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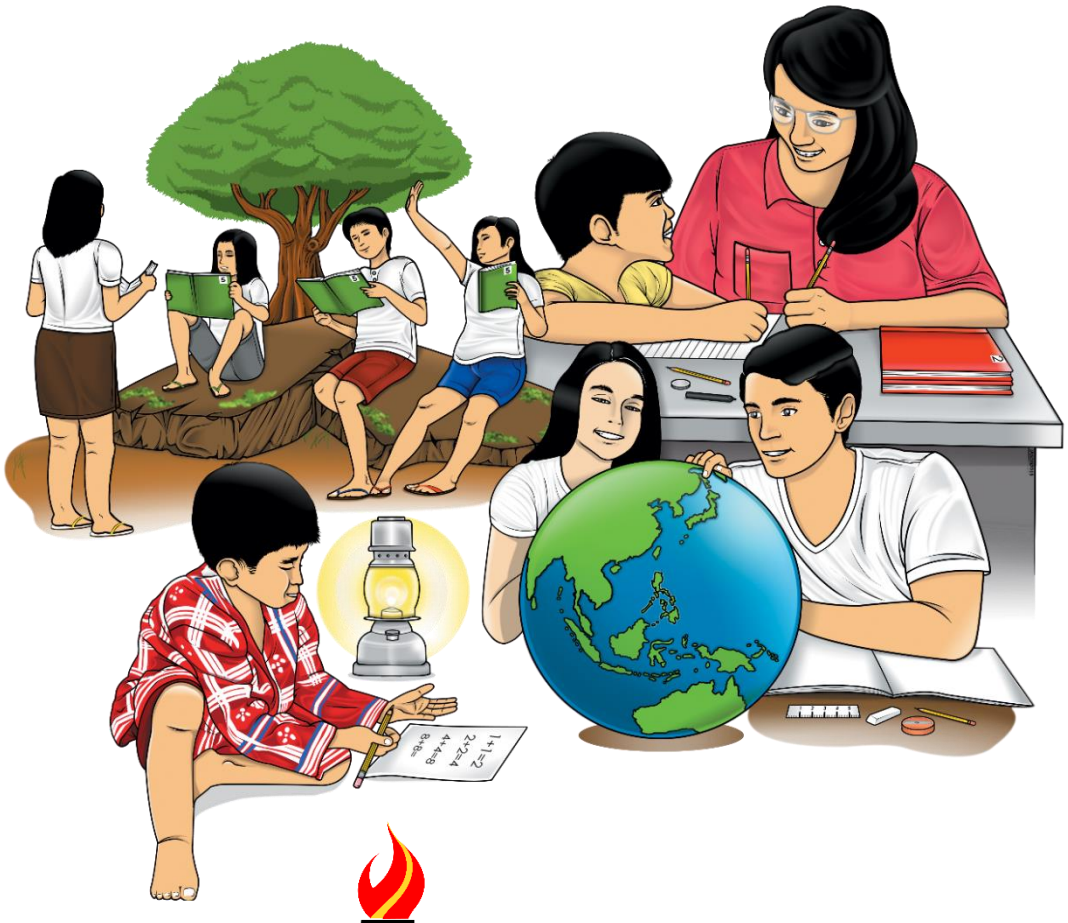
DEPARTMENT OF EDUCATION

Science
Quarter 2 – Module 8:
"Effects of Interaction"



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Science
Quarter 2 – Module 8:
“Effects of Interaction”

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Introductory Message

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. Read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

What I Need to Know

This module was designed and written with you in mind. It is here to help you understand that organisms interact with each other. All organisms are interconnected with one another and interactions between and among them can either be beneficial or harmful. There are interactions that badly affect one organism while the other one is benefited. There are also those where organisms mutually benefit from each other. Moreover, there are those that one organism is benefited while the other one is not harmed nor benefited in the interactions.

