

Backpack



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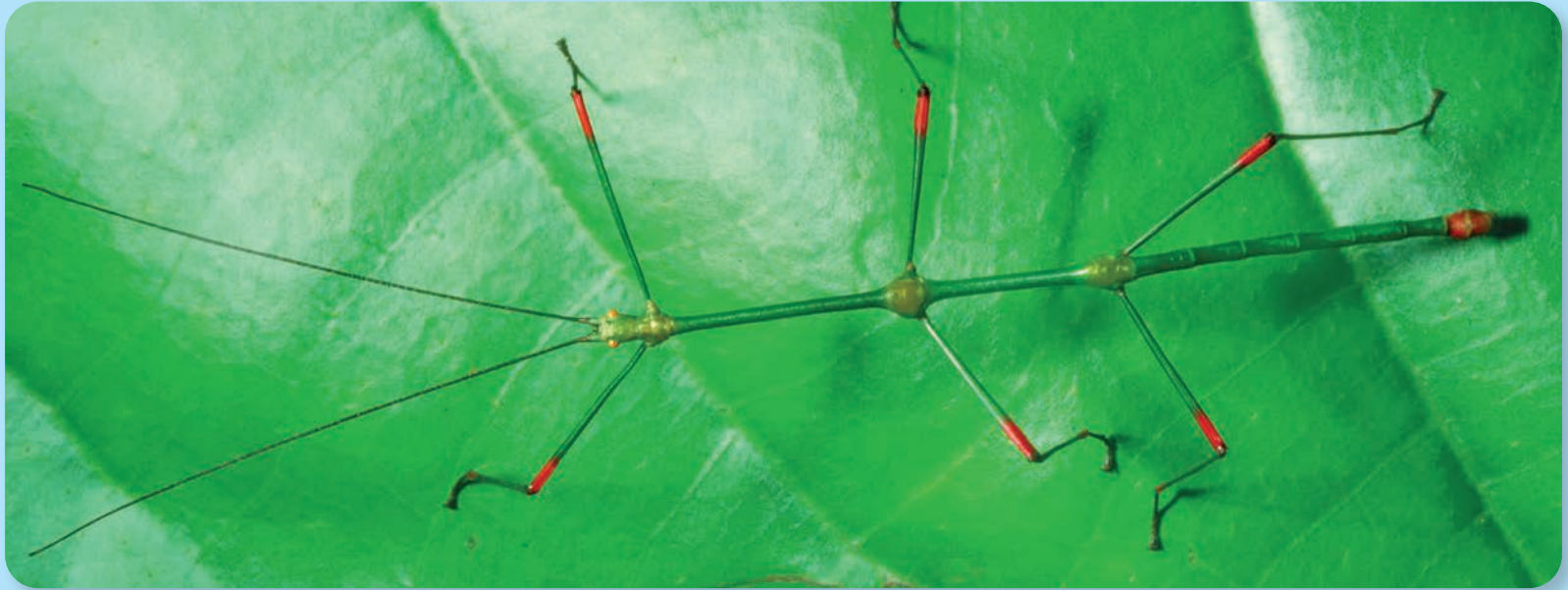


# Invertebrates Book

Includes Spiders and Insects

Written by Alice O. Shepard

BOOK  
4



### What is this?

It's not a stick, but a real living animal!  
By reading this book, you will learn how counting its legs  
can help you figure out what it is.

**BOOK**  
**4**

#### Animal Kingdom Series Book 4

Read this book to your children.  
It will encourage their natural  
curiosity about science.

