BLOSSOM & ROOT

ELEMENTARY SCIENCE // YEAR 3

Wonders of the Animal Kingdom

PARENT GUIDE

YEAR 3

Exploring the Animal Kingdom

www.blossomandroot.com

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Blossom & Root

Elementary Science,
Year 3:

Wonders of the Animal Kingdom

A Complete, Hands-On Secular Science Curriculum

Grades 1 - 4

Blossom & Root Elementary Science
Year 3: Wonders of the Animal Kingdom

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Welcome to a Year of Wonder

A Relaxed, Hands-On, and Adventurous Approach to Science in the Early Grades

When I decided I wanted to homeschool my daughters, one of the most difficult tasks I faced was finding a science curriculum that suited our needs. We wanted curriculum that was completely secular, hands-on, and full of opportunities to take our learning outside. We wanted books, and lots of them! We wanted permission to explore, dig deeper, and go off to explore rabbit trails from time to time. But we also wanted structure--just enough to build concepts upon one another in a linear way without the pressure of a rigid schedule. When it came to recording our discoveries, we wanted freedom from the worksheets, tests, and time-consuming lap books that seemed to dominate most of our options--something more akin to a scientist's field journal.

When I couldn't find this particular unicorn, I decided to do what I had done for my early years and kindergarten curriculum--I created it. Since I knew we couldn't be the only family looking for such a thing, I put my heart, soul, and complete focus into crafting a solution for those families too. I created *Wonders of the Animal Kingdom*, the third of six planned years of science curriculum, brought to you by Blossom and Root. It is designed to be flexible, adaptable, inspiring, and gentle. My fondest hope is that it will provide discovery, joy, and wonder for the families that use it.

Thank you for your support of Blossom and Root. Please feel free to reach out to me at any time--I am always happy to help!

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Options for Scheduling This Curriculum:

Traditional Schedule:
Aim to complete one unit per week, in order, for a 36-week school year. If you do science once a week, this may mean reading one of the suggested books, completing one of the activity options, and ending with your child recording their experience in the student notebook. If you do science twice a week or more, you may wish to incorporate multiple books and video links, and more of the optional activities per unit.

Relaxed Schedule:
Begin at the beginning and spend as much or as little time in each unit (or "wonder," as we call them) as desired. You can even split this curriculum into two year's worth of science by doing half of it in the first year, and half in the second. This will allow ample time for families that like to incorporate lots of field trips and projects, without added pressure to complete the entire curriculum in one school year.

Scheduling for Seasonal Relevance:
You are welcome to explore the wonders in any order you like, which means you can optimize topics by season. For example, you may want to save the unit on seabirds, waterbirds, and shorebirds for your spring break trip to the seashore. Or perhaps you want to study migration, hibernation, and seasonal adaptations in the winter. If this sounds appealing to you, go through the list of wonders at the beginning of this guide and make a note of which ones you'd like to cover in a specific season. This is an excellent approach for families who like to spend a lot of time outdoors, or go on lots of field trips.

How to Plan Out Each Unit (the Simple Way):
A few weeks before you begin a unit, look over it and decide which books or video links you'd like to use and which projects you'd like to do. Highlight them in the parent guide here or write them into a separate planner. Refer to the Laboratory Guide for specific supplies you'll need to gather for the activities you'd like to include.

Make It Yours

How to Teach This Curriculum

This curriculum is designed to provide support and inspiration to the parent educator. Above all else, please make it *yours*!

Step One: Wonder
Each unit begins with an introduction to the wonder at hand--whether that is insects, bony fish, or primates. Together, you and your child will delve into the topic through engaging literature, videos, and guided conversations.

Step Two: Explore
The next step is to explore the topic through hands-on activities, projects, demonstrations, and experiments. Our curriculum is flexible, providing several options for each wonder so that you may tailor it to your budget, time available, personal preferences, and your child's learning style.

Step Three: Record
The final step is to allow your child to record their experiences. Once again, our curriculum allows for maximum flexibility. Children who are already eager, confident writers may use the student notebook to employ written narration. Others may wish to draw or color a picture of their experience, and their parent can dictate their oral narration. Still others may prefer to tape or paste in photographs taken of their adventures and activities during that unit--the choice is yours!

