

# Activity Preparation for Chapter 10

Activity/Investigation	Advance Preparation	Time Required	Other Considerations
<i>Find Out: Ants at Work</i> (page 218) (TR page 245)	<ul style="list-style-type: none"> <li>• Several days/weeks before               <ul style="list-style-type: none"> <li>– Look for ants on school property. Order ants, if necessary.</li> <li>– Instruct students to bring in empty glass jars.</li> <li>– Purchase a bag of soil.</li> </ul> </li> <li>• 1 day before               <ul style="list-style-type: none"> <li>– Gather twigs and leaves.</li> <li>– Organize materials.</li> <li>– Photocopy <b>BLM 10–3 Ants at Work</b> (optional).</li> </ul> </li> <li>• Day of               <ul style="list-style-type: none"> <li>– Set out materials.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 30 min</li> </ul>	<ul style="list-style-type: none"> <li>• Depending on the time of year, it may be hard to find ants on school property, and you may decide to order ants. Alternatively, make this activity a demo or purchase commercial ant farms.</li> <li>• Caution students to be careful when adding ants to the jar. An ant infestation in the classroom is serious since it is difficult to get rid of ants.</li> </ul>
<i>Try This!</i> (page 219) (TR page 247)	<ul style="list-style-type: none"> <li>• Several days/weeks before               <ul style="list-style-type: none"> <li>– Book the computer lab. Alternatively, purchase or rent <i>March of the Penguins</i>.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 20–30 min (includes discussion and visiting related links)</li> </ul>	<ul style="list-style-type: none"> <li>• The preview is two minutes in length. You will need more time to view the entire film.</li> </ul>
<i>Find Out: Life in a Pond</i> (page 220) (TR page 248)	<ul style="list-style-type: none"> <li>• Several days/weeks before               <ul style="list-style-type: none"> <li>– Collect pond water, or order pond water and organisms from a supplier.</li> <li>– Gather a class set of microscopes.</li> </ul> </li> <li>• 1 day before               <ul style="list-style-type: none"> <li>– Photocopy <b>Assessment Master 10 Using Tools and Equipment Rubric, BLM 9–8 Show You Know! Microscope Certification</b> (optional), and <b>Assessment Master 7 Safety Checklist</b> (optional).</li> </ul> </li> <li>• Day of               <ul style="list-style-type: none"> <li>– Set out materials.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 30–40 min</li> </ul>	<ul style="list-style-type: none"> <li>• In advance, check the pond water to be sure it contains a variety of species. Alternatively, order stocked pond water samples from a supplier.</li> <li>• Review procedures for using a microscope and making slides. Consider testing students using <b>BLM 9–8 Show You Know! Microscope Certification</b>.</li> </ul>
<i>Try This!</i> (page 223) (TR page 252)	<ul style="list-style-type: none"> <li>• 1 day before               <ul style="list-style-type: none"> <li>– Make sure that a hallway is available, or else book the gym.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 10 min</li> </ul>	<ul style="list-style-type: none"> <li>• Choose volunteers who are allowed to participate in Physical Education class.</li> </ul>
<i>Try This!</i> (page 223) (TR page 252)	<ul style="list-style-type: none"> <li>• 1 day before               <ul style="list-style-type: none"> <li>– Make sure that the schoolyard or a gym is available.</li> <li>– Gather materials.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 15–20 min</li> </ul>	<ul style="list-style-type: none"> <li>• Only students who are allowed to participate in Physical Education class and do not have allergies to grass or pollen should play this game.</li> </ul>
<i>Find Out: Competing for Resources</i> (page 226) (TR page 256)	<ul style="list-style-type: none"> <li>• A few days before               <ul style="list-style-type: none"> <li>– Book the gym.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 45–50 min</li> </ul>	<ul style="list-style-type: none"> <li>• Only students who are allowed to participate in Physical Education class should play this game.</li> </ul>
<i>Find Out: Spreading Disease</i> (page 229) (TR page 257)	<ul style="list-style-type: none"> <li>• 1 day before               <ul style="list-style-type: none"> <li>– Photocopy <b>BLM 10–5 Spreading Disease</b>.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 15 min</li> </ul>	

# Materials Needed for Chapter 10

Activity/Investigation	Apparatus	Materials	Blackline Masters
<i>Find Out: Ants at Work</i> (page 218) (TR page 245)	Per group: <ul style="list-style-type: none"> <li>• 1 large glass jar</li> <li>• 1 unopened can to fit inside glass jar</li> <li>• small scoop</li> <li>• magnifying glass (optional)</li> </ul>	Per group: <ul style="list-style-type: none"> <li>• soil</li> <li>• small sponge</li> <li>• ant food, such as bread crumbs or sugar</li> <li>• about 20 ants</li> <li>• twigs and leaves</li> <li>• piece of cloth</li> <li>• elastic band</li> <li>• large piece of black paper or cloth to wrap around glass jar</li> </ul>	<b>Optional</b> BLM 10–3 Ants at Work
<i>Try This!</i> (page 219) (TR page 247)	<ul style="list-style-type: none"> <li>• computer (1 per student), or TV and VCR/DVD player if viewing film</li> </ul>		
<i>Find Out: Life in a Pond</i> (page 220) (TR page 248)	Per student: <ul style="list-style-type: none"> <li>• medicine dropper</li> <li>• slide</li> <li>• cover slip</li> <li>• microscope</li> </ul>	<ul style="list-style-type: none"> <li>• pond water</li> </ul>	<b>Recommended</b> Assessment Master 10 Using Tools and Equipment Rubric <b>Optional</b> BLM 9–8 Show You Know! Microscope Certification Assessment Master 7 Safety Checklist
<i>Try This!</i> (page 223) (TR page 252)	<ul style="list-style-type: none"> <li>• stack of textbooks</li> <li>• stopwatch</li> </ul>		
<i>Try This!</i> (page 223) (TR page 252)	<ul style="list-style-type: none"> <li>• hula hoop™</li> <li>• stopwatch</li> </ul>		
<i>Find Out: Competing for Resources</i> (page 226) (TR page 256)	<ul style="list-style-type: none"> <li>• masking tape</li> <li>• whistle</li> <li>• 2 different coloured pencils</li> </ul>		<b>Optional</b> BLM 3–8 Making a Line Graph in Microsoft® Excel
Find Out: Spreading Disease (page 229) (TR page 257)			<b>Recommended</b> BLM 10–5 Spreading Disease OHT C–7 Spreading Disease

