

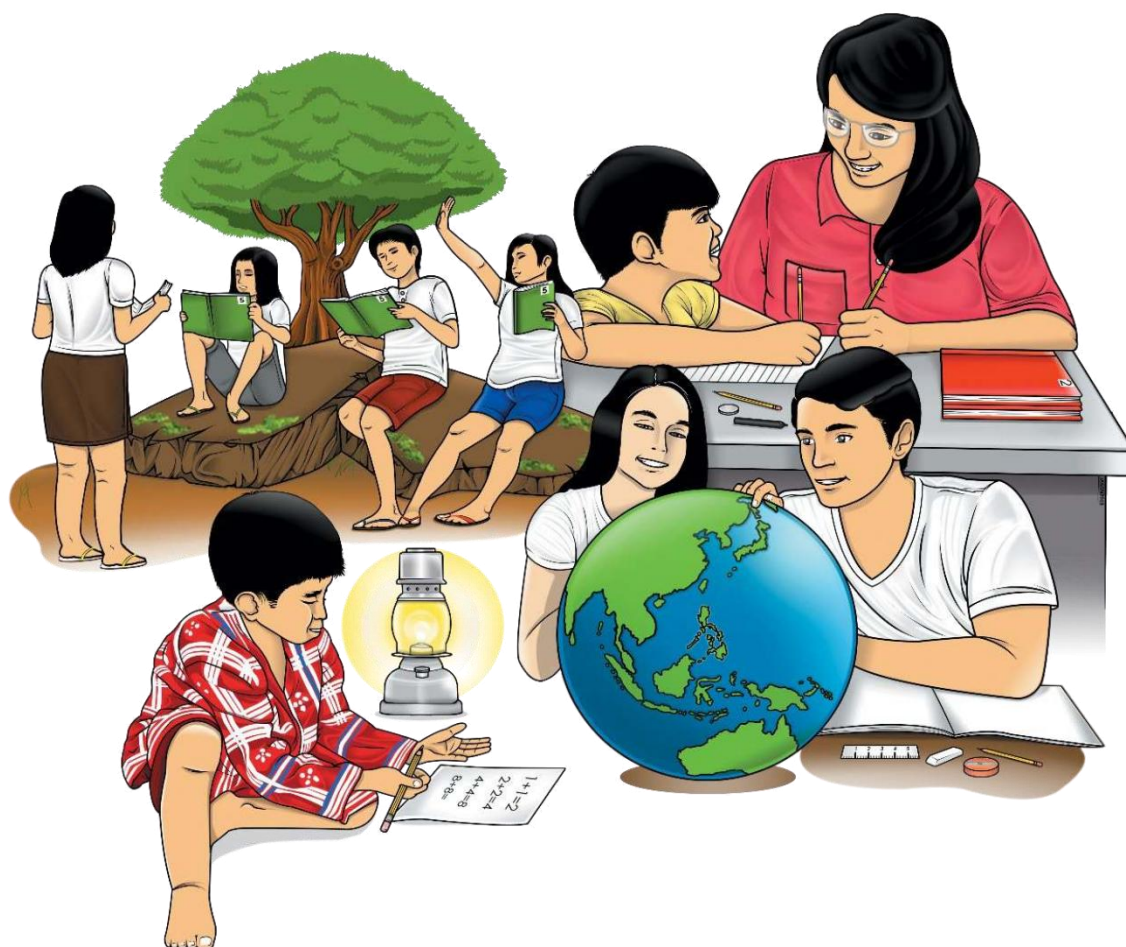
Senior High School



# Earth and Life Science

## Quarter 2 – Module 10:

### *Interaction and Interdependence*



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*Earth and Life Science*

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*Quarter 2 – Module 10: Interaction and Interdependence*

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**Development Team of the Module**

**Writer:** Nerissa E. Manila

**Editors:** Melanie I. Samudio, Jocelyn M. Manset

**Reviewers:** Jason Ricaforte, Elizabeth A. Soriano, Princess Paolah L. De Guzman, Marissa C. Betchaida, Louie L. Alvarez, Gregorio M. De Chavez Jr., Jocelyn M. Manset, Mario B. Maramot, Elaine T. Balaogan, Job S. Zape Jr., Arturo E. De Leon

