

Our Wonderful World

—FALL—

Backyard Neighbors: The World of Insects



Please enjoy these sample pages from *Our Wonderful World Fall: Backyard Neighbors—The World of Insects* (ISBN 978-1-956655-04-9), © 2026 by DIYHomeschooler. All content in this sample is protected under United States and international copyright laws. Permission is granted to reproduce these pages for personal, noncommercial use. For purchasing options and more information on the book, please visit HomesteadOnTheRange.com.

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INTRODUCTION

O^{UR} *Wonderful World* by Emery Lewis Howe was originally published in the late 1920s. It covers pets, birds, plants, animals, and the earth and solar system.

Written for young children, this treasure explores God's creation through story. As mentioned in the "Greetings" in the front of the book, it encourages a child's curiosity by asking a question or two:

- How did the earthworms help the peach you ate?
- Do you think it possible that the birds had anything to do with your peach?
- Could beavers, dogs, or horses, have helped grow the peach?
- What did the skyland helpers do for it? How many of them may have helped?
- Did ants, or bees, or butterflies, have any share in the work?

Part of the appeal of the book is that that the parent or mentor or teacher is learning right along with the student (or at least facilitating that learning). Elements of the natural approach to learning will be:

- Observing.
- Exploring.
- Researching.
- Recording.

How to Use This Book

The book is broken down into parts in order to make it easier for teachers and mentors to include nature study in their already busy schedule:

- **Part I: *Backyard Neighbors* (Fall)**
Covers worms, ants, spiders, honey bees, and butterflies and moths.
- **Part II: *Feathered Friends* (Winter)**
Covers various types of birds, their adaptations (beaks, nests, feet, etc.), bird guardians, and how to attract, feed, and care for birds.
- **Part III: *Garden Life* (Spring)**
Covers plants and how they grow, wildflowers, pollination, trees, forests, seeds, seed dispersion, and wheat.

- **Part IV: *Four-footed Friends & The Earth and Its Neighbors* (Summer)**

Covers dogs, horses, beavers, and sheep, and then switches to the physical earth topics of sky, clouds, planets, rocks, and water.

Each part, excepting Part II (Winter), is roughly 10 lessons. If you complete all four parts, you will have 32 lessons. By adding a weekly “lab” or outside explore, you will have enough material for a complete school year. (Older students can tag along by including an age-appropriate biology text.)

Another way you can use the series is simply work through each part during the course of one year. It will take longer to complete the series but you will also have more time for exploration and observation.

Tips for Teachers

A most important factor in the success of any course of lessons is the teacher. A teacher of skill, insight, and sympathy may fill a poor and ill planned course so full of richness that the finest results are produced; a poor teacher may render the best course ever offered utterly barren and ineffective.

Jean Gertrude Hutton, Our Wonderful World Teacher's Manual (The Abingdon Press, 1927), 8.

Here are a few tips to keep in mind:

- **Be prepared.**

Nothing takes the wind out of a lesson more than not having what is needed to learn.

- **Be curious.**

Maybe you don't know; but you can teach your children how to find out for themselves.

- **Be brief.**

Try to avoid long lectures. The idea is that the child is learning on his own. Our role is to guide the process.

- **Stay in the background.**

The person doing the work is the person who is learning. This means our children need to be the ones actively engaged.

- **Let the child lead where possible.**

This is part of the natural learning lifestyle approach.

- What questions does the child have?
- How can they be answered?

- **Don't worry about "subjects."**

If you cross over into science, history, or language arts—so much the better!

Generally, the book progresses from things near at hand to things more distant (ants through to the planets). You can really

start in any section you wish depending on the season and what is accessible to you, without losing the flow. (Heads up: Part III: *Garden Life* refers back to the lessons about the insects of Part I and the birds of Part II.)

Suggested activities can be found at the end of each lesson. The goal of these activities is to encourage the student to interact with what he has learned.

No one would find much interest in learning to drive an automobile if there were no expectation of driving after the learning is accomplished.

Hutton, Teacher's Manual, 11.

Obviously, you don't need to complete all of the suggested activities. They really are "suggestions." And you may have a few ideas of your own. More resources can be found at DIYHomeschooler.com/handy-mom-tools/our-wonderful-world.

In addition, not all students will appreciate all activities. The idea is to encourage curiosity and investigation and that may look different depending on the child. Teach the child, not the book.