# CHAPTER 10 Communities

(page 214)

## SUGGESTED TIMING

15–20 min

## MATERIALS

- chart paper and markers

## BLACKLINE MASTERS

Master 2 Writing an Opinion Paragraph  
BLM 10–1 Should Students Work Together?  
OHT 5 PMI Chart

## Overall Expectations

**BLTV.01** – explain the strategies that organisms use for successful co-existence in populations and communities

**BLTV.03** – analyse the challenges that arise from organisms living in communities

## Science Background

The definition of “community” is considered to be a group of the same species interacting together, as opposed to groups of different species interacting together. The latter is addressed in Chapters 11 and 12.

## Key Terms Teaching Strategies

Have students complete some or all of the following activities to help them learn and remember the key term:

- List the people who make up a school community (e.g., students, teachers, principal, vice-principal, secretaries, caretakers, parent council). Discuss how a school community fits the definition.
- Write a definition for the term in their Science Log. You may wish to have students keep a glossary at the back of their Science Log.

Help students remember the key term by posting it on a science word wall.

## Reading Icon Answer (page 214)

1. Students should highlight: A community is a group of the same species interacting with each other in a common place.

## Activity Planning Notes

Initiate discussion of the everyday meaning of the word “community.” Ask students about the factors that contribute to making a community. Consider recording student answers on chart paper.

As a class, read the information on page 214. Ask students how the scientific definition for community compares with the ideas they recorded. In the scientific sense, what are the specific qualifications for a group of individuals to be considered a community?

Have students discuss and share their observations of how other animals interact with each other in groups.

#### Accommodations

- Consider providing students who need more space to fill in the PMI chart with a photocopy of **OHT 5 PMI Chart**.
- Have students who have difficulty writing work with those who can help record their answers. Alternatively, have students present their opinion orally.

Have students complete and then discuss questions 2 and 3. Distribute copies of **BLM 10–1 Should Students Work Together?** for students to do research and complete question 3. In advance, consider checking out some language-friendly sites for students to access. Have students use **Master 2 Writing an Opinion Paragraph** to complete the assignment.

Consider using the following blackline masters and overhead transparency:

- **Master 2 Writing an Opinion Paragraph**
- **BLM 10–1 Should Students Work Together?**
- **OHT 5 PMI Chart**

#### Making Connections Answers (page 214)

2. Yes. Sample answer: Seagulls belong to the same species, interact with each other, and live in the same place.
3. Answers will vary. Accept any reasonable answer. For example:

- Plus: shared workload; improved quality of product; complement each others' skills
- Minus: individuals who don't do share of workload; individuals who control; hard to find time when all members can meet
- Interesting: different interpretations of what to do; many creative ideas makes it hard to decide

# 10.1 Living in a Community (page 215)

## SUGGESTED TIMING

45–50 min including the Science and Literacy Link  
30 min for Find Out: Ants at Work  
20–30 min for Try This!  
30–40 min for Find Out: Life in a Pond

## MATERIALS

- chart paper and markers

## BLACKLINE MASTERS

BLM 9–8 Show You Know! Microscope Certification (optional)  
BLM 10–2 Research and Report on Roles in an Animal Community  
BLM 10–3 Ants at Work Assessment Master 6 Scientific Communication Rubric  
Assessment Master 7 Safety Checklist (optional)  
Assessment Master 10 Using Tools and Equipment Rubric

## Specific Expectations

**BLT1.03** – compare the strategies used by various communities of organisms to successfully co-exist

**BLT1.04** – use appropriate scientific terminology related to concepts of organisms living together

**BLT2.03** – make accurate observations of the organisms that exist in a community, using a microscope

**BLT2.04** – make observations, directly or using technologies, to determine the benefits and challenges of living in communities

**BLT2.05** – use a variety of research strategies to determine the roles of specific organisms within a community

**BLT2.06** – explain and interpret observations by summarizing patterns obtained from graphing data, organizing information, and communicating orally and in writing

**SIM2.04** – organize and communicate information collected from lab investigations and information research using graphic organizers

## Key Terms Teaching Strategies

Have students complete some or all of the following activities to help them learn and remember the two key terms:

- Write definitions for these terms in their Science Log. You may wish to have students keep a glossary at the back of their Science Log.
- Use an example to show the meaning of role and social structure.

Help students remember the key terms by posting them on a science word wall.

