

Ecology REVIEW

Only about **10%** percent of the energy available within one trophic level is transferred to organisms at the next trophic level when they are eaten.

1%

5%

10%

50%

100%

TYPES OF HETEROTROPHS

<u>TYPE</u>	<u>How does it get its energy?</u>	<u>Examples</u>
<u>PRODUCER</u>	absorbs energy by breaking down organic matter	<u>PLANTS</u>
OMNIVORE		Humans, bears, crows
<u>HERBIVORE</u>	Eat only plants	Cows, rabbits
<u>DECOMPOSER</u>	feed on dead plant and animal remains	Earthworms, snails, mites, Crabs,
CARNIVORE	<u>FEED ON HERBIVORES</u>	<u>LIONS, SNAKES, OWLS</u>

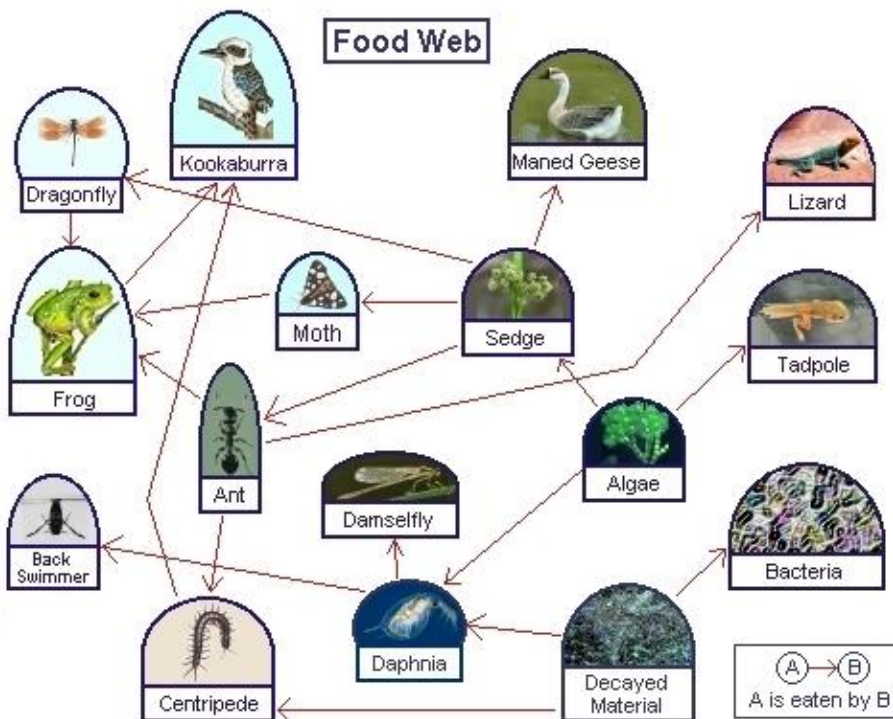
PUT THE FOLLOWING IN ORDER FROM LEAST TO MOST COMPLEX

BIOSPHERE POPULATION ECOSYSTEM COMMUNITY INDIVIDUAL BIOME ORGANISM

INDIVIDUAL /ORGANISM – POPULATION – COMMUNITY – ECOSYSTEM – BIOME - BIOSPHERE

TELL HOW A FOOD CHAIN IS DIFFERENT FROM A FOOD WEB

FOOD CHAIN	FOOD WEB
<u>ONLY ONE CHAIN OF ENERGY TRANSFER</u>	<u>MULTIPLE FOOD CHAINS AND ENERGY TRANSFER WITHIN AN ECOSYSTEM</u>



THINK ABOUT IT

Look at the food web below and answer the questions.

Name a producer in this food web

ALGAE

Name the primary consumers

SEDE, TADPOLE, DAPHNIA

Name the secondary consumers

DAMSELFY, BACK SWIMMER,

Name the tertiary/quarternary consumers

ANT, FROG, KOOKABURRA, MANED GEESE, LIZARD,

THINK ABOUT IT: Use the food web from above to answer the following.