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Backpack Bear's

# Invertebrates Book

**Includes Spiders and Insects**

Written by Alice O. Shepard



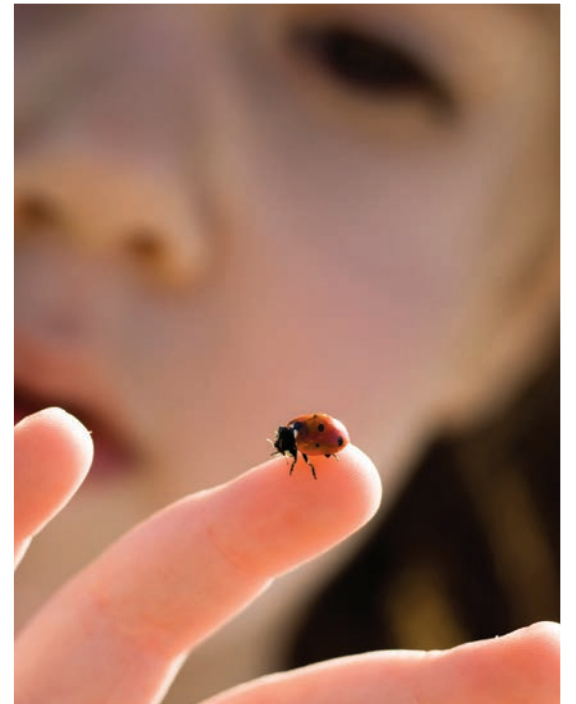
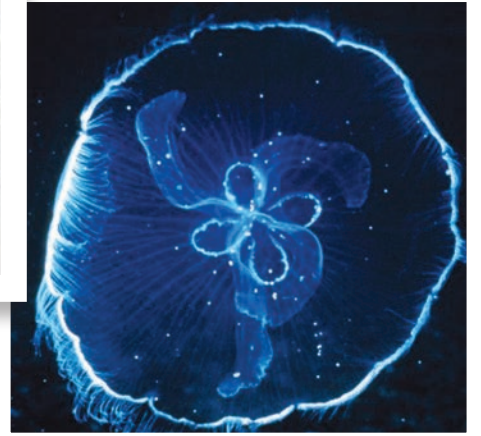


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# Table of Contents

<b>Invertebrates</b>	<b>7</b>
<b>Arthropods: Invertebrates with Jointed Legs</b>	<b>13</b>
<b>Insects: The Largest Group of Arthropods</b>	<b>19</b>
Glossary	32
Enrichment	33
Index, About the Author, and Acknowledgements	34

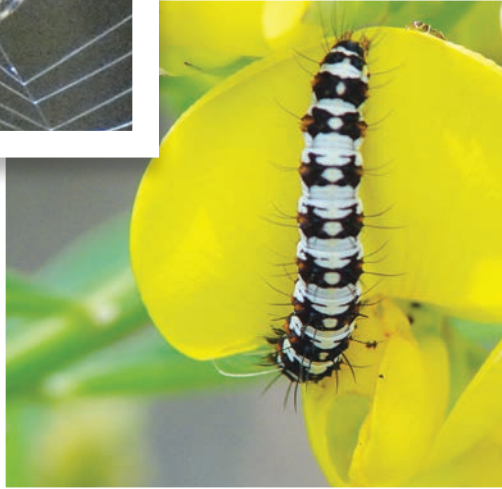


# Invertebrates

These animals may look different from each other, but they all have one thing in common. They are ***invertebrates!***

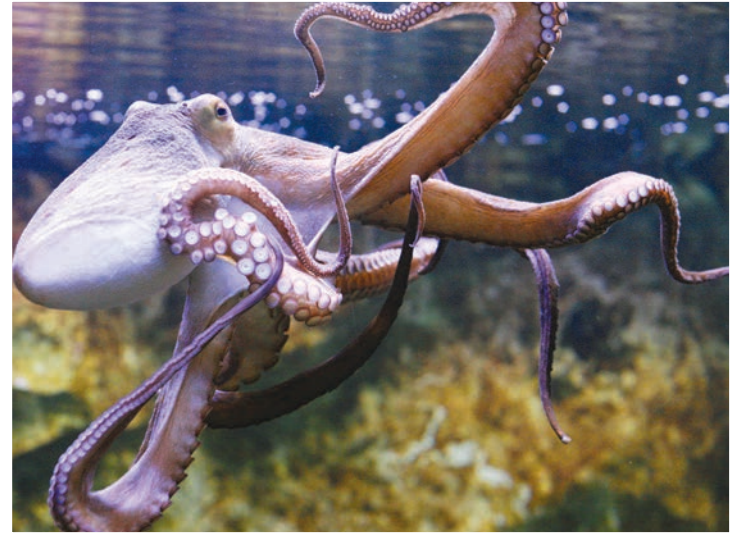
Invertebrates are animals without backbones.