### Reading Icon Answer (page 216)

1. Wording will vary. Look for the idea of a pecking order among individuals in a group.

## Activity Planning Notes

Introduce the term “role” by asking students to share what playing a role in a movie or play means. As a class, read and discuss individuals’ roles in the

### Accommodations

- Pair ESL and LD Learners with students who have stronger language skills.
- Pair students who have difficulty writing with those who can help record their answers for the Science and Literacy Link. Alternatively, have students present their information orally.

### Technology Links

- For information about social structure among ants, go to [www.mcgrawhill.ca/books/Se10](http://www.mcgrawhill.ca/books/Se10) and follow the links to Ant Behaviour.
- For information about social structure among termites, go to [www.mcgrawhill.ca/books/Se10](http://www.mcgrawhill.ca/books/Se10) and follow the links to Termite Social Structure.
- For information about social structure among bees, go to [www.mcgrawhill.ca/books/Se10](http://www.mcgrawhill.ca/books/Se10) and follow the links to Anatomy of a Hive.
- For information about social structure among flamingos, go to [www.mcgrawhill.ca/books/Se10](http://www.mcgrawhill.ca/books/Se10) and follow the links to Flamingo Social Structure.
- For information about social structure among chimpanzees, go to [www.mcgrawhill.ca/books/Se10](http://www.mcgrawhill.ca/books/Se10) and follow the links to Chimpanzee Behaviour.

recreation centre on page 215. Have students discuss roles that they play at home, school, and elsewhere.

Read about roles in a lion pride. Have students use what they know to compare the roles that animals and humans play within their communities. You might use chart paper and markers to complete a double bubble organizer about the similarities and differences.

After students complete and discuss the answers to question 4 on page 215, read the Science and Literacy Link together. Consider providing ideas for researching animal communities, such as ants, termites, bees, flamingos, or chimpanzees, and web sites or text references to check. Distribute **BLM 10–2 Research and Report on Roles in an Animal Community** and review the criteria for the information paragraph. You might model a sample paragraph. In advance, gather text references and book the computer lab. Allow time for students to research before writing a report.

As a class, read about social structure on pages 216 and 217. Discuss social structure among human populations by having students relate the concept to a TV reality show such as *Survivor*. Each member of the tribe plays an important role. While some fight for the position of leader, others become followers who carry out specific tasks. Usually the strongest and most intelligent individuals survive the longest on the show.

Have students discuss the social structures where they work. Help them understand that there is a hierarchy in almost every occupation.

Use the Find Out activities and the Try This! investigation as a follow-up to the discussion about roles and social structures.

Consider using the following blackline master:

- **BLM 10–2 Research and Report on Roles in an Animal Community**

#### Making Connections Answers (page 215)

4. Answers depend on the sport. Look for four roles. For example:
- hockey: left and right wing, centre, defense, and goalie
  - football: quarterback, running back, receiver, and guard

#### Check Your Understanding Answers (page 217)

2. Answers will vary. Look for the following idea:
- Individuals are responsible for carrying out specific roles.
3. a) queen; lays eggs and takes care of larvae  
b) workers; collect food, protect the colony, and enlarge the nest  
c) drones; mate with queen

## Find Out Activity (page 218)

### *Ants at Work*

#### Purpose

- Students build an ant colony and observe ants.

#### Science Background

Ants, like bees and termites, are social insects. A colony consists of a queen, workers, and drones.

The queen has a life span of up to 15 years. Her role is to lay eggs. The queen needs to mate only once to produce millions of eggs. After mating, the queen searches for an appropriate place to start a new colony. She emits a scent that makes colony members stay together. The scent is distinct from that of any other ant colony, and all of the members in a colony have a similar smell.

The workers are sterile female ants. They collect and store food, feed the queen, take care of the eggs and larvae, protect the colony from attacks, and enlarge the nest. The worker ants may have differences in physical appearance according to the specialized tasks they perform. For example, guard ants may have bigger heads and jaws than other workers.

The drones are the male ants whose single role is to mate with new queens. The drones die shortly after mating. Their adult life span is only two or three days.

#### Advance Preparation

WHEN TO BEGIN	WHAT TO DO
Several days/weeks before	<ul style="list-style-type: none"> <li>• Look for ants on school property. Order ants, if necessary.</li> <li>• Instruct students to bring in empty glass jars.</li> <li>• Purchase a bag of soil.</li> </ul>
1 day before	<ul style="list-style-type: none"> <li>• Gather twigs and leaves.</li> <li>• Organize materials.</li> <li>• Photocopy <b>BLM 10–3 Ants at Work</b> (optional)</li> </ul>

Day of	• Set out materials.
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APPARATUS	MATERIALS
Per group: <ul style="list-style-type: none"> <li>• 1 large glass jar</li> <li>• 1 unopened can to fit inside glass jar</li> <li>• small scoop</li> <li>• magnifying glass (optional)</li> </ul>	Per group: <ul style="list-style-type: none"> <li>• soil</li> <li>• small sponge</li> <li>• ant food, such as bread crumbs or sugar</li> <li>• about 20 ants</li> <li>• twigs and leaves</li> <li>• piece of cloth</li> <li>• elastic band</li> <li>• large piece of black paper or cloth to wrap around glass jar</li> </ul>

#### Suggested Timing

30 min

#### Safety Precautions

- Caution students to be careful when using glass jars. Point out the container for broken glass, and remind them to inform you about any glass breakage.
- Caution students to be careful when adding ants to the jar. An ant infestation in the classroom is serious since it is difficult to get rid of ants.
- Have students clean up the work area and wash their hands thoroughly with soap and water at the end of the activity.