**Illustrator:** Ednelinda Robles, Lovely Joy La Rosa, Charles Erick A. Jusay, Sandro Carlo B. Tablizo

**Layout Artist:** Anselma M. Ebero, Elizalde L. Piol, Jocelyn M. Manset, Argie L. Ty

**Management Team:** Francis Cesar B. Bringas

Job S. Zape, Jr.  
Ramonito Elumbaring  
Reicon C. Condes  
Elaine T. Balaogan  
Fe M. Ong-ongowan  
Merthel M. Evardome  
Nadine C. Celindro  
Nicolas M. Burgos  
Mario B. Maramot  
Fe M. Ong-ongowan  
Rosalinda A. Mendoza

**Department of Education – Region IV-A CALABARZON**

Office Address:

Gate 2 Karangalan Village, Brgy. San Isidro, Cainta, Rizal

Telefax: 02-8682-5773/8684-4914/8647-7487

E-mail Address: [lrmd.calabarzon@deped.gov.ph](mailto:lrmd.calabarzon@deped.gov.ph)



## ***What I Need to Know***

This module was designed and written with you in mind. It is here to help you master the nature of Biology. The scope of this module permits it to be used in many different learning situations. The language used recognizes the diverse vocabulary level of students.

The lessons are arranged to follow the standard sequence of the course. But the order in which you read them can be changed to correspond with the textbook you are now using.

The module covers:

- Lesson 1 – Interaction and Interdependence

After going through this module, you are expected to:

1. Categorize the different biotic potential and environmental resistance (e. g. diseases, availability of food and predators) that affect population explosion
2. Identify biotic factors and abiotic factors; and
3. Categorize biotic potential and environmental resistance that affect population growth.

**Lesson****1****Interaction and  
Interdependence**

Every living thing relies upon one another and their environment. No living creature could make due all alone without relying upon different living beings and its environment. Interaction and interdependence are two important relationships in nature. Ecology is the branch of biology that deals with the study of these relationships of interaction and interdependence between living things and their environment. The area wherein living things associate with each other and with their environment is known as the ecosystem. Association among species help shape ecosystem.

**What's In****Activity 1**

Look around. What do you see in your environment? List 10 living things and 10 non-living things on the table. Answer the questions below.

Living Things	Non-living Things

1. What is the interaction between living things and non-living things?

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2. How dependent are we on other organisms and the environment?

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**Activity 2**

Encircle the words in the grid and fill in the blanks with the correct term.

Niche

Competition

Predation

Symbiosis

Population

Parasitism

Commensalism

Mutualism

Habitat

Community

G	L	E	I	P	T	R	K	C	E	S	H	A	D
I	F	C	O	M	M	U	N	I	T	Y	E	S	E
V	P	O	P	U	L	A	T	I	O	N	S	Y	L
E	H	M	U	T	U	A	L	I	S	M	D	M	E
R	D	P	A	R	A	S	I	T	I	S	M	B	Y
P	R	E	D	A	T	O	R	N	S	R	N	I	S
L	D	T	E	C	O	L	O	G	Y	G	C	O	A
A	V	I	H	A	B	I	T	A	T	R	H	S	H
N	U	T	C	O	N	S	U	M	E	R	S	I	N
T	X	I	A	N	I	M	A	L	S	E	T	S	N
S	C	O	M	M	E	N	S	A	L	I	S	M	O
A	L	N	I	C	H	E	F	R	O	G	A	L	R
D	E	C	O	M	P	P	O	S	E	R	D	Y	M

1. Different types of organisms that interact with one another in a given area form a \_\_\_\_\_.
2. A group of organisms of similar species that live in a characterized territory area form a \_\_\_\_\_.
3. The place or type of environment in which an organism or population lives is called \_\_\_\_\_.
4. The capacity of a life form or the role it plays in the habitat is known as ecological \_\_\_\_\_.
5. Interaction between two organisms of various species in which at any rate benefits is called \_\_\_\_\_.
6. \_\_\_\_\_ is a harmonious relationship wherein two life forms benefit.
7. The symbiotic relationship in which one organism benefits and the other is unaffected is called \_\_\_\_\_.
8. \_\_\_\_\_ is a symbiotic relationship in which one organism benefits, while the other is harmed.
9. The feeding of one organism on another is called \_\_\_\_\_. Life forms that feed on the other living creature are called predators, while prey refers to life forms eaten by a predator.
10. An environment can't fulfill all the requirements of its individuals so creatures must battle with each other to survive. This sort of interaction when two species utilize a similar limited resource is called \_\_\_\_\_.