With that said, grab a copy of the *Handbook of Nature Study* by Anna Botsford Comstock. Originally written in 1911 by the head of the Department of Nature Study at Cornell University, this much-loved handbook shows us how to observe nature in 887

pages of detail. This is a great reference when it comes to getting outside and observing. We mention the corresponding pages for reference in our study. While the paperback is still in print, the original is also available online as a free download. (Visit DIYHomeschooler.com/handy-mom-tools/our-wonderful-world for this and other resources such as free Nature and Drawing & Writing notebooking sets.)

Inputs must have outputs. So we suggest having your student keep a notebook. Things that can be kept in the notebook include:

- Experiments and results.
- Copywork and narrations.
- Diagrams and illustrations.
- Bible verses and memory work.
- Summaries of the various insects, plants, birds, etc.

We'll provide specific notebooking ideas at the end of each section.

We used the King James Version (KJV) of the Bible for memorization and copywork for familiarity reasons. Feel free to substitute the Bible version your family normally uses.

The child who early comes to see God in all around him has a safeguard that nothing will break or remove. As he learns to look on all life as coming from the hand of the great Creator, and as he sees himself as a part of this vast stream, he enters into an appreciation that enriches his spirit and lifts him to a higher plane of thought and living. The child that in imagination watches the earth grow through long ages under the hand of the Almighty, as he prepares it to serve his great ends, experiences a stretching of mental and spiritual boundaries in a healthy and normal fashion. Imperceptibly he comes into his rightful heritage as a child of his heavenly Father.

Hutton, Teacher's Manual, 7-8.

A Thank You

A thank you to Michelle Lindsey at Homestead on the Range for the original illustrations and the insect “stories.”

LESSON I

BUSY PLOWMEN

WHAT a fine morning after last night's shower! The grass is fresh and green. The flowers are decked with sparkling dewdrops. Bees are humming. Birds are busy. The rain-washed earth has a delightful smell. It is just the time to make a friendly call and become better acquainted with some of our good neighbors.

Do you say it is too early to visit Mrs. Brown? You are sure that Mrs. Smith is too busy to be interrupted just now?

You quite misunderstand me. I am not planning to go with you to see friends who live in houses like yours or mine, or to call on neighbors who talk as you and I talk.

The neighbors I am thinking of live in a very simple way, generally quite out of our sight. They do their work with no thought of what it means to us. But they are following the laws of the heavenly Father, who made them, as he made all things. In countless numbers, and for countless years, these helpers have been carrying out their part in God's great plan, though we seldom stop to think how much of our comfort and pleasure we

owe to these busy workers who toil in the way the Creator has set for them.

I see you do not know what I am talking about. Come with me along the garden path, and we may chance upon one of these busy plowmen; we will stop and get acquainted with him.

Ah, here is one! Let me introduce Plowman Earthworm, a tireless worker. What? You thought it only a horrid, wriggling worm? You supposed it good for nothing but fish bait? Had the earthworm not done his task well, I suspect you would have had no breakfast. It is due to his work very largely that you could enjoy that juicy lettuce, those fine strawberries, the nice cereal and the rich yellow milk, or, for that matter, any of the vegetable food you ever ate! Did you really think that an earthworm had filled the purpose for which it was put into the world when it had helped you catch a fish dinner? No, indeed!

But you need not feel too much disturbed that you have not known sooner the very important work of Plowman Earthworm. The wisest men living did not know much about these plowmen a few years ago. Then Charles Darwin, a great English scholar, began a very exact and painstaking study of these small creatures. Mr. Darwin measured off plots of ground, and counted the earthworms he found in each; he counted the burrows he found; he counted the leaves the worms carried down; he weighed the earth thrown up by them. In these ways he learned many most interesting things about these busy

helpers who work out of sight and so quietly that we seldom think of them, except when we wish to go fishing!

You probably know that many animals are important soil builders. What would your answer be if I were to ask you to name the most important of them all? I am sure you would speak of a half dozen before you would think of putting Plowman Earthworm at the head of the class. But that is just what Mr. Darwin answered! He concluded that the earthworm does a vast deal of soil building, of soil draining, of opening soil to the air, and of making passages through which the tender roots of growing plants can easily find their way, and where they can get their food. Besides this, the worms chew up bits of leaves and blades of grass, and take them to the burrows under the surface. All of this lightens the soil, and makes it more porous. The worm breaks up the soil exactly as does the farmer's plow, only much more perfectly and completely.