Permission to Go Off the Grid
One of the greatest gifts of homeschooling is the ability to follow rabbit trails, and to delve deeper when inspiration calls. We fully encourage this, and promise that the curriculum will be here, waiting for you when you're ready to come back and move on to the next wonder!

Step One: Wonder

Setting the stage for discovery

"*Wisdom begins in wonder.*"
Socrates

The Main Goal
You will begin each unit (or "wonder" as we call them) by introducing the topic to your child through books, videos, and guided conversations. **The primary goal of this stage is simply to introduce the topic and inspire curiosity.**

Options for Step One
As with the rest of this curriculum, we focus on providing multiple options for you to choose from, unit by unit:

Category 1: For the Minimalists
If you're pressed for time, short on resources, or simply not as excited about a specific unit, stick with Category 1: For the Minimalists to introduce the topic. This category is designed to touch on the main points with as few resources and as little time as possible.

For each unit, choose from one or multiple categories to introduce the topic and inspire curiosity.

Category 2: For the Book Basket Folks
This category will provide a rich list of engaging literature to pick and choose from for your initial introduction. **You absolutely do not need to provide all of these books, every week.** This list is meant to provide *options* for families that prefer a literature-based approach to learning.

Category 3: For the Visual Learners
Some children prefer a more visual model for receiving information, and some topics can be difficult to explain without a visual demonstration. Therefore we provide suggested video links, most of which are hosted on YouTube, to help introduce each topic. **Please screen them ahead of time to be sure they are in line with your family's values and developmental appropriateness for your child.**

New in 2019 - 2020: We will be curating playlists for each level of Blossom and Root science on our YouTube channel. You can visit these playlists to view the recommended YouTube videos in this curriculum. These playlists should be available by the end of 2019. They will include the same linked videos you see here (YouTube only.)

Step Two: Explore

Choose your own adventure

The Main Goal
The next step for each unit is to explore the topic through hands-on activities, demonstrations, projects, and experiments. **The primary goal of this stage is to allow your child the opportunity to make discoveries about the topic at hand.**

Options for Step Two
As with the rest of this curriculum, we focus on providing multiple options for you to choose from, unit by unit:

Category 4: For the Outdoor Learners
This category was designed for families that prefer to do their learning outdoors. If you and your children love to explore, take field trips, and get your hands good and muddy, this is the category for you!

Category 5: For the Table-Lab Crowd
For families that love "table science" we have designed activities that can be done indoors using (mostly) common household objects. These activities and demonstrations can bring big ideas closer to home and provide hands-on fun for children of multiple ages.

Category 6: For the Crafts-and-Projects Families
Some families really love projects--hand-made exploration of a topic through art projects, crafts, and writing activities. For these families, we have provided suggested projects that are designed to be "on display."

Mix and Match to Choose Your Own Adventure!
Pick and choose from any of these categories to design a unit of science for your family. If you're short on time, one activity will do--you can even stick to the "minimalist" category in step one and call it a week. If you're loving a topic, you may wish to combine multiple categories for exploration and extend your learning for several weeks.

For each unit, choose from one or multiple categories to provide rich and engaging opportunities for discovery.

Step Three: Record

Documenting the journey

The presentation of the topic belongs to you, the parent educator. What your child takes from that presentation belongs to them.

For each unit, have your child document their experiences using one of these options for the student notebook.

The Main Goal

The final step for each unit is to give your child a chance to document their experiences through the student notebook. **The primary goal of this stage is to allow your child to record whatever they are inspired to, concerning the topic you investigated together during the previous two steps.**

Options for Step Three

As with the rest of this curriculum, we focus on providing multiple options for you to choose from, unit by unit:

Oral Narration

For this option, your child will give a brief oral narration of what they have learned. You, the parent, may choose to take dictation of their words into the student notebook. They may wish to draw or color something before or after the oral narration in the student notebook. This can also be done in the form of casual conversations together.

Written Narration

If your child is already confidently writing, and enjoys doing it, they may wish to record their own written narration, with or without a drawing, in their student notebook.