What do you think will happen to the frog population in this community if all the centipedes were killed off by a disease?

FROD POPN WOULD DECREASE DUE TO A DECREASE IN THE ANT POPULATION,

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Name and describe the types of SYMBIOSIS

TYPES OF SYMBIOSIS	DESCRIPTION
MUTUALISM	BOTH BENEFIT
COMMENSALISM	ONE BENEFITS, THE OTHER IS INDIFFERENT
PARASITISM	PARASITE BENEFITS, HOST IS HARMED
MIMICRY	MIMIC BENEFITS, OTHER IS INDIFFERENT
PREDATOR-PREY	PRED BENEFITS, PREY IS HARMED
COMPETITION	BOTH ARE HARMED

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COMPARE AND CONTRAST

	BIOTIC FACTOR	ABIOTIC FACTOR
WAY THEY ARE DIFFERENT	LIVING FACTOR IN THE ECOSYSTEM	NONLIVING FACTOR IN THE ECOSYSTEM
WAY THEY ARE ALIKE	BOTH INFLUENCE THE ECOSYSTEM	

	NICHE	HABITAT
WAY THEY ARE DIFFERENT	AN ORGANISM'S WAY OF LIFE	WHERE THE ORGANISM LIVES
WAY THEY ARE ALIKE	BOTH INFLUENCE THE ORGANISM IN THE ECOSYSTEM	

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Ecosystem recycling CYCLES Name the 3 cycles we discussed:

1. WATER 2. CARBON 3. NITROGEN

NAME THE CYCLE DESCRIBED (you may write the number or cycle name in the space provided)

CARBON Cycle in which photosynthesis and cellular respiration participate

WATER Cycle that involves transpiration

NITROGEN Cycle which is dependent on bacteria for nitrogen fixation and denitrification

WATER Process by which water enters the atmosphere from the leaves of plants

CARBON Cycle in which volcanic activity and burning fossil fuels plays a role

_____ OOPS - **YOU DO NOT NEED TO KNOW THIS** _____ Another name for the water cycle

_____ **CARBON** _____ Cycle which includes an underground reservoir in the form of fossil fuels

NAME THE STEP IN the ECOSYSTEM RECYCLING CYCLE:

_____ **NITROGEN** _____ Process in which nitrogen gas from the atmosphere is converted into ammonia by bacteria that live in the soil and on the roots of plants called legumes

_____ **NITROGEN** _____ Process in which soil bacteria convert nitrogen compounds in soil back into nitrogen gas which is released into the atmosphere

_____ **CARBON** _____ Process in which sunlight is used to change atmospheric carbon into biomolecules used for energy by living things

_____ **WATER** _____ Process in which water evaporates from the surface of plant leaves

_____ **CARBON** _____ Process in which nutrients in dead organisms are returned to the soil

_____ **CARBON** _____ Process in which the break down of sugars in living things returns carbon to the atmosphere as CO₂

_____ **WATER** _____ Process in which liquid water changes into gas form

_____ **WATER** _____ Process in which water vapor (gas) changes into liquid water

*Tell 2 human activities by which carbon can enter the atmosphere as CO₂ during the carbon cycle
_____ **factories and cars** _____

*Name 2 NON-human activities by which carbon can enter the atmosphere or oceans during the carbon cycle.
_____ **cellular respiration and decomposition** _____

*Tell one way carbon leaves the atmosphere during the carbon cycle. _____ **photosynthesis** _____

*Tell 2 ways water enters the atmosphere in the water cycle _____ **transpiration and evaporation** _____