This lesson will focus on:

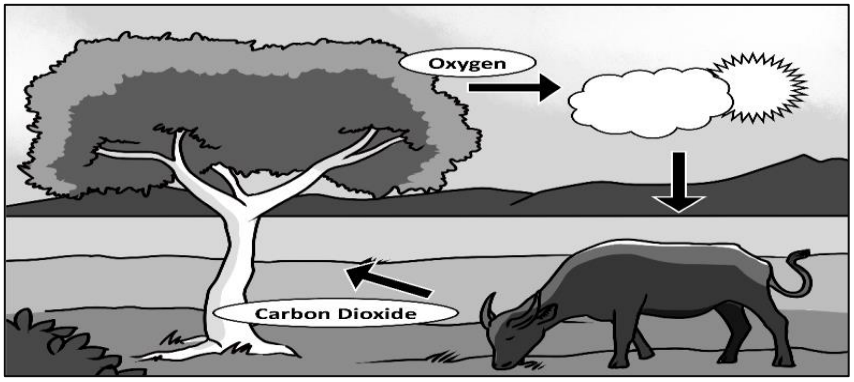
Lesson 1- Beneficial and harmful interactions among living things

After going through this module, you are expected to:

1. demonstrate understanding of the effects of interaction between and among living things; and
2. describe some types of beneficial and harmful interactions among living things.

What I Know

A. Directions: Study the diagram, then answer the following questions. Write your answers in your notebook.



Illustrated by: Jotham D. Balonzo

1. What living things are found in the picture?
2. What is given off by the tree that is needed by the cow? What is given off by the cow that is needed by the tree?
3. What do you think will happen if the cow or other animals will not give off carbon dioxide? What do you think will happen if trees or other plants are not present in the environment?
4. Do they have important roles in the environment? What are they?
5. Are the organisms interacting with each other? Is the interaction beneficial or harmful?

B. Directions: In your notebook, write **TRUE** if the statement is correct and **FALSE** if the statement is wrong.

_____1. The ticks are predators to dogs.

_____2. Internal parasites may kill their hosts.

_____3. Tapeworms are examples of internal parasite.

_____4. Internal parasites live outside the host's body.

_____ 5. Lice and ticks are examples of internal parasites.

_____ 6. In the relationship between the frog and the fly, the fly is the prey.

_____ 7. Plants compete for sunlight. The relationship is called competition.

_____ 8. Predators are usually large animals and prey are usually bigger animals.

_____ 9. If the population of prey decreases, number of predators also decreases.

_____10. When carabaos and goats eat on the same grassland, their relationship is called parasitism.

Keep on trying, I know you can do it! Happy reading!

Lesson 1 "Types of beneficial and harmful interactions among living things"

"No man is an island." This saying is also true for organisms in an ecosystem. **No organism exist in isolation.** Individual organisms live together in an ecosystem and depend on one another. In fact, they have many different types of interactions with each other, and many of these interactions are critical for their survival.

In this module, you will be familiarized with how organisms interact with one another and how these interactions affect the environment.

What's In

Directions: Put a check (✓) mark if the statement shows interaction among living things and cross mark (X) if not. Write your answers in your notebook.