Did you know that all invertebrates are “cold-blooded?”

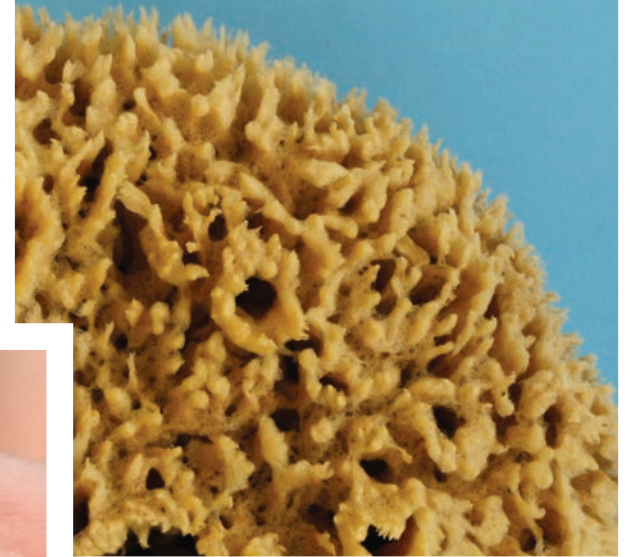
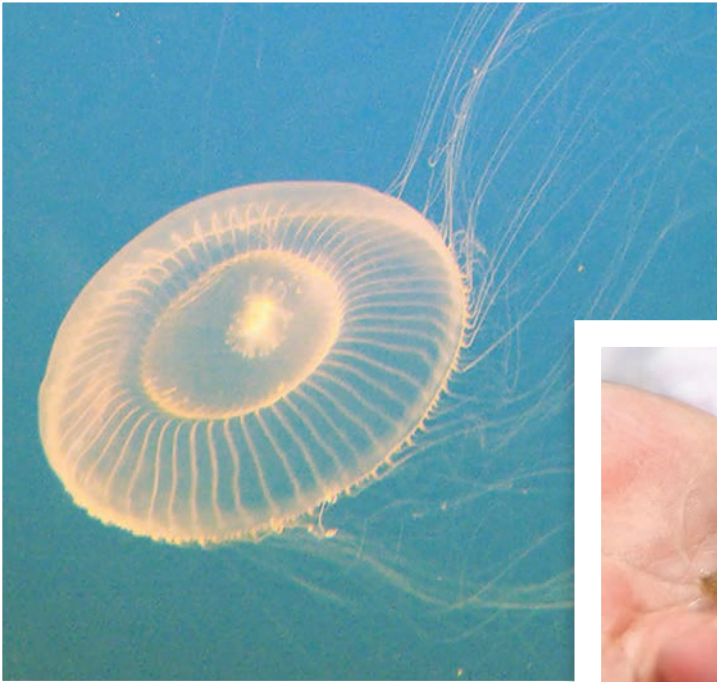


You can **observe** invertebrates almost anywhere! You will see them crawling, wiggling, jumping, swimming, flying, and oozing. Some barely move at all!

Have you seen these animals before? They are all invertebrates.