## What's New

The **ecosystem** comprises of all living and non-living things that interact with each other in a given territory. Every living piece of an ecosystem, for example, animals, plants, and other living being are called **biotic factors**. Living organisms interact in the ecosystem to obtain food in order to survive. Their interactions can be used to classify them as to producers, consumers and decomposers.



The non-living parts of an ecosystem are called **abiotic factors**. Living creatures in a biological system can't natural separated independently from the abiotic or non-living components in their surroundings.

### Activity 3

Read the words in the word box. Classify the following component of ecosystem as to biotic or abiotic factors.

tree	cow	farmer
dog	wind	oxygen
temperature	grass	fish
water	CO <sub>2</sub>	sunlight
bacteria	salinity of water	chicken
pH of soil	flower	

#### Biotic Factors

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#### Abiotic Factors

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Refer to the column of biotic factors and classify each as to:

Producers	Consumers	Decomposers



### ***What is It***

### ***Biotic Potential and Environmental Resistance***

Biotic potential and environmental resistance are the factors that influence the population growth. Biotic potential is the rate at which life forms reproduce when they have perfect conditions that would advance effective generation. It is likewise characterized as capacity of a populace of a species to propagate under perfect conditions, for example, adequate food and water supply, no diseases, suitable habitat and no predators. The biotic potential among creatures' changes from species to species. The following factors determine biotic potential:

1. numbers of offspring per reproduction
2. chances of survival age of reproduction
3. age at which propagation starts
4. how frequently every individual replicate

### Activity 4

Look at the pictures. Tell something about each picture.



A. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



B. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



C. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### Activity 5

Refer to pictures shown in Activity 4. Answer the following questions.

1. How many offspring does each organism have?
  - A. \_\_\_\_\_
  - B. \_\_\_\_\_
  - C. \_\_\_\_\_
2. At what age does the organism start to have the capacity to reproduce?
  - A. \_\_\_\_\_
  - B. \_\_\_\_\_
  - C. \_\_\_\_\_
3. What will happen if living organisms fail to reproduce?
4. How can a population grow?
5. How can predators affect the population's growth?
6. How does disease affect population growth?
7. What factors control the increase of population?



## ***What I Have Learned***

### **Activity 6**

Refer to this illustration in answering questions A, B and C



A. What are the abiotic factors in the illustration?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

B. What are the biotic factors in the illustration?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_

C. Identify the environmental resistance that may affect the population in the ecosystem.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

D. What is the effect environmental resistance on a population?





## What I Can Do

### Activity 7

The year 2020 had been a tough and difficult time for many countries around the world. What environmental resistance affects the Philippines? What measures will you do to protect the community?

#### RUBRICS

CRITERIA	5 EXCELLENT	3 GOOD	2 NEEDS IMPROVEMENT	1 LOW PERFORMANCE
PURPOSE	Strong voice and tone that clearly addresses the purpose for writing.	Appropriate voice and tone. The purpose is largely clear.	Attempts to use personal voice and tone. Somewhat addresses the intended purpose.	Demonstrates limited awareness of use of voice and tone. Limited evidence of intended purpose.
UNDERSTANDING	Many interesting, specific facts and ideas are included.	Many facts and ideas are included.	Some facts and ideas are included.	Few facts and ideas are included.
GRAMMAR	Journal contains no errors in grammar, capitalization, or punctuation	Journal contains 1- 2 errors in grammar, capitalization, or punctuation.	Journal contains 3- 4 errors in grammar, capitalization, or punctuation.	Journal contains 5 or more errors in grammar, capitalization, or punctuation.



## Additional Activities

Cut and paste/ copy and paste or draw pictures of an ecosystem showing environmental resistance and biotic potential.

Criteria	4 Exceeding	3 meeting	2	1
Organization	Extremely well organized. Order & structure of information is compelling and flows smoothly	Organized. Structure allows reader to move through content without confusion. Flows smoothly	Somewhat organized structure allows reader to move through some of the content without confusion. Flow is sometimes interrupted.	Poorly organized. A clear sense of direction is not evident. Flow is frequently interrupted.
Content	Thorough and insightful understanding of content	Complete understanding of content	Shows some understanding of content	Shows incomplete understanding of material
Creativity	Enthusiastically uses materials and ideas for enhancement	Use of materials and ideas for enhancement	Shows some use of materials and ideas	Shows minimal effort for enhancement of materials and ideas
Ideas	Insightful and well considered ideas making multiple connections	Ideas are considered; more than one thoughtful connection is made	Ideas are somewhat on topic; makes some connections	Ideas are unclear few connections

## *References*

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