Perhaps someone has told you that the plow was one of the first tools invented by man. You certainly know that it has been one of the most valuable tools he has ever had. At first the plow was probably nothing but a crooked stick, or a forked branch; and you have all seen the pictures of the fine steel plows and tractors that the farmer of today uses. Sometimes one or two horses will draw the plow. Often, on large farms or ranches, four horses will be used. Many farmers today have put aside the horse-drawn plow for one that is driven by gasoline.

Are you thinking of these great plows, and wondering how a soft creature like an earthworm can force itself through the hard soil and turn it up to the air and the sun? It surely must be very difficult. Indeed, it would be impossible if the worm tried to force itself through, but this is not the way it takes—it eats its way through. Instead of rolling up little pellets of earth and taking them to the surface, as do many of the insects, the earthworm swallows the earth. Then, in a gizzard much like the one you have seen taken from the Thanksgiving turkey, only very, very much smaller, the earth is ground up fine. Out of the ground-up mass the earthworm takes the decayed vegetable matter for its food. The rest of the earth is cast out in the form of little mounds or pellets. You can find these almost any morning, in the grass, or along the garden path.

Of course you are ready to say that the amount of soil building that can be done by a few earthworms is so small that it is hardly worth counting. I suspect that the worms themselves, if they had minds and could think, and if they could once see how very big the earth is, especially when measured by earthworm measures, would grow quite discouraged, and be ready to say, "It never, never can be done!"

But you are overlooking one fact, and that is the number of earthworms that are all the time plowing, plowing, plowing. You remember Mr. Darwin counted the earthworms he found in measured pieces of ground. In this way he was able to make a

pretty good guess as to how many worms might be found in any section. How many do you suppose he figured lived in an acre of ground? Five hundred? A thousand? Perhaps as many as five thousand? All wrong! He figured that there are more than fifty thousand in an acre of ordinary ground, and perhaps in rich land there may be a half million to an acre.

More than this, earthworms seem to be found in most parts of the world. They are at work all the time. Our farmers can plow only when there is little or no snow, and when the ground has just the right amount of moisture. Not so Plowmen Earthworms! When it is warm and moist they stay near the surface. Let the weather turn cold and damp, and do you suppose they take a rest? No, indeed! They simply eat down deeper, where the wet and chill cannot reach them, and keep on plowing.

You can see that a half million creatures, even as soft and weak as earthworms, can accomplish a great deal of work on an acre of ground, if they are always at it. Recall that Mr. Darwin weighed the earthworm castings he gathered up on measured parts of the land, and you will see how he could figure the amount of soil the worms would deposit in a year. You will not dare guess this time, so I will tell you that he estimated that as much as ten tons might be cast out in a single year. That is so much that you can hardly imagine it. Perhaps you can figure how many boys or girls as heavy as you are would be required

to weigh ten tons, and you will have an idea of the weight of earth the worms throw out.

You must remember that the castings from the worms are soil ground up very fine, and this makes the best fertilizer. When some parts of the earth have as much as a fifth of an inch of this deposited over it in a year, do you not think it is worth a great deal? Do you think there is any truth, then, in the old notion that more worms are found in rich soil than in poor soil?

Did you ever find in an old pasture a stone that was nearly buried? How do you suppose it came to be so nearly hidden? I often saw such stones when I was a child, and wondered if they had sunk deep into the ground just because they were so heavy. But when I turned them over, I found they did not weigh so much as I had thought. It was a long time before I found out that the busy Plowmen Earthworms had been burying the stone! First, as you can see, they worked under the stone. As they hollowed out little tunnels, and opened up the soil, the stone would sink a bit deeper. Then the worms would deposit their castings around the stone, and so build up the earth about it. When this had gone on for a number of years, the stone began to sink out of sight.

As you will learn in a later lesson, all soil is made from rock that has been broken into bits. This takes many long years, and many workers have a part in the process. Wind and water, frost and sun, all help. There are other helpers, too, and, of course,

you will not be surprised to find the earthworms are among them. How can they work on rocks? Part of the rock-breaking comes through the action of acids that are made when vegetable matter decays. When the earthworms open and loosen the soil, they make the passage for these acids easier, and give channels that let them trickle down to the rocks. In this way the worms really aid in breaking up rocks on which their soft bodies could have no effect.