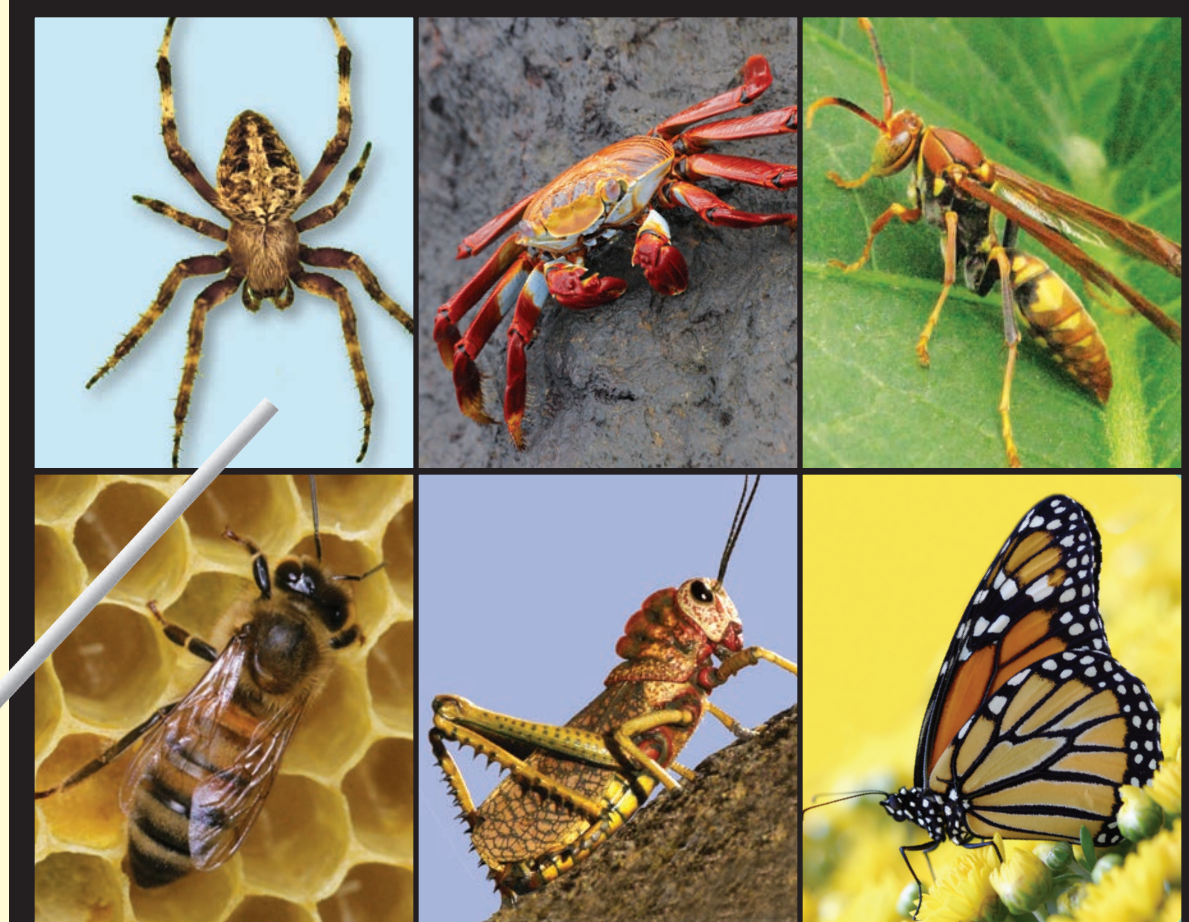


By observing invertebrates carefully, you can learn how to sort them into groups.



# Invertebrates (Animals without

These are  
different groups  
of invertebrates.  
Arthropods are  
the largest group.



**Jointed Legs  
(Arthropods)**

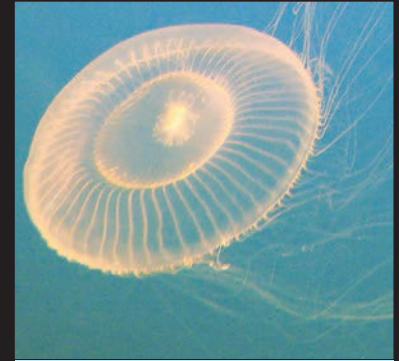
# Backbones)



**Soft Bodies  
(Mollusks)**



**Spiny Skins**



**Stinging Tentacles**



**Natural Sponges**



**Worms**



Crab

# Arthropods:

## Invertebrates with Jointed Legs

Crabs, spiders, and honeybees are invertebrates, but they also share another characteristic. Can you see what it is? They all have jointed legs! Scientists named this group **arthropods**. Arthropod means “jointed foot.”

Arthropods have a hard outer skin called an **exoskeleton**. Their exoskeletons protect their bodies and give them their shape.





Crab



Cicada

Arthropods do not grow like you do. As *you* grow, your skin stretches to make room for your bigger body, but an arthropod's skin is hard—it can not stretch!