Scrapbooking with the Student Notebook

You may wish to treat the student notebook as a scrapbook instead, allowing your child to tape or glue photographs into it that you (or they) take during your activities together. They may wish to add brochures or postcards from field trips, make drawings or notes in the margins, or have you take dictation.

Step Three, cont.: The Wild Files

Learning How To Learn

The Wild Files: An extended project to explore a specific ecosystem and several of the key species within it.

The Wild Files
During weeks 30 - 36, your child will be learning about ecosystems of the world. They will choose one ecosystem to study in-depth, as well as several key species within that ecosystem to learn more about. They will use The Wild Files to document their discovery.

Print a Copy of The Wild Files
You will need to provide a printed copy of the Wild Files pdf that came with your purchase of this curriculum.

Follow the Prompts to Choose a Topic
Follow the prompts in weeks 31 - 35 to choose an ecosystem and several species within it to study.

Gather Resources
Gather resources from the internet, local library, nature centers, the zoo, etc. to use for The Wild Files. This is one of the most important steps in the project, because this is when you will be teaching your child how to learn about things that interest them. Show them how to search for books, how to identify a reliable source of information online, and how to think outside the box by meeting with experts, watching documentaries, attending workshops or classes, and visiting public venues to learn more.

Complete the Wild Files Pages and Project
Your child will use the information they gather from their resources to complete the pages in their Wild Files booklet. Once they finish, they will complete a final project (there are several ideas in the booklet for project options), take a picture of it, and paste the picture into the booklet.

Learning how to learn is one of the most important skills to reinforce with your child. Learning is, after all, a lifelong endeavor.

Permission to Go Off-Grid

"*Curiosity is the wick in the candle of learning.*"
William Arthur Ward

It's All About the Journey, NOT the Map!

As you move through the following "wonders," you will naturally come across forks in the road where your child wants to stop and dig deeper or follow a rabbit trail that springs up. These side-trails can provide some of the richest learning opportunities there are--curiosity-driven, interest-led investigations--so don't ignore them if you can help it.

Many of us feel nervous about "veering off the path" of a curriculum. The thought of learning gaps and self-imposed deadlines can keep us awake at night. We are here to assure you that it is 100 percent a-okay to follow your child's curiosity. This curriculum will be here when you are ready to come back and continue on.

It is also 100 percent a-okay to hurry through a topic that is not very interesting to you, or skip it entirely. We want this curriculum to be yours, so take the liberty to mold it the way you want it and be sure to indulge in those rabbits trails! *(We love them so much that we even flag you down in places where side-voyages may feel natural! If you see the rabbit icon, it means there's an opportunity for a possible rabbit trail.)*

Follow those rabbit trails

Bringing Big Ideas Closer to Home

Where Nature Study Fits Into This Curriculum

"*We all have the need to be trained to see, and to have our eyes opened before we can take in the joy that is meant for us in this beautiful life.*"
Charlotte Mason

Why a Coordinating Nature Study?
With the exception of a stand-alone purchase of *Nature Study, Year Three: Wonders of the Animal Kingdom*, our science and nature study programs for year three are meant to be done together. This does not mean that you always must be on the same unit number in the science program as the corresponding week number in the nature study program (in fact, they don't even have week numbers.) It just means that these two programs were designed to be done throughout the same year.

We believe that science in the early grades should largely concern the natural and physical world of the child: the rocks and the trees and the worms that they can see and touch first-hand. However, many of the concepts in zoology and other life sciences can be lofty and abstract for the young mind. Nature study--the investigation and observation of the intimate landscape immediately surrounding a child--can help to bring these big ideas closer to home.

For example, a child in the third grade may not be able to wrap their mind around the finer points of evolution or animal anatomy, but if given the opportunity to explore local birds with a pair of binoculars while on a hike, they will begin to notice the subtle differences between bird species, and perhaps even the different types of beaks they have for eating different foods, and ultimately that the concepts they learned in the related science unit are very much present in *their* world. Therefore, *they* are part of those big ideas too.

Contents

Contents

Wonder No. 1: The Animal Kingdom

Welcome to Wonder No. 1: The Animal Kingdom.