#### Activity Planning Notes

In advance, collect the necessary materials and ask students to bring in empty glass jars with wide openings. Find out if there are ants on the school property that you can use. When gathering ants, it is best to include a queen. Without a queen, the other ants will carry out their tasks. However, since there are no eggs being laid, the colony will begin to die off after approximately three weeks in a jar.

You may decide to order ants. Alternatively, you can make this activity a demonstration or purchase commercial ant farms.

Consider building an ant colony in advance and using it to demonstrate how to make one.

Read the directions together. Before students begin, mention the importance of treating ants with respect.

### Accommodations

- Students with dexterity problems could be paired with those without such difficulties.
- Students with visual impairments could be paired with other students to make the ant colony and observations. Alternatively, provide such students with **BLM 10–3 Ants at Work** to help them answer questions 7 and 8, on page 219.

#### Find Out Activity Answers (page 219)

7. Sketches will vary but should show features of an ant colony, such as evidence of tunnels and chambers.
8. Tunnels and possibly chambers.
9. Ants use pincers to carry food away.
10. Answers will vary. Look for the idea that ants have different jobs, depending on their role.

### Activity Wrap-up

- After one week, have students complete and then discuss the questions on page 219. If available, have students use a magnifying glass to observe ant behaviour (e.g., how the antennae function; how ants behave towards each other; and how they feed). Ask students what the ant colony looks like now, and for evidence that the ants perform several different tasks. Alternatively, have students make observations of a cross section of an ant colony on **BLM 10–3 Ants at Work**.
- Return the ants to where they were found, or if purchased, release them to a grassy area outdoors.

### Alternative Activities

- Show a film about the social structure of ants such as *Antz* (Dreamworks Animated, 1998. ASIN: 0783231474). Discuss which parts of the film are based on fact.
- Consider reading or assigning the following book to students to read and asking them to present a report: *A Colony of Ants*, Louise Spilsbury and Richard Spilsbury (Heinemann Library, 2003. ISBN: 40340741X). Reading Level: Ages 8–10.

## Try This! Activity (page 219)

### Purpose

- Students watch a preview of a documentary film called *March of the Penguins*.

### Science Background

In Antarctica, emperor penguins live in penguin communities called rookeries. The penguins live, fish, breed, and raise young together. In the winter, they huddle in a large mass and take turns moving to the middle of the group, where they are protected from wind and freezing temperatures by others surrounding them. After mating, the females lay eggs, and then leave together to feed in the open sea. The males keep the eggs warm until they hatch. When the females return with food for the newly hatched chicks, the males leave to find food. As the young penguins grow, the adult penguins leave again to find food. An adult emperor penguin guards a group (or crèche) of young penguins until the parents return.

### Technology Links

- For more information about emperor penguins, go to [www.mcgrawhill.ca/books/Se10](http://www.mcgrawhill.ca/books/Se10) and follow the links to Emperor Penguins.

### Advance Preparation

WHEN TO BEGIN	WHAT TO DO
Several days/weeks before	<ul style="list-style-type: none"><li>• Book the computer lab. Alternatively, purchase or rent <i>March of the Penguins</i>.</li></ul>

APPARATUS	MATERIALS
<ul style="list-style-type: none"><li>• computer (1 per student), or TV and VCR/DVD player if viewing film</li></ul>	

### Suggested Timing

20–30 min (includes discussion and visiting related links)

**Note:** The preview is two minutes in length. You will need more time to view the entire film.

### Activity Planning Notes

Instruct students to watch the preview of *The March of the Penguins*, which shows how penguins live and interact in a community. Afterward, discuss the different roles in a rookery, and have students describe who performs each role and what it involves.

If there is time, have students visit the related web sites about emperor penguins. Point out the buttons that lead to video, audio, and interesting facts. After some initial guidance, let students navigate on their own.

### Accommodations

- Students who are hesitant about using a computer may be paired with those who are more computer literate.
- Instead of navigating the Internet, students may refer to the book *A Rookery of Penguins*, Louise Spilsbury and Richard Spilsbury (Heinemann Library, 2004. ISBN: 1403446911). Reading Level: Ages 8–11.

### Activity Wrap-up

- As a class, compare the social behaviour of emperor penguins and the animal communities that students researched in section 10.1.

## Find Out Activity (page 220)

### *Life in a Pond*

#### Purpose

- Students use a microscope to study how unicellular organisms interact in pond water.

#### Science Background

Students study protists, which are unicellular organisms. Common protists found in pond water include the amoeba, euglena, and paramecium.

**Amoeba:** Amoebas, which look like shapeless blobs, are found in fresh and salt water, wet soil, and sometimes inside other organisms. They eat algae, bacteria, and other microscopic protozoa. Amoebas move by changing the shape of their body.

**Euglena:** Euglenas are typically green because they have chloroplasts that are used to carry out photosynthesis. A long, whip-like tail, called the flagellum, helps them move through water.

**Paramecium:** Paramecia are shaped like oval and elongated footballs. They feed on bacteria, algae, and yeast. They use tiny hairs called cilia to sweep food into the mouth. The cilia help paramecia swim through water.

Protists living in the same environment interact with each other in complex ways. Some species compete for the same space and resources, which usually leads to one or more species being more successful than others. These species may become the dominant species in an area. In another area, however, there may be a balance among the number of different species.