_____1. A cat eats rat.

_____2. Horse eats grass.

_____3. Frogs eats insects.

_____4. A dog eats its food.

_____5. Insects eats worms.

_____6. Ants crawl to look for food.

_____7. The bird flies high in the sky.

_____8. Bees sip nectar from flowers.

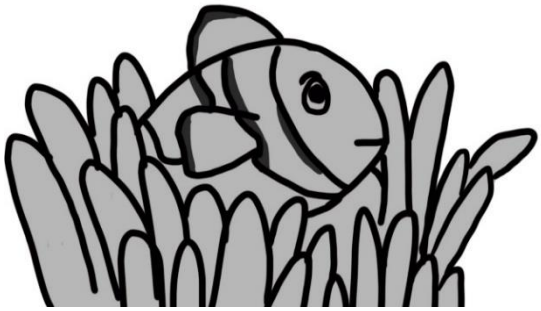
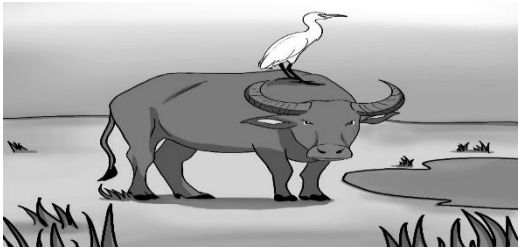
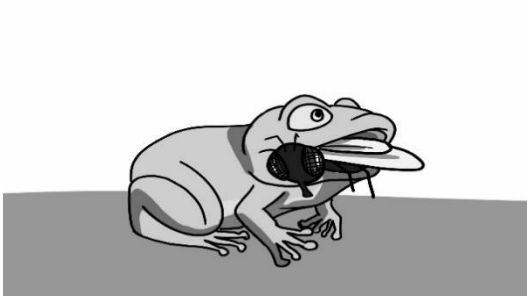
_____9. A farmer gives grass to his cow.

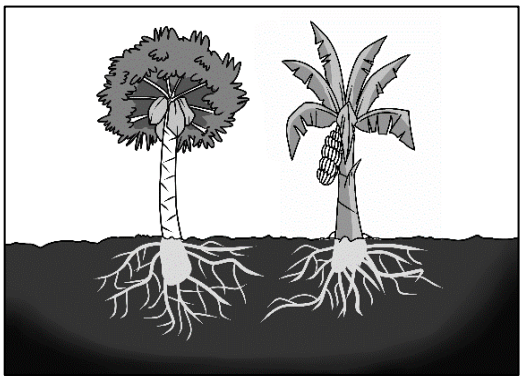
_____10. The chickens and the ducks look for food in the pond.

Good Job!!! As you go through with the different activities in this module, you will be able to name other examples of interaction among organisms.

What's New

Directions: The following pictures either show beneficial or harmful interactions in the environment. Read the information in each picture and answer the questions that follow.

Picture 1 	Clownfish and Sea Anemone The clownfish cleans away fish and algae leftovers from and gives better water circulation to the sea anemone because the clownfish fan their fins while swimming. The sea anemone protects the clownfish from other fish by driving them away using their stinging tentacles.
Picture 2 	Egrets and Carabao Egrets eat the insects stirred or kicked up by the carabaos when they are grazing.
Picture 3 	Mosquito and human The mosquitoes suck blood from humans as their host. Humans are affected and might get sick.
Picture 4 	Frog and Mosquito A frog catches mosquitoes at night for food using their long and sticky tongue.

Picture 5	Different plants
	They compete for the same needs such as nutrients and water from the soil.

Illustrated by: Kristal Grace C. Ilao and Jotham D. Balonzo

Guide Questions:

1. In pictures 1 to 5, which organism is benefited and harmed?
2. Describe the interaction between organisms in pictures 1 to 5.
3. What pictures show beneficial interactions in the environment?
4. What pictures show harmful interactions in the environment?
5. What made the interactions beneficial? harmful?
6. If you are going to choose from the different interactions you've seen in the pictures, what do you think is the best? Why?

Great! You are now doing better in performing the activities. You can now proceed to enhance more your understanding about this lesson.

What is It

Points to Remember:

Living things constantly interact with their environment. Each kind of environment is made up of biotic (living) and abiotic (non-living) components that interact and depend on one another

in different ways. Such interactions among living things and their environment enable them to live in units called Ecosystems.

Ecology- the branch of Science that deals with the many relationships and interactions of living things with one another and with their environments.

Ecosystems- it consists of all living and non-living things in a given area; it is the largest and the most complex level of organization which consists of all plants, animals and microorganisms which function with all the environmental factors such as sunlight, climate, soil, water, air, space, nutrients, temperature and energy.

Interaction is a relationship that exists among organisms. It could be beneficial or harmful.

There are interactions where both species benefit from the relationship and there are also interactions where one specie benefits but the other is neither affected nor harmed. These interactions are beneficial/ important for survival.