Arthropods shed their exoskeletons as they grow new, bigger ones.



This ant and spider are both arthropods. How can we tell? They both have jointed legs!

Look closely. These arthropods are not the same.

- ▶ Ants have six legs and three body parts.
- ▶ Spiders have eight legs and two body parts.

Ants belong to a group of arthropods called ***insects***. All adult insects have exactly six legs and three body parts. A spider is not an insect because it has eight legs and two body parts.



# Ant



# Spider



Count their legs  
and body parts!



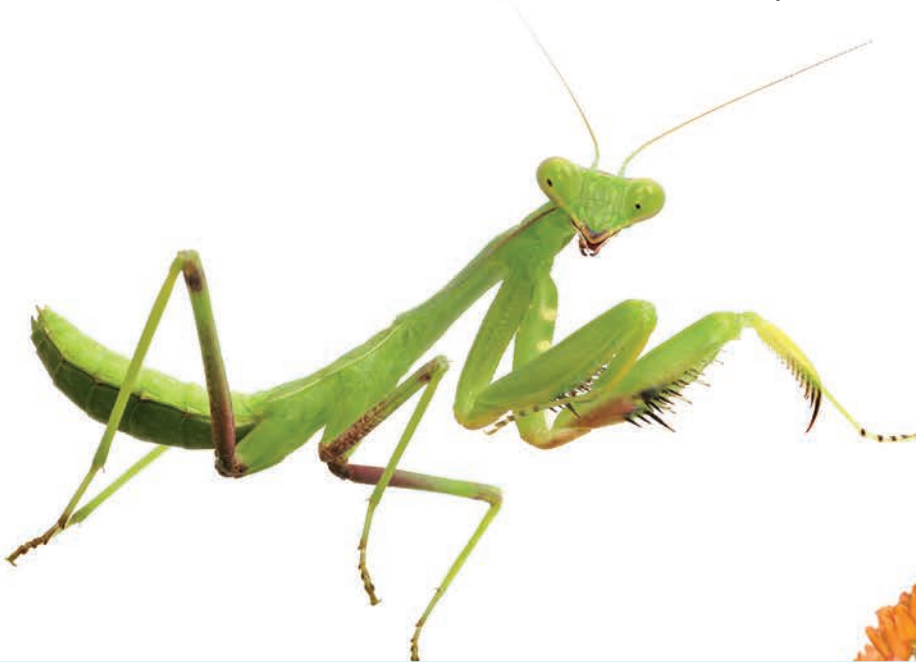




Insects:

## The Largest Group of Arthropods

There are many, *many* different kinds of insects, more kinds than all the other animals in the world, combined!





*Sugar Maple Borer*



*Small Tortoiseshell Butterfly*



*Feather-horn Beetle*



*Banded Alder Borer*



**Longhorn Beetle**

You probably remember that adult insects have six legs and three body parts, but did you know that insects also have two **antennae** at the top of their heads?

Sometimes, antennae are called “feelers,” but they can do more than feel. Insects use their antennae to smell and taste, too!



*Dragonfly eyes*

Can you guess how many eyes this insect has? No, it doesn't have just two. This insect has thousands of eyes!

Each of the big eyes you see in this picture is made up of thousands of tiny eyes.

With these eyes, this insect can see things that move really fast!



Insects have clever ways to protect themselves from predators. Some are poisonous. Others sting. Most hop, crawl, or fly away.

Many insects have excellent camouflage. Can you find the insects hiding in the pictures below?



Walking Stick Insect



Leaf Insect





Grasshopper



Butterfly

What do you think would happen if a predator tried to eat this insect?



Spiny Bush Cricket



Honeybees

A few kinds of insects, such as honeybees, live in a **colony**. These insects work together to find food, build shelter, and take care of their babies.