Among protists, there are complex patterns of predator and prey relationships that form a food chain. For example, green algae produce food by photosynthesis. Small ciliates such as paramecia may consume the algae. In turn, small ciliates may be eaten by larger ciliates or by amoebas.

#### Technology Links

- For more information including photographs of protists, go to [www.mcgrawhill.ca/books/Se10](http://www.mcgrawhill.ca/books/Se10) and follow the links to Protists.

#### Advance Preparation

WHEN TO BEGIN	WHAT TO DO
Several days or weeks before	<ul style="list-style-type: none"><li>• Collect pond water, or order pond water and organisms from a supplier.</li><li>• Gather a class set of microscopes.</li></ul>
1 day before	<ul style="list-style-type: none"><li>• Photocopy <b>Assessment Master 10 Using Tools and Equipment Rubric</b>, <b>BLM 9–8 Show You Know! Microscope Certification</b> (optional), and <b>Assessment Master 7 Safety Checklist</b> (optional).</li></ul>
Day of	<ul style="list-style-type: none"><li>• Set out materials.</li></ul>

APPARATUS	MATERIALS
Per student: <ul style="list-style-type: none"><li>• medicine dropper</li><li>• slide</li><li>• cover slip</li><li>• microscope</li></ul>	<ul style="list-style-type: none"><li>• pond water</li></ul>

#### Suggested Timing

30–40 min

#### Safety Precautions

- Caution students to handle microscope slides carefully. You may wish to use plastic cover slips instead of glass ones.

- Remind students not to eat anything in the science lab.
- Have students clean up the work area and wash their hands thoroughly with soap and water at the end of the activity.

### Activity Planning Notes

In advance, check the pond water to be sure it contains a variety of species. Alternatively, order stocked pond water samples from a supplier.

Review how to use a microscope by demonstrating how to focus and prepare a specimen. Consider testing students using **BLM 9–8 Show You Know! Microscope Certification**.

Consider beginning the lab by distributing **Assessment Master 7 Safety Checklist** and reviewing the importance of safety in the lab.

Review what protists are before reading through the directions together and making sure that everyone understands what to do. Students will observe more than one species of protist.

Students may have trouble finding their protists since they move quickly. Consider using a quieting solution (e.g., methyl cellulose) to slow down their movement for easier viewing.

You might modify the activity by letting students attempt the activity on their own, and then do a demonstration by projecting slides on a TV for everyone to see.

### Accommodations

- Consider using prepared slides and a microviewer to show students what to look for on their slide.
- Provide visually-impaired students with a microscope that can project images onto a TV screen, if available.
- Students with dexterity problems could explore web sites that describe and show pictures of different protists.

- Some students may get frustrated because the activity requires patience. You might project the slides on a TV for everyone to see.

### Find Out Activity Answers (page 221)

3. **a) and b)** Answers will vary. Hopefully, students will observe at least three kinds.
4. Answers will vary. Many students may observe that the different types of organisms move away from each other.
5. Answers will vary depending on observations. Sample answer:
  - The organisms seemed to interact more with the environment than with each other.
6. Students should suggest observing more than one sample for a better demonstration of how protists behave. Explanations may vary. For example:
  - Protists are very small and move very quickly.
  - The number and type of organisms may vary from sample to sample.

### Activity Wrap-up

- Have students complete and then discuss the questions on page 221. Provide time for students to discuss their observations. In many cases, students likely observed protists moving around rapidly, looking for food, and not socially interacting with others. Protists usually interact with each other through predator and prey relationships. Discuss how this type of community is different from other animal communities that students have studied.

### Ongoing Assessment

- Have students complete a double bubble organizer to compare the roles and social structure in two different animal communities. Have students consider size of community, social structure of community, and roles and responsibilities of individuals.
- Use Assessment **Master 6 Scientific Communication Rubric** to assess students' information paragraphs.
- Use Assessment **Master 10 Using Tools and Equipment Rubric** to assess students' use of equipment during Find Out: Life in a Pond.

### Technology Links

- For information about social structure among non-human primates, go to [www.mcgrawhill.ca/books/Se10](http://www.mcgrawhill.ca/books/Se10) and follow the links to Social Structure.
- For more information about ants, go to [www.mcgrawhill.ca/books/Se10](http://www.mcgrawhill.ca/books/Se10) and follow the links to Ant Hill.
- For a game, in which students can take on the role of a penguin that has to keep an egg safe, go to [www.mcgrawhill.ca/books/Se10](http://www.mcgrawhill.ca/books/Se10) and follow the links to March of the Penguins Game.

## Alternative Activities

- Show a video that portrays different roles in an animal community, such as *Lion King*, 1994, or *Finding Nemo*, 2003.
- Consider either reading the following book or assigning it to students and asking them to present a report: *Animal Groups: How Animals Live Together*, Etta Kaner (Kids Can Press, Ltd., 2004. Paperback ISBN: 1553373383). Reading Level: Ages 9–12. The book looks at animal social behaviour and the reasons why animals live together.

# 10.2 Benefits of Living Together (page 222)

## SUGGESTED TIMING

15–20 min

10 min for first Try This! on page 223

15–20 min for second Try This! on page 223

## Specific Expectations

**BLT1.01** – summarize the potential benefits of organisms living together in communities

**BLT1.04** – use appropriate scientific terminology related to concepts of organisms living together

## Activity Planning Notes

As a class, read and discuss the information on page 222 as a lead in to the two Try This! activities.

After completing and then discussing questions 2 and 3 on page 223, help students realize that living together increases the chances that a species will survive.