Illustrated by: Kristal Grace C. Ilao

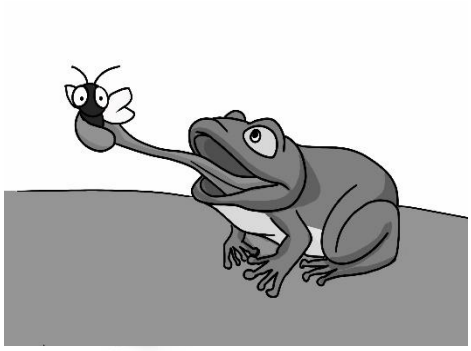
Mutualism- the type of interaction where both species benefit from the relationship.

Example: butterfly and the flower

Commensalism- the type of interaction where one organism benefits while the other is not harmed nor affected.

Example: Orchids on a tree

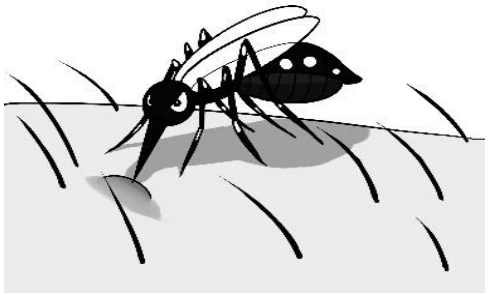
Illustrated by: Kristal Grace C. Ilao



Illustrated by: Kristal Grace C. Ilao

Predation- The type of interaction where one benefits while the other one is harmed or badly affected. The one that usually benefits is called the predator and the one that is harmed is called the prey. This kind of interaction is called the predator-prey. Example: Frog catching mosquito for food.

The size of predator and prey population are related to each other. If the number of prey is large, the number of predators increases.



Illustrated by: Kristal Grace C. Ilao

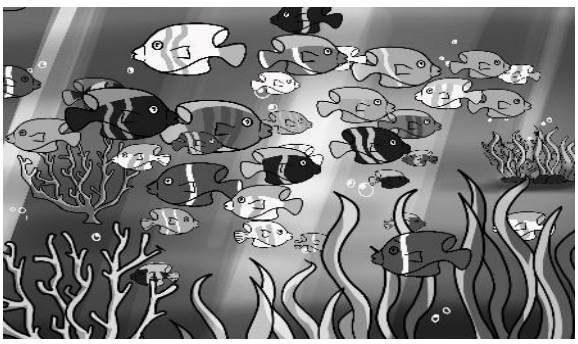
Parasitism- the relationship where one organism is called the parasites and the other is called the host.

Example:

Human bitten by mosquito

Parasites can be:

a. Internal parasites- they are found inside the body of the host
   Ex: ascaris, ringworm, tapeworm
b. External parasite- they are found outside the body of the host
   Ex: aphids, tick



Illustrated by: Kristal Grace C. Ilao

Parasites cannot live alone. They must live in a living host. Some do slight harm to their host. Others can kill their host.

Competition- it is the striving or vying between organisms for the things needed for survival .

Ex: Fishes compete to feed on other animals

Environment- it is everything that surrounds and affects an animal. It includes plants and other animals in the area, rocks, soil, air and water. Both living and non-living things are parts of an environment.

Sources: Abutay, L., Bonao, D., Crucis, E., Eslabra, J., Gramaje, Guadamor, M., Hernande, A., Ilagan, L., Llamera, F., Manawatao, R., Panganiban, H., Rojo, J., Tosco, R.R., and Zape, J. **Science Grade 4 Learner's Material,** First Edition 2015, Department of Education (2015), pages 155, 158-159.

Abutay, L., Bonao, D., Crucis, E., Eslabra, J., Gramaje, Guadamor, M., Hernande, A., Ilagan, L., Llamera, F., Manawatao, R., Panganiban, H., Rojo, J., Tosco, R.R., and Zape, J. **Science Grade 4 Teacher's Guide,** First Edition 2015, Department of Education (2015), pages 189- 199.