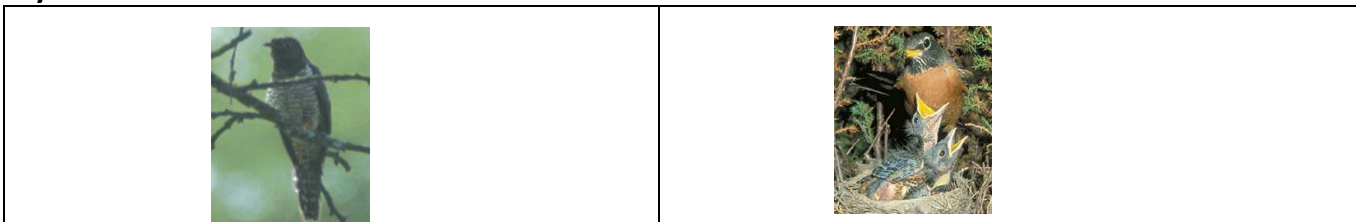
*Tell something humans do to return nitrogen to the soil for the nitrogen cycle. _____ **fertilizer** _____

Although almost 80% **oops – almost 90% or above** of the atmosphere is made up of nitrogen gas, most living things don't have the enzymes necessary to use nitrogen directly from the atmosphere. Tell how we get the nitrogen we need to make proteins and DNA if we can't get it from breathing.



From nitrogen fixing bacteria in the ground. Then plants are able to absorb the nitrogen, herbivores eat plants (or we do) and then we eat the herbivores.


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Symbiosis




RED_CHESTED CUCKOO BIRDS find an unattended robin nest and push out the robin eggs. They then lay their own eggs in the robin's nest and leave for the robins to incubate the cuckoo eggs. +	Robin eggs don't hatch, but the cuckoo babies hatch. The robin parents feed and take care of the cuckoo babies. -
WHAT'S THE TYPE OF SYMBIOSIS? this could technically be parasitism...but I would also see how it could be competition. **there will not be one like this on the quiz**	



	
SNAPPING SHRIMP have poor vision. They depend on their goby fish roommate to give the danger signal whenever predators approach. The goby fish guides the snapping back home if they wander too far.	GOBY FISH who don't have a place to hide are quickly eaten. They find a Snapping shrimp roommate who digs a hole for both of them to live in.
WHAT'S THE TYPE OF SYMBIOSIS? mutualism	

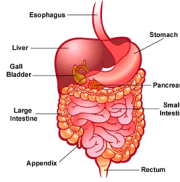

	
ATHELETE'S FOOT FUNGUS lives on the skin of humans and feeds on keratin, a protein.	Some HUMANS have itchy, cracked skin on their feet which can become infected.
WHAT'S THE TYPE OF SYMBIOSIS? parasitism	


	
REMORA use suckers to attach temporarily to large marine animals such as sharks, manta rays, whales, turtles, or large fish	The SHARK provides free transportation, protection, and dropped food and feces which the remora feeds on. The host is not injured.
WHAT'S THE TYPE OF SYMBIOSIS? ommensalism	


	
FUNGI form lichens by living in a close relationship within algae. The	The ALGAE gathers energy from the sun using photosynthesis.

fungus provides a protective home for the algae, and gathers mineral nutrients from rainwater and from dissolving the rock underneath.	Both organisms share their nutrients with each other.
WHAT'S THE TYPE OF SYMBIOSIS? mutualism	

	
HONEYGUIDE BIRDS find a bee hive then chatter loudly to attract the Honey badger. They fly toward the hive making sure the badger is following.	Upon arrival at the bee hive, the BADGER tears open the hive and feasts on the honey. Then the Honeyguide bird feeds on the remaining wax and larvae.
WHAT'S THE TYPE OF SYMBIOSIS? mutualism	

	
HUMAN INTESTINE provides food for bacteria that live inside digestive system.	Beneficial BACTERIA live in the intestine of humans and help digest cellulose from plants which humans don't have the enzymes to break down.
WHAT'S THE TYPE OF SYMBIOSIS? mutualism	

	
GALL INSECT lays their eggs in the leaves or branches of Oak trees causing a lump to form.	OAK TREES provide shelter and food to the insect larvae, but are not harmed.
WHAT'S THE TYPE OF SYMBIOSIS? commensalism	

	
SKUNKS often live in burrows that have been dug and abandoned by armadillos.	ARMADILLOS dig holes for homes, but often abandon them
WHAT'S THE TYPE OF SYMBIOSIS? commensalism	

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****Review all notes covering: Classification, Hardy-Weinberg, and Ecology****