If you look very closely at the body of one of these little plowmen, you will find no eyes at all; of what use would eyes be to a creature that spends most of its life under the surface of the earth, in the dark? Eyes would be very troublesome, in fact. Nor will you find any true brain, though there is a small nervous system, a central nerve spot, with a chain of smaller nerve spots extending through the body. Feet, which you would suppose very useful to a plowman of any sort, are also wanting. Instead, the earthworm has four double rows of spines set into the rings of which the body is made. These help the worm in moving, and are used to cling to the burrow for safety when you are trying to pull out of the earth a worm for your bait can, or when a hungry robin is looking for his breakfast.

Can you think of any creature in all God's wonderful world that does a bigger or more important work with as few and as simple tools as belong to the earthworm? Only a worm, working blindly in the dark, without noise, without confusion,

persistently and patiently burrowing its way through the darkness and the damp! It is a simple, quiet, and an unseen part that our little plowmen play. Humble as it is, it is a part of God's great plan for the good of all his creatures. All plant and animal life is benefited by the work of the worms; and man, with all his intelligence and skill, would find it hard, if not entirely impossible, to accomplish the task which is so well done by these helpers.

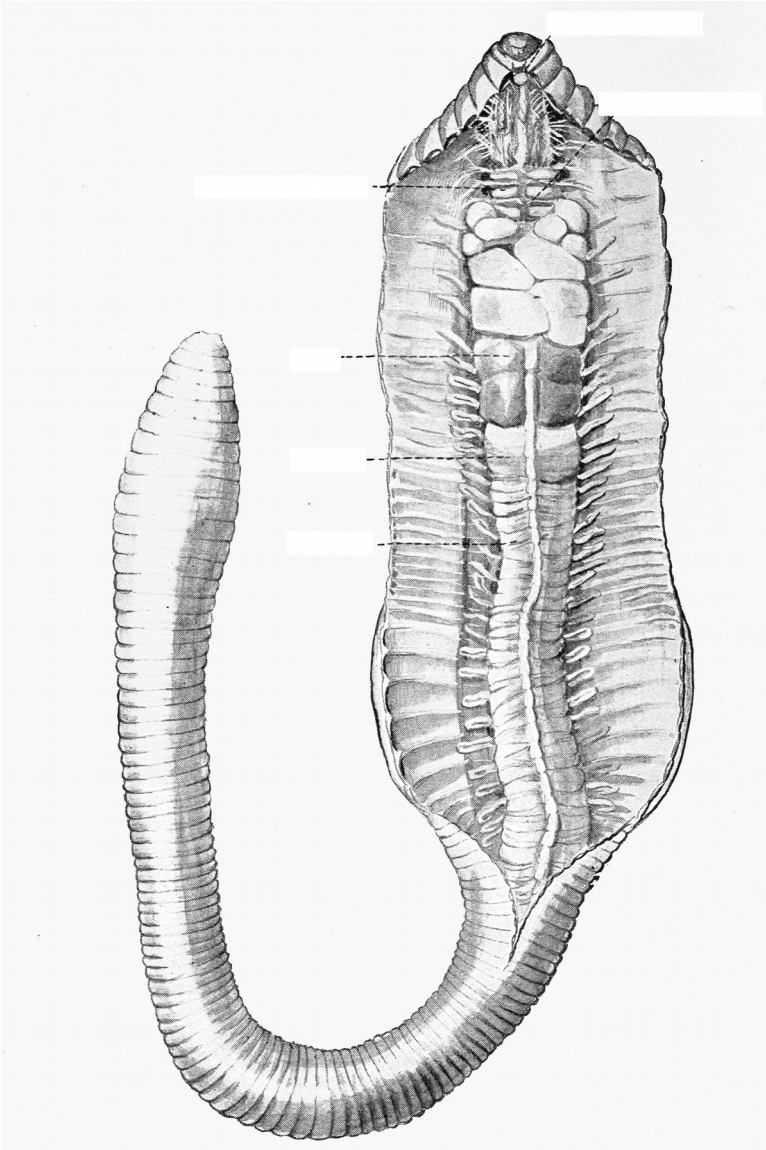
When you next look at an earthworm and when you remember how this small and seemingly unimportant creature has been chosen to do so vast and important a bit of work, perhaps you will think of God's choice of the weak things to put to shame the things that are strong. And maybe after thinking about all this we shall all be a little slow to think of anything in God's creation as little or weak or of no account.