Lang, J. M. & Benbow, M. E. (2013) Species Interactions and Competition. *Nature Education Knowledge* 4(4):8

Congratulations! You made it.

What's More

Activity 1: "Relationships"

Directions: What relationship does the following pair of organisms have? In your notebook, write **PR** for predation, **P** for parasitism, and **C** for competition.

_____1. cat and mouse

_____2. pig and tapeworm

_____3. fox and rabbit

_____4. tiger and zebra

_____5. worm and bird

_____ 6. goat and cow

_____7. aphids and rose

_____8. human and ringworm

_____9. tick and dog

_____10. owl and worm

Activity 2: "Interactions"

Directions: Identify what is being described in each statement. Write your answer in your notebook.

_____1. It is the striving or vying between organisms for the things needed for survival.

_____2. The organism that benefits in predation is called _____.

_____3. The relationship where one organism is called the parasite and the other is called the host.

_____4. The organism that is harmed in predation is called _____.

_____5. The type of interaction where one benefits while the other one is harmed.

_____6. What kind of parasite is found inside the host's body?

_____7. The type of interaction where one organism is benefited while the other one is not but not harmed.

_____8. The type of interaction when two organisms are benefited.

_____9. It is a type of interaction that happens when there is scarcity of the same needs.

_____10. It is a type of parasite living outside the host's body.

Activity 3: "Am I Right?"

Directions: In your notebook, write **true** if the statement is correct and **false** if the statement is wrong.

_____1. If the population of prey increase, the number of predators decrease.

_____2. In the relationship between the frog and the fly, the fly is the predator.

_____3. Predators are usually large animals and preys are usually smaller animals.

_____4. Plants compete for sunlight. The relationship is called parasitism.

_____5. When sheep and goats eat on the same grassland, their relationship is called competition.

_____6. The dogs are predators to ticks.

_____7. Internal parasites live inside the host's body.

_____8. Internal parasites may kill their hosts.

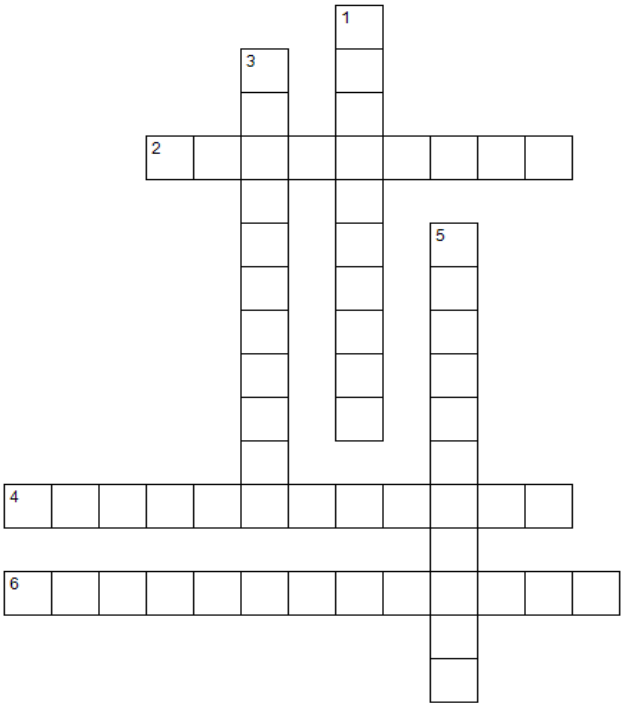
_____9. Ringworm and tapeworm are examples of parasites.

_____10. Lice and ticks are examples of external parasites.

Good job! You got it right.

What I Have Learned

Directions: Answer the following crossword puzzle based from what you have learned in this module.



