Exploring Creation With Zoology 1: Flying Creatures of the Fifth Day

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Lesson 1
What is Zoology?

Welcome to **zoology**! Did you know that you've actually done zoology before? When you examined an insect or watched a squirrel in your yard, you were, in fact, doing zoology, because zoology is the study of the animals that God made. All animals are included in zoology, even fleas, ants, and spiders. Some people don't realize that critters like these are animals, but they are!

All insects (including this praying mantis) are animals.

Try to picture in your mind all the animals that God created. You could probably spend years trying to study every animal. Instead of trying to study all the animals in one book, then, we will focus on a special group of animals fashioned by God on the fifth day of creation: the flying creatures. Did you realize that the flying animals God created on the fifth day included much more than just birds? The Bible was originally written in a language called **Hebrew**, and in Hebrew, the word used for the flying animals in Genesis is *owph*. The Hebrew word *owph* means "flying creatures." Read the Bible verse below:

> Then God said, "Let the waters teem with swarms of living creatures, and let birds fly above the earth in the open expanse of the heavens." God created the great sea monsters and every living creature that moves, with which the waters swarmed after their kind, and every winged bird after its kind; and God saw that it was good. God blessed them, saying, "Be fruitful and multiply, and fill the waters in the seas, and let birds multiply on the earth." There was evening and there was morning, a fifth day. (Genesis 1:20-23)

Even though this English translation of the Bible (New American Standard) refers to the flying creatures as "every winged bird," the original Hebrew simply says "flying creatures." So the Bible tells us that on the fifth day God made every flying creature, even insects and bats.

Are you wondering which animals, exactly, will be covered in this book? Our study of zoology begins with birds, then bats, then flying reptiles, and it ends with insects. It will be more fun if you can do the insect lessons in early fall, spring, or summer when insects are out and about; so feel free to read the insect lessons when it works best for you. Before you learn about specific types of animals, however, I want you to learn a little about a few general topics such as how zoologists organize the

animals they study, how certain animals fly, where animals live, and that some animals go extinct. That's what I'm going to cover in this lesson.

Classification

Scientists who study animals are called **zoologists** (zoh awl' uh jists). They have a tough job, because there are a *lot* of animals in creation. In order to help them organize all of these animals, scientists put them into several groups based on how similar the animals are to one another. After they put animals in groups, they then name each animal. Do you remember one of the jobs that God gave Adam in the Garden of Eden? Adam had to name all the animals. Even today, people are still doing what Adam did. Whenever a new animal is discovered, it is put into several groups and then named. This process is called **taxonomy** (taks ahn' uh mee), and it is used to group and name all living things. The names they choose are not English "common" names, but Latin scientific names.

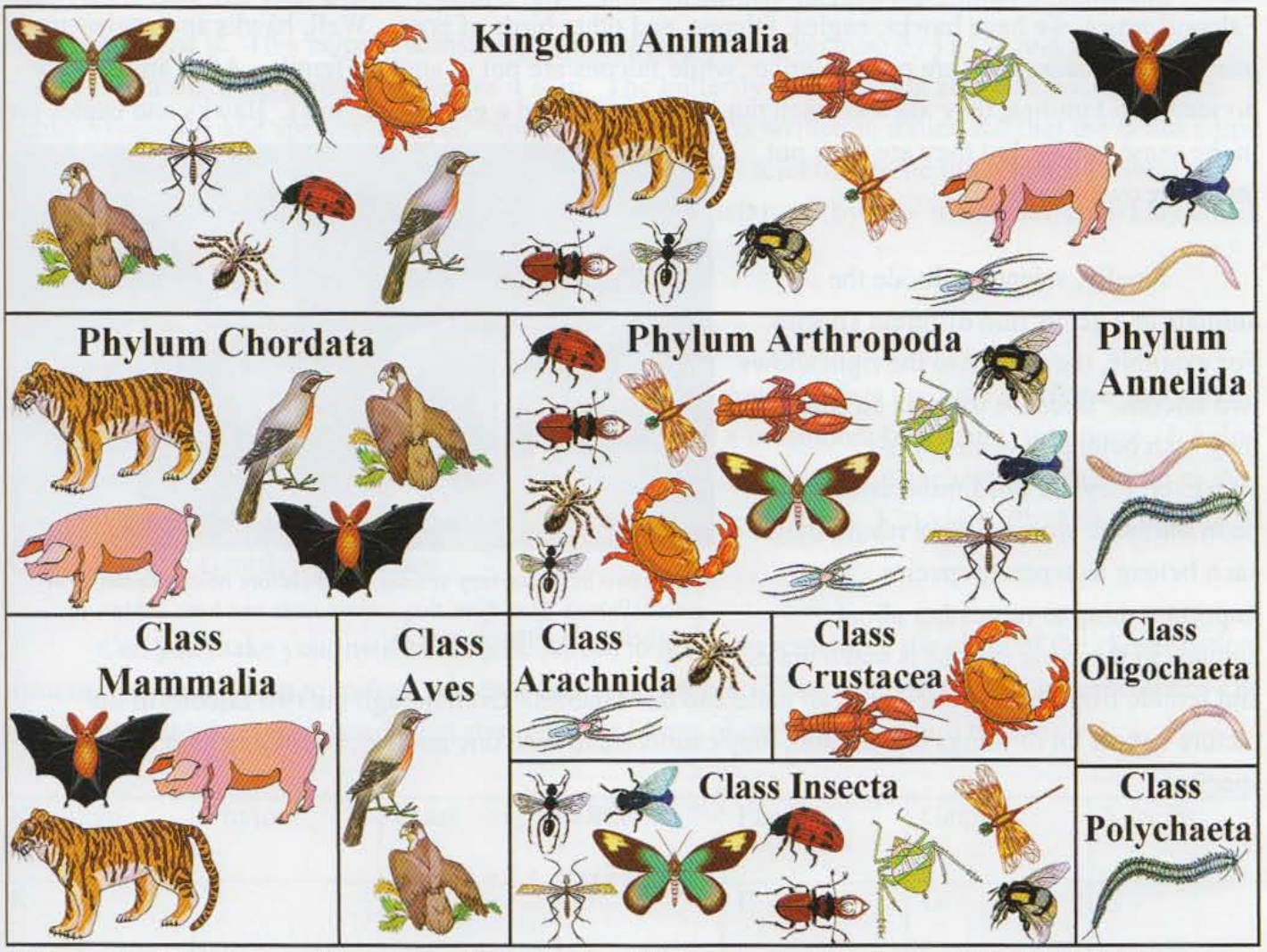
When scientists learn of a newly-discovered animal (there are new animals discovered every year, especially in the insect world), they study it to see how to classify, or group, it. If it has all the features of a butterfly, for example, it is put into the butterfly group, which is called **Lepidoptera** (lep uh dahp' tur uh). That's Latin for "scale wings." It gets even more specific than that, however. If it has tiny front legs, it's put in a special group of butterflies with tiny front legs. Then, if it also has orange coloration, it's placed with other butterflies having tiny front legs and similar colors. On and on it goes, so that the animal is put in smaller and smaller groups until all the butterflies in a group look almost exactly alike. That group is called a **species**, and it is the most specific grouping used when scientists classify animals.