### Reading Icon Answer (page 222)

1. Students should highlight protection, sharing of resources, hunting success, and caring for the young.

### Making Connections Answers (page 223)

2. Answers will vary. Accept any supported argument for one of the four benefits. For example:
  - Sharing care for the young is the most important benefit for humans. Human infants are totally dependent on others for survival. While parents work, infants and young children can be cared for by caregivers.

3. Answers will vary. Accept any reasonable explanation such as:

- Polar bears hunt by stalking their prey or lying in wait by a seal hole in the ice. There is no advantage for a group of polar bears to hunt together.
- Polar bears are top predators and therefore don't need help to catch prey.

## Try This! Activity (page 223)

### Purpose

- Students compare the efficiency of a group with an individual to complete a task.

### Science Background

Carrying books from one end of a hallway to another is time-consuming and tiring. A group of individuals can complete this task more efficiently than an individual can.

### Advance Preparation

WHEN TO BEGIN	WHAT TO DO
1 day before	<ul style="list-style-type: none"><li>• Make sure that a hallway is available, or else book the gym.</li></ul>

APPARATUS	MATERIALS
<ul style="list-style-type: none"><li>• stack of textbooks</li><li>• stopwatch</li></ul>	

### Suggested Timing

10 min

### Safety Precaution

- Textbooks can be heavy. Choose volunteers who are allowed to participate in Physical Education class.

### Activity Planning Notes

Read the instructions together before going into a hallway and placing a large stack of textbooks at one end. Ask five to ten volunteers to form a line along the hallway. Record the time it takes to complete the task. Repeat the activity with one volunteer working alone.

### Accommodations

- Encourage students with physical disabilities to participate in timing and recording.

### Activity Wrap-up

- Have students discuss which method was more efficient. Help students understand the connection between the activity and the benefit of people working together to complete tasks.

## Try This! Activity (page 223)

### Purpose

- Students play a game and find out if predators hunting together are more successful than an individual hunting alone.

### Science Background

Some animals hunt together while others hunt alone. Hawks, lionesses, cheetahs, whales, and wolves are examples of animals that hunt in groups to increase their chances of catching prey. Even crocodiles, who are usually solitary animals, will hunt co-operatively.

### Advance Preparation

WHEN TO BEGIN	WHAT TO DO
1 day before	<ul style="list-style-type: none"><li>• Make sure that the schoolyard or gym is available.</li><li>• Gather materials.</li></ul>

APPARATUS	MATERIALS
<ul style="list-style-type: none"><li>• hula hoop™</li><li>• stopwatch</li></ul>	

## Suggested Timing

15–20 min

## Safety Precautions

- Only students who are allowed to participate in Physical Education class and do not have allergies to grass or pollen should play this game.
- Caution students who are predators to tag prey using a gentle touch not a push. Alternatively, if students do not wish to be touched, provide students who are prey with a scarf or other material to hold.

## Activity Planning Notes

As a class, read the information. Reinforce the importance of safety precautions and make sure that everyone understands what to do before playing the game.

After you lead the class into the schoolyard, assign one student to tag prey. Record the number of prey that the predator catches in two minutes. Repeat the activity assigning three students to work together to tag prey.

## Accommodations

- Encourage students with physical disabilities to participate in timing, recording results, and ensuring that the individuals working as a team catch prey together.

## Activity Wrap-up

- Have students compare the number of prey caught by one predator working alone with the predators hunting together. Ask which way is more efficient to capture a greater number of prey to bring home. Help students understand the connection between the activity and the benefits of animals working together to catch prey.

### Ongoing Assessment

- Use the Making Connections questions on page 223 to assess students' understanding of the benefits of living together.

# 10.3 Challenges of Living Together

(page 224)

## SUGGESTED TIMING

40–50 min including the Science and Literacy Link  
45–50 min for Find Out:  
Competing for Resources  
15 min for Find Out: Spreading Disease

## BLACKLINE MASTERS

Master 3 Centimetre Grid Paper  
BLM 3–8 Making a Line Graph in Microsoft® Excel  
BLM 10–4 Research Safe Practices  
BLM 10–5 Spreading Disease  
OHT C–7 Spreading Disease  
Assessment Master 13 Oral Presentation Checklist  
Assessment Master 14 Oral Presentation Rubric

## Specific Expectations

**BLT1.02** – identify challenges that arise from organisms living together in communities, including human populations

**BLT1.04** – use appropriate scientific terminology related to concepts of organisms living together

**BLT2.04** – make observations, directly or using technologies, to determine the benefits and challenges of living in communities

**BLT2.06** – explain and interpret observations by summarizing patterns obtained from graphing data, organizing information, and communicating orally and in writing

**SIM3.04** – communicate science-related information to a workplace audience

## Activity Planning Notes

As a class, read the information on page 224. Consider using an enlarged transparency of the cityscape to help discuss the answers to questions 1 and 2.

Use the visuals on page 225 to direct students' learning about challenges that animal communities face. Have students complete and then discuss question 5 as a lead-in to the Find Out activity on page 226.

Have students answer question 1 on page 228 before reading the Science and Literacy Link as a class. Have students complete and then discuss questions 2 and 3. For question 3, students might argue that since domestic birds live in crowded conditions, they are more likely to spread disease than wild birds. Point out that even though wild birds may be carriers of the disease, they do not get sick. You might ask why public health officials are concerned about people getting bird flu from each other, not only those workers in direct contact with infected birds. Explain that there have been suspected but unconfirmed cases that the bird flu has evolved to the stage in which it can be transmitted from human to human.