Across:

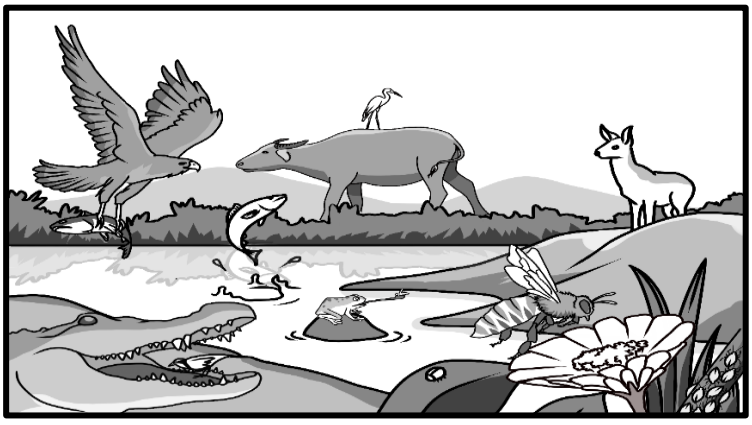
2. both organisms benefit from each other
4. one is benefited, the other one is not but not harmed
6. organisms that interact with one another

Down:

1. one is benefited, the other one is not and is harmed
3. controls the population of living organisms
5. striving for things needed for survival

What I Can Do

Directions: Describe at least three interactions that you see in the picture of environment below. Answer the questions that follow. Do this in your notebook.



Illustrated by: Jotham D. Balonzo

Guide Questions:

1. Are the interactions you identified and described important? Why?

2. Which interactions are beneficial? harmful?

3. What should you do in order for these interactions among living things to continue, especially the beneficial ones?

Wonderful! Now you've figured it out!

Assessment

Directions: In your notebook, write T if the statement is **True,** and F if the statement is **False**.

_____1. The type of interaction between the birds and worms is called predation.
_____2. The birds are the prey, and the worms are their predator.
_____3. Predation is also called predator-prey relationship.
_____4. Parasitism is a type of interaction where one benefits while other one is harmed or badly affected.
_____5. The type of interaction between the aphids and the rose plant is called parasitism.
_____6. The aphid is the parasite and the rose plant is the host.
_____7. The host is the organism which usually benefits from this interaction and the parasite is the one that is affected.
_____8. Parasites can be internal or external.
_____9. Internal parasites are those found inside the body of the host like the ascaris in the human stomach.
_____10. The interaction between the buffalo and the lion is called predation.

B. Directions: Copy and complete the table below. Think of five pairs of organisms. Identify whether their interaction is beneficial or harmful by checking the proper column. Describe the interaction between the organisms.

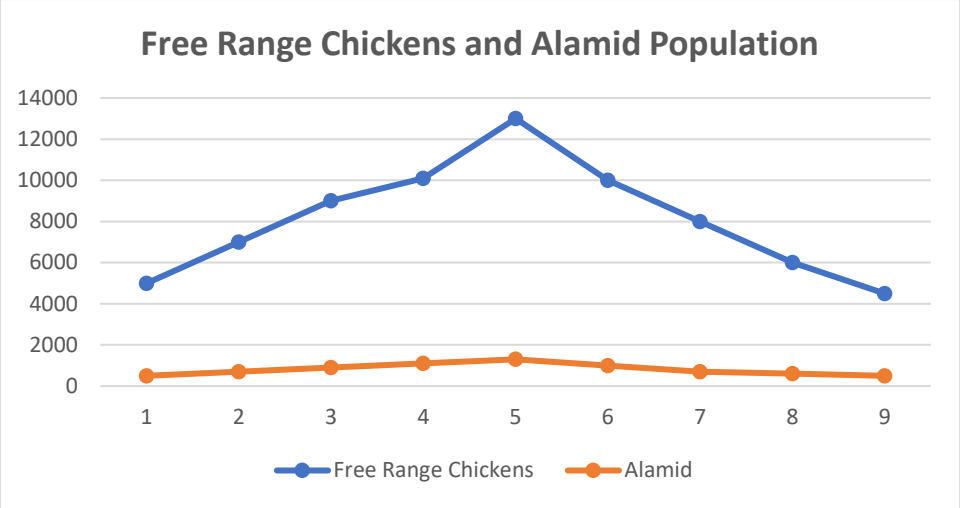
Pair of Organisms	Interaction		Describe the interaction
	Beneficial or harmful?	Type of Interaction	
Example: *dog and ticks*	*harmful*	*parasitism*	*The ticks suck blood from the dog's body. The dog is harmed.*
1.			
2.			
3.			
4.			
5.			