In this unit, we introduce the kingdoms of life on Earth, and explore the six key features of the animal kingdom, as well as the seven levels of classification in the animal kingdom. As always, please screen the suggested videos and books before sharing them with your child, as every family and every child is different regarding the materials that work for them. Instructions for activities can be found in the Laboratory Guide.

There are three "big picture" messages to focus on during this unit:

1) There are many kingdoms of life. Our organization of these kingdoms changes over time as we learn more about the various forms of life on Earth. When scientists first began to organize life into kingdoms, they used only two: animal and plant. As we've learned more, and are able to see smaller details and life forms with better technology, we've developed more kingdoms. *These kingdoms include: animalia (animals), plantae (plants), fungi, protista, and monera (sometimes eubacteria and archaebacteria.) Some countries and scientists classify living things in a slightly different way, and this list does change over time.*

2) Throughout this curriculum, we will explore the animal kingdom. It has six key features:

1) Animals have multicellular bodies. Remember that a cell is the basic unit of life. Some living things have only one cell, other living things have many. Animals have many cells.
2) They need energy from food to live and they cannot produce their own food from the sun the way plants can.
3) Animals eat living organisms, or the remains of dead ones.
4) Animals need oxygen to live.
5) Most animals have nerve cells that make up sensory systems in their bodies, helping them to navigate their world, find food, avoid danger, and communicate with other animals.
6) Animals (with a few exceptions) are mobile and can move from place to place.

3) We organize animals based on a system developed by a Swedish man named Carolus Linnaeus. The system has seven levels: kingdom, phylum, class, order, family, genus, species. Here is a fun way to remember that order:

Keep **P**onds **C**lean **O**r **F**rogs **G**et **S**ick**.**

Every animal on the planet can be classified according to this system.

Wonder No. 1: The Animal Kingdom

1. For the Minimalists:
Look at *DK Smithsonian Animal*! pgs. 6 -7, 12 - 13, 250 - 251. Discuss the "big picture messages" for the week.

2. For the Book Basket Folks:
Karl, Get Out of the Garden!: Carolus Linnaeus and the Naming of Everything by Anita Sanchez; *Animalium* pgs. 2 - 5

3. For the Visual Learners:
From Amoeba Sisters: Classification. Copy & Paste Link:
https://www.youtube.com/watch?v=DVouQRAKxYo
This video is excellent for older students. It covers the "3 Domain" classification system.

From Free School: Animal Classification for Children: Classifying Vertebrates and Invertebrates for Kids. Copy & Paste Link:
https://www.youtube.com/watch?v=mRidGna-V4E

From the Laboratory Guide:

4. For the Outdoor Learners:
Wonder No. 1 "Nature Hike: A Year of Animals"

5. For the Table-Lab Crowd
Wonder No. 1 "Organizing Animals Challenge"

6. For the Crafts-and-Projects Families:
Wonder No. 1 "Poster: Classifying a Favorite Animal"

From the Student Notebook:
Complete Wonder No. 1 Entry

Remember: You are the master of the curriculum. You can finish each wonder in one week, take multiple weeks for the topics that intrigue you the most, and follow rabbit trails. You can pick and choose activities from any given category in any given unit. The focus in these early grades should be on discovery and wonder. This is the time to play and to explore.

Wonder No. 16: Seabirds, Waterbirds, and Shorebirds

Welcome to Wonder No. 16: Seabirds, Waterbirds, and Shorebirds.

In this unit, you'll dive into seabirds, waterbirds, and shorebirds. These can be some of the most interesting creatures to watch for near your home, depending on where you live and what time of the year you are completing this unit. If possible, visit local bird sanctuaries or water habitats to watch them up-close.

There are nine "big picture" messages to focus on during this unit:

1) Many birds are specialized for life around (or in) the water. We call these seabirds (birds that live and feed at sea), waterbirds (birds that live and feed in freshwater wetlands), and shorebirds (birds that live and feed on tidal shores.)

2) Seabirds, waterbirds, and shorebirds feature a tremendous variety in their diet, physical build, feet, and bills. Some are built to be excellent divers, while others are built to stand on long legs in the water and spear fish with their sharp bills. Some have webbed feet for paddling while others are built for long ocean journeys and catching fish from the air.

