

## Chapter Preview

What do you need to live? How are your needs different from those of other living things on Earth? Where do the things that you need come from? What would happen if something you needed was not available?

Life exists almost everywhere on Earth. All life, and everything needed to maintain it, exists within a thin layer of land, sea, and air. While the estimates vary, some scientists believe that as many as 40 million different species may populate the planet. But only about 3 million of them have been identified and given a name. Only a few thousand of them have been studied in detail. Scientists attempt to learn more about each living thing. But they do not stop there.

To fully understand the world of living things, scientists look at how organisms interact with each other and with their environment. No living thing can exist in isolation. Every organism is linked to other organisms on the planet. Trying to understand all of the relationships that exist among different living things, as well as with their surroundings, is the goal of ecology.

### KEY IDEAS

- Living things are connected to each other in complex interrelationships.
- Biotic and abiotic factors are responsible for shaping a community of living things.
- Nutrients cycle within ecosystems.
- Energy flows through ecosystems.

## TRY THIS: Modelling Interactions

**Skills Focus:** communicating, recording

In this activity, you will explore the interactions that one organism has with the other organisms around it, and with the environment in which it lives.

**Materials:** notebook or graphic organizer

1. Create a graphic organizer to represent interactions between a spider and its environment.
2. Consider what the spider eats. What other organisms might compete with it for the same food? What eats spiders? Consider other relationships as well.
3. Consider the non-living factors that affect the spider.
4. Add these organisms, relationships, and factors in your graphic organizer. Connect the interactions by drawing lines between them and the spider.
- A. In what way is this model of representing interrelationships useful?
- B. What are the weaknesses of this type of model for showing interrelationships?
- C. Why are models like this one useful for understanding interrelationships among organisms and their environments?
- D. The spider is just one organism. What can you predict about modelling interactions that occur between all of the living things on planet Earth?