Are you wondering why scientists do all of this grouping? There are many reasons, but one is because when you have animals divided into groups, it is easier to learn about them. If one species of butterfly lays eggs on a certain plant, maybe other similar species lay eggs on a similar plant. If you wanted to attract a certain species of butterfly, you would want to know what kind of food it eats. You might learn what food it eats by studying similar butterflies that are in the same group. In other words, it's easier to study animals when they are divided into groups based on their similarities. Since zoologists spend a lot of time classifying animals into groups, we need to learn about how they do this.

All animals are first put into one big group called the **Animal Kingdom**, or **Kingdom Animalia** (an' uh mahl' ee uh) in Latin. Then, each animal in the Animal Kingdom group is put into a smaller group, called a **phylum** (fye' lum), with other similar animals. That group is then given a scientific name. For example, all animals in the Animal Kingdom with a backbone (also called a "spine") are separated and placed into phylum **Chordata** (kor dah' tuh). Do you have a spine? Yes, you do. You can feel it if you run your fingers over the middle of your back. This means you are in phylum Chordata along with all creatures that have a spine. The easy way to remember this phylum name, Chordata, is to remember that inside of the spine is a special cord of nerves. That nerve cord is

so important that if you were to injure it badly, you might never be able to move your arms and legs. No wonder God put it inside the bones in your spine. That cord really must be protected!

Animals that have backbones are often called **vertebrates** (vur' tuh brayts), and animals without backbones (like insects) are called **invertebrates** (in vur' tuh brates). It turns out that there are *a lot* more invertebrates than vertebrates in the Animal Kingdom. Because of this, all vertebrates can be fit into one phylum, but there are so many invertebrates that they must be put in several phyla (plural of phylum). Look at the diagram below. **Arthropoda** (are thruh' pah duh) is one phylum of animals that don't have a backbone. Crabs, lobsters, spiders, and insects are in this phylum. Another phylum that contains animals without a backbone is phylum **Annelida** (an uh lee' duh). Earthworms are put in this phylum. There are other phyla of invertebrates, but I don't want to go into them now.



This drawing illustrates part of the process of classification. The creatures in the top box are all in the Animal Kingdom. They are then grouped into phyla based on their similarities. Then, they are grouped into classes. This is only a partial illustration, as there are many more groups, ending in species, which is the smallest of all the groups.

After being divided into phyla, the animals in each phylum are further divided into groups called **classes**. For example, birds are put in their own class, called **Aves** (aye' veez). Animals that have fur, give birth to babies, and nurse their babies with mother's milk are put into a class called

Exploring Creation with Zoology 1:

Flying Creatures of the Fifth Day

Apologia Educational Ministries, Inc. is proud to present the third book in its Young Explorer Series. This elementary-level science curriculum uses the Charlotte Mason methodology to give elementary school students an introduction to the incredible world of the flying animals.

The book begins with a lesson on the nature of zoology, the process of classifying animals, and the dynamics of flight. It then discusses the wonderful world of birds, describing their physical characteristics as well as their behavior patterns. The book then moves on to discuss the amazing world of bats, dispelling many of the myths that have arisen regarding these gentle creatures. After that, the prehistoric world of the flying reptiles is covered, and the course ends with a discussion of insect characteristics and life cycles.

As you might expect from a book that uses the Charlotte Mason approach, the student notebook is emphasized in every lesson. Students are told to make illustrations for each lesson and are given notebook assignments to reinforce what they have learned. Notebook assignments include making a "map" of bird anatomy, compiling a "life list" of all the bird species the student sees, making a comic strip about two different kinds of bats meeting one another, and writing a speech informing people how they can avoid mosquito bites.

The activities and projects use easy-to-find household items and truly make the lessons come alive! They include performing an experiment to see what foods birds like, determining what colors attract what kinds of birds, "killing" an insect and "bringing it back to life," and making a fossil.

Most importantly, of course, a creationist world view is stressed throughout. Time and time again, God is glorified as the Master Creator of all that the students are studying.

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