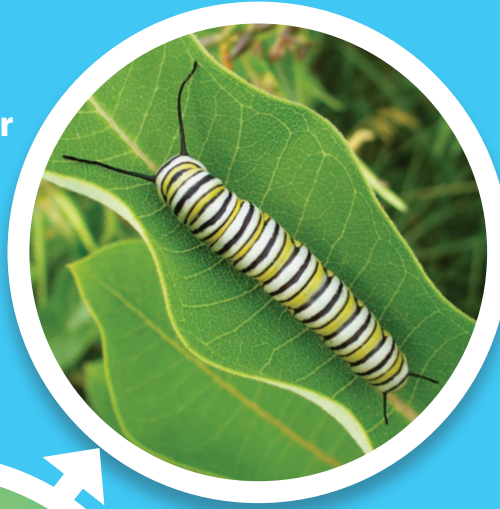


*Honeybee*

Honeybees and some other insects do a very important job. They carry pollen from flower to flower. If they did not do this work, plants would not grow, and life on our planet would not survive!

# Metamorphosis of a Monarch Butterfly

Caterpillar  
(Larvae)



Caterpillar  
shedding its skin  
and becoming a  
chrysalis



Chrysalis  
(Pupa)

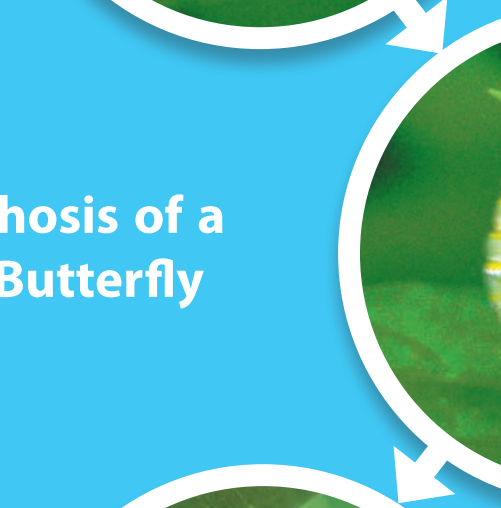
Butterfly  
emerging from  
chrysalis



Monarch  
Butterfly



Butterfly Eggs



Almost all female insects lay eggs. Some hatch into worm-like babies called **larvae**.

The larvae do not look like their parents. Their bodies change as they become adults. This transformation is called **metamorphosis**.



This caterpillar is a baby monarch butterfly!



*Walking Stick Insect*



*Dragonfly*



*Fulgorid*



*Milkweed Beetle*

## Summing it up!

Insects are the largest group of animals on our planet. They can be found flying in the air, crawling above and under ground, and even swimming in the water.

They are unusual and beautiful animals.



# Glossary

**Antennae:** A pair of sensory organs of some arthropods, used to feel, hear, taste, and smell

**Arthropod:** An invertebrate with jointed legs and an exoskeleton

**Colony:** A group of insects that live and work together and depend on each other for survival

**Exoskeleton:** The hard protective outer shell of an arthropod

**Insect:** An arthropod with three body parts, six legs, and two antennae

**Invertebrate:** An animal without a backbone

**Larvae:** A worm-like stage in the life cycle of an insect

**Metamorphosis:** A major change in the form of some animals that happens as the animal becomes an adult

**Observe:** To pay close attention and notice details about what you see



# What Is the Food Chain?



Every living thing needs energy to live. Plants get energy from the sun, some animals eat plants, and some animals eat other animals. Whenever something that was alive dies, it returns to the soil. The soil helps new plants grow. Each living thing depends on other living things. This is called the Food Chain.

If you take out a link in the chain, you affect everything in that chain. For example, if you pollute the land and water, the plant life dies. Many animals depend on plants for food, and without plants they can not survive. Without the smaller animals to feed on, the larger animals disappear from the world.

# Index

## A

Antennae 21

Arthropods 10, 13, 15-16, 19

## C

Colony 26

## E

Exoskeleton 13, 15

## I

Insects 16-31

Invertebrates 7-11, 13

## L

Larvae 28-29

## M

Metamorphosis 28-29

## O

Observe 8

## About the Author

Alice O. Shephard's favorite invertebrate is an arthropod with ten legs. Can you guess what it is? It is a crab! She likes them so much because they are one of her favorite things to eat, but only on special occasions.

## Acknowledgements

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