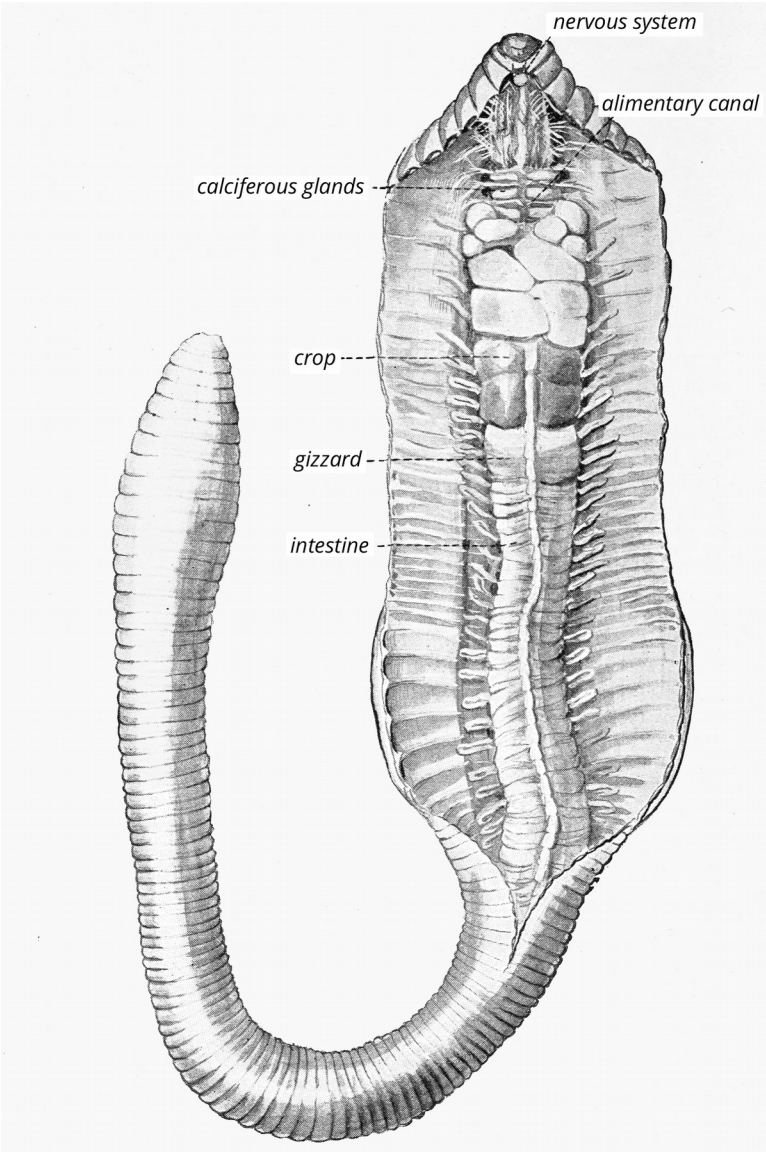
Something to Do

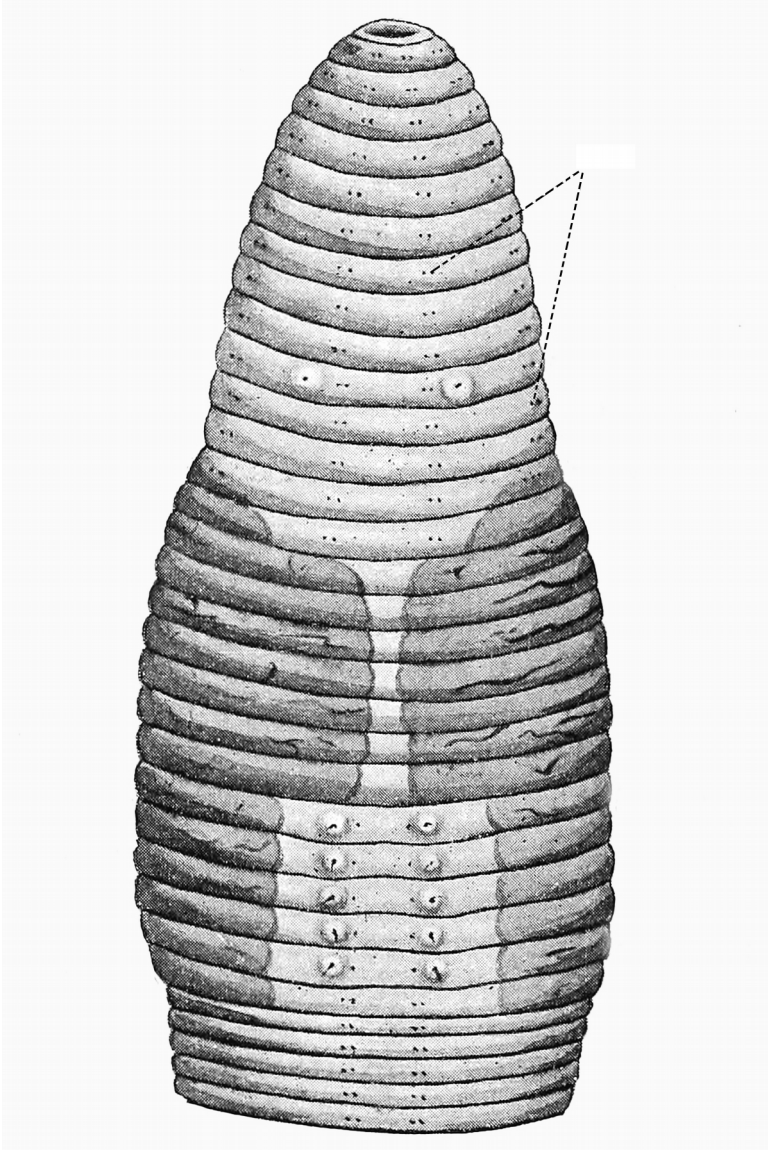
- Make a list of the things earthworms do to improve soil.
- Compare and contrast an earthworm to a plow. Make a compare/contrast chart with similarities on one side and differences on the other to get started.