3) Herons (a waterbird) hunt in freshwater wetlands. They will stand perfectly still for hours in shallow water, then hinge their heads suddenly forward into the water to spear a fish.

4) Puffins (a seabird) can swim and hunt underwater, using their wings to propel them through the sea. They can grab dozens of smaller fish in their colorful beaks in one bite.

5) Eurasian Curlews (a shorebird) are wader-birds that gather worms, crabs, and clams in muddy tidal shores and wetlands with their long, curved bills.

6) Flamingos are filter-feeders. They dip their heads onto the surface of shallow waters and pump the water (along with insects and shrimp) through their specialized bills. In their bills, comb-like bristles let the water through while trapping the prey inside. They get their brilliant pink hue from pigments in the shrimp they eat.

7) Cormorants are excellent divers. Their webbed feet can paddle them swiftly underwater as they chase down fish to eat. Their feathers absorb water, reducing their buoyancy and allowing them to stay beneath the surface for longer periods of time.

8) The Wandering Albatross has the largest wings of any bird. It often spends days in the air without landing, flying over large expanses of open ocean.

9) Many seabirds make long migrations every year. Arctic Terns have one of the longest migrations, beginning with breeding season in the Arctic and ending near Antartica to feed.

Wonder No. 16: Seabirds, Waterbirds, and Shorebirds

1. For the Minimalists:
Look at *DK Smithsonian Animal*! pgs. 12 - 13, 120 - 121, 136 - 139, and talk about the "big picture" messages for the week.

2. For the Book Basket Folks:
Animalium pgs. 60 - 63; *Horseshoe Crabs and Shorebirds: The Story of a Food Webs* by Victoria Crenson; *Make Way for Ducklings* by Robert McClosky; *Ducks Don't Get Wet* by Augusta Goldin; *Feathers: Not Just for Flying* by Melissa Stewart; *The Burgess Seashore Book for Children* by Thornton Burgess; *Watching for Water Birds* by Jim Arnosky; *All Night Near the Water* by Jim Arnosky; *Red Knot: A Shorebird's Incredible Journey* by Nancy Carol Willis; *Henry the Impatient Heron* by Donna Love; *A Day in the Salt Marsh* by Kevin Kurtz; *Wisdom, The Midway Albatross: Surviving the Japanese Tsunami and other Disasters for over 60 Years* by Darcy Pattison; *A Perfect Day for an Albatross* by Caren Loebel-Fried; *Nature Anatomy* pages 186 - 187, 194 - 195, 204 - 205

3. For the Visual Learners:
From BBC Earth: World's Largest Albatross Colony. Copy & Paste Link:
https://www.youtube.com/watch?v=tHCQYIX6Mf4

From BBC: How baby flamingos become pink. Copy & Paste Link:
https://www.youtube.com/watch?v=zhVPoll3LUA

From the Cornell Lab or Ornithology Channel:
Birds of the Mississippi River Delta. Copy & Paste Link:
https://www.youtube.com/watch?v=cjD_ElZDW3A
Birds of the Yellow Sea. Copy & Paste Link: https://www.youtube.com/watch?v=N74zn7bCpq8
Alaska's Yukon Delta National Wildlife Refuge. Copy & Paste Link:
https://www.youtube.com/watch?v=4yyMEoqG0jA
Seabird Success Story. Copy & Paste Link: https://www.youtube.com/watch?v=u-WFYZLWXmY&t=2s

The Cornell Lab of Ornithology channel has **dozens** of clips of ducks, cormorants, and more:
https://www.youtube.com/user/LabofOrnithology/videos

Disney's *The Crimson Wing*.

From the Laboratory Guide:
4. For the Outdoor Learners:
Wonder No. 16 "Watching for Waterbirds, Shorebirds, or Seabirds"
Wonder No. 16 "Dig, Scoop, and Filter"

5. For the Table-Lab Crowd:
Wonder No. 16 "Make a River Delta in a Pan"
Wonder No. 16 "Hunting Like a Shorebird"

6. For the Crafts-and-Projects Families:
Wonder No. 16 "Paintings of Local Waterbird, Shorebird, or Seabird Species"
Wonder No. 16 "Albatross Wings"

From the Student Notebook:
Complete Wonder No. 16 Entry