## Technology Links

- For information about safe practices for workers who handle birds that may be infected with the bird flu, go to [www.mcgrawhill.ca/books/Se10](http://www.mcgrawhill.ca/books/Se10) and follow the links to Animal Handlers.

Provide students with **BLM 10–4 Research Safe Practices** and read the information together. Use **Assessment Master 13 Oral Presentation Checklist** to help review the criteria for the oral report. In advance, book the computer lab and familiarize yourself with the link provided in the Technology Links. Be prepared to explain terminology such as impermeable, culling, influenza, and vaccine. Allow time for students to do research before writing and presenting an oral report.

Conclude this section by having students complete the Find Out activity on page 229.

Consider using the following blackline masters:

- **BLM 10–4 Research Safe Practices**
- **Assessment Master 13 Oral Presentation Checklist**

#### Accommodations

- Pair ESL and LD Learners with students who have stronger language skills.
- Help students understand the research information for **BLM 10–4 Research Safe Practices** by providing a printed copy of the article that they can use to highlight pertinent information.

#### Reading Icon Answers (page 224)

1. Look for circles around four problems in the visual, such as: congested traffic, garbage cans, smog, or crowd of people.
2. Answers will vary. Accept any two urban problems. For example:
  - risk of disease and lack of affordable housing

#### Reading Icon Answer (page 225)

4. Students should highlight: competing for resources, competing for leadership, and risk of disease.

#### Reading Icon Answer (page 228)

1. Students should highlight information about concerns of animal diseases. For example, reduce the size of animal populations, reduce the ability of farm animals to produce food, and some animal diseases spread to humans.

#### Making Connections Answers (page 224)

3. Answers will vary. Accept any two reasonable benefits and two challenges for each.

Sample answers:

- a) Family: get financial support, get emotional support; competition for space, competition for resources such as clothes and entertainment

- b) Neighbourhood: get transportation services, participate in recreational activities; garbage pollutes, traffic
- c) Group of school friends: acceptance, fun and entertainment; maintaining friendships, respect for cultural differences and religious beliefs

#### Check Your Understanding Answer (page 225)

5. Sample answer: The strongest and most intelligent individuals have a better chance of survival.

#### Check Your Understanding Answers (page 228)

2. a) reduces wild animal populations  
b) reduces productivity of farm animals  
c) some diseases spread to humans

#### Making Connections Answer (page 228)

3. Answers may vary. For example:
  - Domestic birds. Domestic birds live in crowded conditions and are more likely to spread disease and get sick than wild birds.

## Find Out Activity (page 226)

### Competing for Resources

#### Purpose

- Students play a game to simulate how individual deer compete for resources.

#### Science Background

Animals require food, water, space, and shelter to survive. When food is plentiful, hunting cooperatively is a benefit. When resources are limited, however, it may not be feasible to live together.

There is a close relationship between the number of individuals in a community and the amount of resources that are available. As the population grows, there is greater competition for resources. As a result, some individuals die. Then, since there are fewer individuals competing for resources, the survival rate increases. Eventually the population grows again, and in turn, the amount of resources begins to decline. The cycle of increasing and decreasing resources controls the population size.

#### Advance Preparation

WHEN TO BEGIN	WHAT TO DO
A few days before	• Book the gym.

APPARATUS	MATERIALS
<ul style="list-style-type: none"><li>• masking tape</li><li>• whistle</li><li>• 2 different coloured pencils</li></ul>	

#### Suggested Timing

45–50 min

#### Safety Precaution

- Only students who are allowed to participate in Physical Education class should play this game.

## Activity Planning Notes

Make sure everyone understands how to play. Consider doing a demonstration round once everyone is in position.

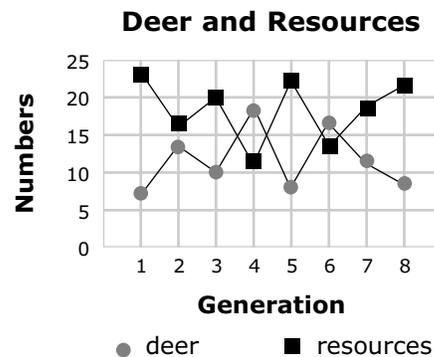
Ask for volunteers to count and record the number of deer and resources at the end of each round.

#### Accommodations

- Encourage students with physical disabilities to participate in recording results.
- Provide colour-coded cards labelled with one of the following terms: food, water, shelter, or space. Students can hold up cards rather than make hand signals.
- Provide students who need more space to record their graph with **Master 3 Centimetre Grid Paper**.
- Allow students with motor difficulties to use **BLM 3–8 Making a Line Graph in Microsoft® Excel**.

#### Find Out Activity Answers (page 227)

7. Graphs will vary depending on results. The graph should be titled and labelled, and there should be a scale and a key. For example:



8. a) The population of deer increased.
- b) No. Explanations may vary. Sample answer:
- The population increased until the resources became limited due to the large number of deer.

## Activity Wrap-up

- Have students complete and then discuss questions 7 and 8 on page 227. Have students interpret the graph to look for a possible pattern.

## Find Out Activity (page 229)

### *Spreading Disease*

#### Purpose

- Students use maps to analyze the spread of avian influenza, also known as bird flu, around the world.