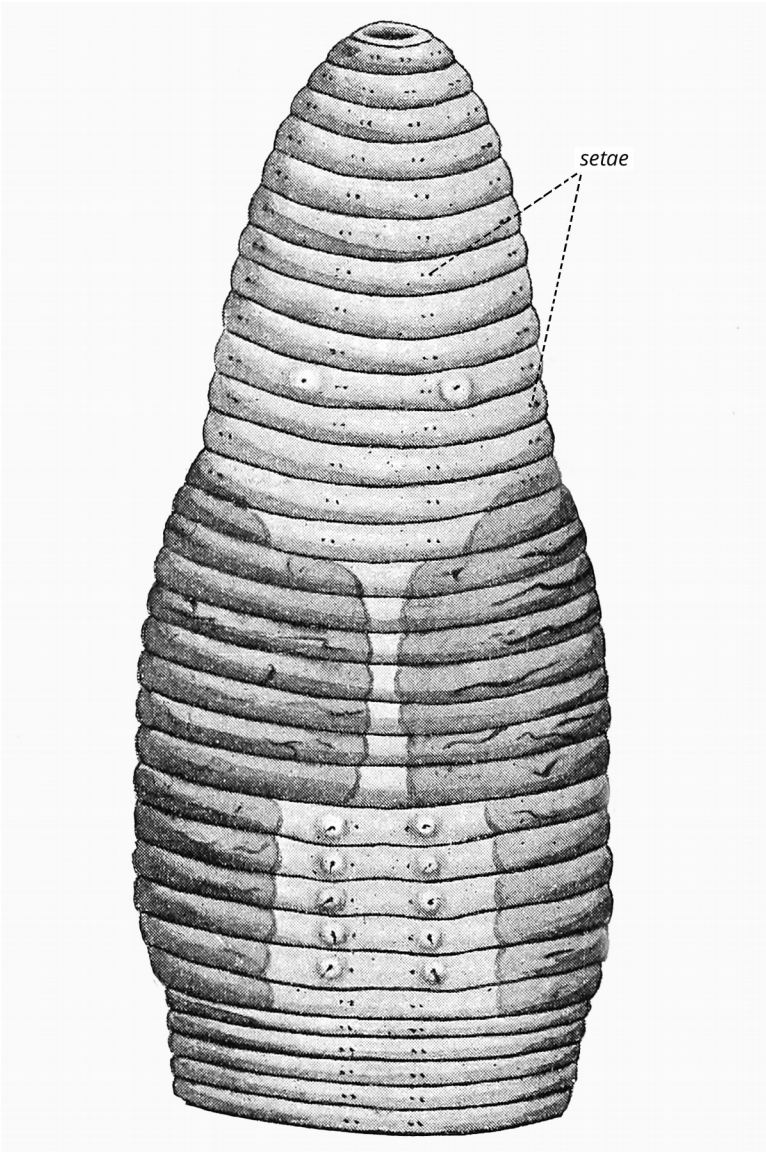
SIMILARITIES	DIFFERENCES

- How heavy are you (in pounds)? If there are 2,000 pounds in a ton, how many of you would it take to weigh the same weight as the earth the worms throw out?
- Draw an earthworm and mark its features (anatomy): crop, gizzard, calciferous glands, corrugated intestines, alimentary canal, nervous system, setae.









- Find a small plot in your backyard or another patch of land. Mark off a 1×1-foot section. Dig to a depth of 1 foot. Plop the dirt into a bucket. Count and record how many earthworms you find. If you are very interested, you can dig another spot and count worms there. Which soil do you think better? Why? Extrapolate (estimate) based on your current sample how many earthworms there would be per acre if there are x small plots per acre.

Experiment

- Fill a small box with soil, and place three or more earthworms on top of this. Cover the box with a lid. When the worms have burrowed beneath the soil, scatter a little grass, and a few leaves, both dry and fresh, on the surface. Observe from day to day, and record in your notebook what the worms do (you can use the following Worm Observation Chart as an example). Sprinkle the earth to keep it from getting too dry. Care for the material for five or six weeks, and note if vegetable mold is formed.

WORM OBSERVATION CHART

Day 1: 	Day 2: 	Day 3:
Day 4: 	Day 5: 	Day 6:
Day 7: 	Day 8: 	Day 9:

- Older students can dissect an earthworm (hands-on or virtually). See DIYHomeschooler.com/handy-mom-tools/our-wonderful-world for resources.
- Outdoor observation: The *Handbook of Nature Study* covers earthworms beginning on page 422.

Narration

- Narrate and explain how creatures “do their work with no thought of what it means to us. But they are following the laws of the heavenly Father, who made them, as he made all things. In countless numbers, and for countless years, these helpers have been carrying out their part in God’s great plan, though we seldom stop to think how much of our comfort and pleasure we owe to these busy workers who toil in the way the Creator has set for them.”