Additional Activities

Directions: Analyze the data presented in the line graph. Write the answers in your notebook.

Changes in predator and prey populations can affect each other. In Barrio Sapang Palay, the main source of livelihood is raising free-range chickens. However, the place is also infested with phytons. The main predator of the chicken is the phyton.

Study the line graph and find out how changes in population of free-range chickens and 'alamid' affect each other over time.



Analysis Questions

1. Using complete sentences, describe the relationship between the population of free-range chickens and the population of 'alamids'.
2. What do you think would happen to the alamid population if all of the free-range chickens die of a disease?
3. How do predator-prey relationships help to maintain a balanced ecosystem?

Congratulations! I am happy that you have accomplished the tasks given to you. See you next time.

Answer Key

What's More

Activity 1

1. PR 2. P 3. PR 4. PR 5. PR
6. C 7. P 8. P 9. P 10. PR

Activity 2

1. competition 6. internal parasite
2. predator 7. commensalism
3. parasitism 8. mutualism
4. prey 9. competition
5. parasitism 10. External parasite

Activity 3

1. false 6. false
2. false 7. true
3. true 8.true
4. false 9. true
5. true 10.true

What I Have Learned

Across: 2. Mutualism, 4. Commensalism, 6. Living things

Down: 1. Parasitism, 3. Interaction, 5. competition

What I Can Do

1. Yes. Because they are needed to have a balanced ecosystem.
2. Answers may vary.
3. Do not pose harm to other organisms. Let other organisms live in peace in their habitat.

Assessment

A. 1. T 2. F 3. T 4. T 5. T
6. T 7. F 8. T 9. T 10. T

B. Pupils' answers may vary.

Additional Activities

Possible answer:

1. An increase in the free-range chicken population leads to an increase in the alamid population. As the alamid population increases, the free-range chicken population begins to decrease as more free-range chicken are captured as prey. As the free-range chicken population decreases, so does the alamid population.
2. The alamid population would probably get smaller. The population would either have to catch a different prey or else move to a different area with other source of food.
3. Predator and prey populations balance each other, so that there are not too many of either species in an area.

What I Know

A. 1. cow and tree

2. oxygen, carbon dioxide

3. Plants will not have carbon dioxide they need. There will be less oxygen in the environment.

4. Yes. They maintain the balance of oxygen and carbon dioxide in the environment.

5. Yes. Beneficial

B.

1. FALSE	2. TRUE	3. TRUE
4. FALSE	5. FALSE	6TRUE
7. TRUE	8. FALSE	9. TRUE
10. FALSE		

What's In

1. ✓	6. ×
2. ✓	7. ×
3. ✓	8. ✓
4. ×	9. ✓
5. ✓	10. ✓

What's New

1. Picture 1-Both are benefited, no organism is harmed
Picture 2-Crabao is not benefited nor harmed, egret is benefited
Picture 3- mosquito is benefited, human is harmed
Picture 4- frog is benefited, mosquitoes are harmed
Picture 5- plants deprived of nutrients and water are harmed, other plants are benefited

2. Picture 1- beneficial
Picture 2- beneficial
Picture 3- harmful
Picture 4- harmful
Picture 5- harmful

3. Pictures 1 and 2
4. Pictures 3-5
5. It is harmful if it badly affects other organisms like affecting their number.
6. Answers may vary.

References:

Abutay, L., Bonao, D., Crucis, E., Eslabra, J., Gramaje, Guadamor, M., Hernandez, A., Ilagan, L., Llamera, F., Manawatao, R., Panganiban, H., Rojo, J., Tosco, R.R., and Zape, J. Science Grade 4 Learner's Material, First Edition 2015, Department of Education (2015), pages 155, 158-159.

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