#### Science Background

Bird flu is an infection caused by avian influenza viruses. Wild birds carry the viruses in their intestines, but usually do not get sick. Bird flu spreads among all birds and it can kill domestic birds such as chickens, ducks, and turkeys.

Infected birds shed influenza virus in their nasal secretions, saliva, and feces. Other birds get infected through contact with contaminated secretions or excretions, or through contact with contaminated surfaces. Domestic birds may get infected with avian influenza virus through contact with infected wild or domestic birds, or through contact with contaminated surfaces such as dirt, or materials such as water or feed.

#### Advance Preparation

WHEN TO BEGIN	WHAT TO DO
Day before	• Photocopy <b>BLM 10–5 Spreading Disease</b> .

## Alternative Activity

- If your school has the Live safe! Work smart! resources for special needs, check for materials related to workers and safe handling of animals.

## Suggested Timing

15 min

## Activity Planning Notes

Read the information as a class. Provide students with the enlargements of the maps on **BLM 10–5 Spreading Disease** to help answer the questions.

## Accommodations

- Pair ESL and LD Learners with students who have stronger language skills.

### Find Out Activity Answers (page 229)

2. Asia
3. The bird flu spread to north and east.
4. 3 continents: Asia, Africa, and Europe
5. Answers may vary. Sample answer:
  - Wild birds spread bird flu when they fly great distances in search of food, nesting sites, and a warmer climate during winters.

## Activity Wrap-up

- Have students complete and then discuss questions 2 to 5. Consider using **OHT C–7 Spreading Disease** to facilitate the discussion. Discuss with students several scenarios for how the bird flu spreads. Reinforce the idea that bird flu is not spread only by migrating birds.

## Ongoing Assessment

- Use the graphs that students make in the Find Out on page 227 to assess their ability to graph and interpret data. Ask students to explain the results orally.
- Use **Assessment Master 14 Oral Presentation Rubric** to assess students' reports about safe practices.

# Chapter 10 Review (page 230)

## SUGGESTED TIMING

30–40 min to complete and take up the review, and assign the Practice Test

## BLACKLINE MASTERS

Master 5 Certificate  
Master 6 List of Skills  
BLM 10–6 Chapter 10 Practice Test  
BLM 10–7 Chapter 10 Test  
BLM 10–8 BLM Answers

## Accommodations

- Allow students to make a chapter summary page of the key ideas/skills from the chapter. The back of the student resource provides space to do this. Alternatively, you might develop a chapter summary as an entire class.
- If students have difficulty with a particular review question, use the Review Guide to identify the section they need to review.
- **BLM 10–6 Chapter 10 Practice Test** can be customized to produce extra reinforcement questions.

## Summative Assessment

- Have students complete **BLM 10–7 Chapter 10 Test** to assess individual skills.
- You may wish to develop **Master 5 Certificate** to show students what they have learned during this chapter. Cut and paste the related skills from **Master 6 List of Skills**.

## Using the Chapter Review

Depending on your class, students should be able to work through the review at their own pace. In order to have success with the Chapter Review, some students may need to do it in chunks, by completing several questions and then taking them up before continuing. This process will prevent students from completing many questions incorrectly.

Once the review is completed and taken up, assign **BLM 10–6 Chapter 10 Practice Test** for students to answer individually. They may wish to use their completed review to help them.

## Review Guide

Question	Section(s)	Refer to
1	Chapter Opener	(page 214)
2	10.1	Living in a Community (page 215)
3	10.1	Social Structure (page 216)
4	10.1	Living in a Community (page 215)
5	10.1	Social Structure (page 216)
6	10.1	Social Structure (page 216)
7	10.3	Challenges of Living Together (page 224)
8	10.3	Challenges of Living Together (page 224)
9	10.2 10.3	Benefits of Living Together (page 222); Challenges of Living Together (page 224)
10	10.3	Risk of Disease (page 225)
11	10.3	Science and Literacy Link (page 228)

### Chapter 10 Review Answers (pages 231–232)

1. **d)** community
2. **c)** role
3. **a)** social structure
4. Answers will vary. Look for four different roles such as: fireman, police officer, paramedic, and rescue worker.
5. Look for the following ideas.

The queen lays eggs and takes care of larvae. Workers collect food, protect the colony, and enlarge the nest. Drones mate with the queen.
6. Answers will vary depending on the animal community chosen. Students should explain how the different roles that individuals play within its social structure help the community function.
7. Accept any two reasonable benefits and challenges of living in a city. Sample answers:
  - a)** sharing transportation services
  - b)** day care services for the young and elderly
  - c)** traffic congestion
  - d)** air pollution
8. Answers will vary. Look for an opinion and at least one supporting point. Sample answer: The greatest challenge is competition for resources such as food, clean water, and adequate shelter. When resources become scarce, people without financial resources can't compete with others for the resources.
9. Examples will vary. Sample answers:
  - a)** challenge; horse with high rank keeps other horses away from food and water until it has its fill
  - b)** benefit; ants carry food back to the colony for the queen and other ants
  - c)** challenge; chickens in close contact can spread disease easily
  - d)** benefit; adult emperor penguins watch over a crèche while parents look for food
  - e)** challenge; when food is scarce, young foxes need to find their own food
  - f)** benefit; lionesses work in packs of four to catch large prey
  - g)** benefit; black-capped chickadees call when predators are nearby
10. Animals in close contact can spread disease easily.
11. **a)** and **b)** Look for any two of the following reasons:
  - reduces wild animal populations
  - reduces productivity of farm animals
  - some diseases spread to humans