- Narrate and explain how, “Had the earthworm not done his task well, I suspect you would have had no breakfast. It is due to his work very largely that you could enjoy that juicy lettuce, those fine strawberries, the nice cereal and the rich yellow milk, or, for that matter, any of the vegetable food you ever ate!”
- Orally narrate and explain how the earthworms get through the soil.

Memorize

But God hath chosen the foolish things of the world to confound the wise; and God hath chosen the weak things of the world to confound the things which are mighty.

1 Corinthians 1:27

Notebook

- Include a Drawing & Writing page (DIYHomeschooler.com/handy-mom-tools/our-wonderful-world). Draw an illustration of an earthworm. Below, write everything you have learned about earthworms.
- Copy:

For who hath despised the day of small things?

Zechariah 4:10a

Read

***An Earthworm's Life* by John Himmelman**

Part of the Nature Upclose series, this beautifully illustrated book explains the life of the worm for younger audiences.

Sea-Side and Way-Side (vol. 2) by Julia McNair Wright

Recommended go-along in the public domain, these nature readers form part of the Christian Liberty Nature Readers series. The earthworm is covered in chapters 11–15.

Wiggling Worms at Work by Wendy Pfeffer

Part of the Let's-Read-and-Find-Out Science series, covers the habits of worms along with a few activities to try on your own!

Extended Readings

Note: For many of the readings, ask for an oral or written narration. See the appendix for narration ideas.

The Earthworm's Story

The earthworm is a creature familiar to many who enjoy the outdoors. More properly stated, the group of animals of various species collectively known as “the earthworm” is familiar to us. This group is not diverse in appearance, inevitably being moist and segmented.

Earthworms are by no means all alike, however. Aside from geography, distinctions can also be found in color and size, with some species measuring less than an inch in length and others, such as the giant earthworm of Australia, regularly measuring between six and ten feet in length and about an inch in diameter.

But the most significant distinction between the earthworm species is found in their burrowing habits. By this metric, there are three major groups of earthworms:

- **Anecic:** Those that live in vertical burrows, often as deep as six feet, although burrows up to 20 feet deep have been found. This group includes the night crawlers.
- **Endogeic:** Those that live in extensive, more nearly horizontal burrows stretching through the topsoil.
- **Epigeic:** Those that live in and on leaf litter on the surface of the soil. This group includes the red wiggler sometimes sold for home composting operations.

As you might have guessed by now, the lives of most earthworms center on their burrows. They are nocturnal, only leaving home in the daytime if flooded out by a sudden rain. At night, they anchor their tails in the burrow by means of bristles known as setae, and with their heads they probe around the surrounding area in search of decaying organic matter, be it plant or animal (including other earthworms). Earthworms ingest tiny particles of food by scooping soil into their tiny mouths with an upper lip remarkably like a shovel.

Let it here be observed that many sources deny that the earthworm has a head. While it is true that to the casual observer the head is sometimes indistinguishable from the tail, there is unequivocally a front and a rear to an earthworm. The

former is equipped with a mouth, as previously mentioned, and also with a cluster of nerve cells that serves as a sort of brain. For this reason, we will be excused for persisting in the use of the word *head* as applied to the earthworm.

This head is not equipped with eyes or ears, and it is believed to possess a very poor sense of smell. However, the acute nervous system of the earthworm is highly attuned to touch and taste, as well as the presence of electricity and some chemicals. And this is quite sufficient for the purposes of the earthworm.

The earthworm breathes without lungs by letting oxygen enter its capillaries directly through the skin. However, this process means that the earthworm absolutely must stay moist at all times, or it will suffocate. Therefore, earthworms have mucous glands that secrete a slimy substance that forms a protective coating on their skin. In times of drought, they can descend deep within their burrows and wait for rain, encased in a particularly thick layer of mucus.

Their breathing, burrowing, and digestive habits restrict earthworms to specific habitats. They must have moist but not saturated soils of reasonably fine texture in which to live, as well as plenty of organic matter to eat. Where these conditions are met, earthworms can become remarkably prolific. It has been estimated that New Zealand and the Netherlands may be home to as many as six million earthworms per acre.

Many of the earthworms familiar to us are descendants of Asian and European hitchhikers who traveled on ships' ballast and imported plants. Indeed, earthworms are considered invasive in the northern forests of the United States because they dramatically change the soil characteristics and subsequently the types of plants that will thrive in the understory.

That said, some earthworm species are native, and these are generally regarded as beneficial. Their burrows aerate the soil, their gizzards full of sand grind up coarser soil particles, and their waste, known as castings, provides nutrients beneficial to most garden plants. For these reasons, earthworms are held in high esteem as benefactors to humanity.

Suggestions

- Narrate the passage.
- List the most interesting characteristics of earthworms.



DIYHomeschooler.com

What do earthworms, ants, bees, and butterflies have to do with the peach you ate for lunch today?

Backyard Neighbors: The World of Insects invites children to explore the wonders of God's creation by discovering the answers for themselves.

Seven nature explorations for fall engage a child's curiosity with story and hands-on investigation while introducing children to our backyard neighbors:

- Earthworms.
- Ants.
- Spiders.
- Honeybees.
- Butterflies and moths.
- And others.

In each chapter, children learn about the habits of insects and their kin through story before pulling out notebooks and magnifying glasses to make their own discoveries. These friendly introductions provide a glimpse into the surprises they will find all around them, such as the structured life of an ant colony or the countless variations of a spider's web.

Hands-on projects range from counting earthworms to observing a beehive to starting a butterfly garden. Rounding out each chapter are notebooking and literary selections, plus additional reading for greater understanding.

Along the way, children will encounter the wonders of nature close at hand while building observation and research skills—skills that will last them a lifetime no matter what their future may hold. More importantly, they will grow into their heritage as children of God.

US \$16.95

JUVENILE / Bugs & Spiders