

Intro to Environmental Science 120

Review – Unit #2

<p>cell tissue organ organ system - nervous - integumentary - respiratory - digestive - excretory - skeletal - muscular - circulatory - endocrine - reproductive - lymphatic/immune ecology ecologist organism species population community ecosystem biome biosphere biotic factor abiotic factor habitat niche sunlight photosynthesis reactant product chemosynthesis autotroph heterotroph - herbivore - carnivore - omnivore - detritivore - decomposer - scavenger</p>	<p>energy food chain food web trophic level owl pellet ecological pyramids - energy pyramid - biomass pyramid - biomass - pyramid of numbers species interactions - direct/indirect - predation - predator - prey - competition - parasitism - parasite - host - mutualism - commensalism adaptation symbiosis co-evolution</p>	<p>nutrient mineral nutrient non-mineral nutrient macronutrient - primary - secondary micronutrient water/hydrologic cycle - surface runoff - precipitation - condensation - percolation/infiltration - capillarity - evaporation - transpiration - ground water carbon cycle - carbon dioxide - oxygen - respiration - photosynthesis - combustion phosphorus cycle - inorganic compounds - phosphates - plants - animals - decaying/fecal matter nitrogen cycle - atmospheric nitrogen - nitrates - nitrites - ammonia - plant protein - animal protein - lightning - bacterial action - nitrogen fixation - absorption by plants - eaten by animals - decay of dead material - break down of feces and urine</p>	<p>environmental problems disrupting natural cycles - radioactive contamination - pollution of oceans - depletion of fish stocks - use of fossil fuels - draining of underground aquifers - clearing of forests - use of fertilizers and pesticides species at risk - extinct - extirpated - endangered - threatened - vulnerable</p>
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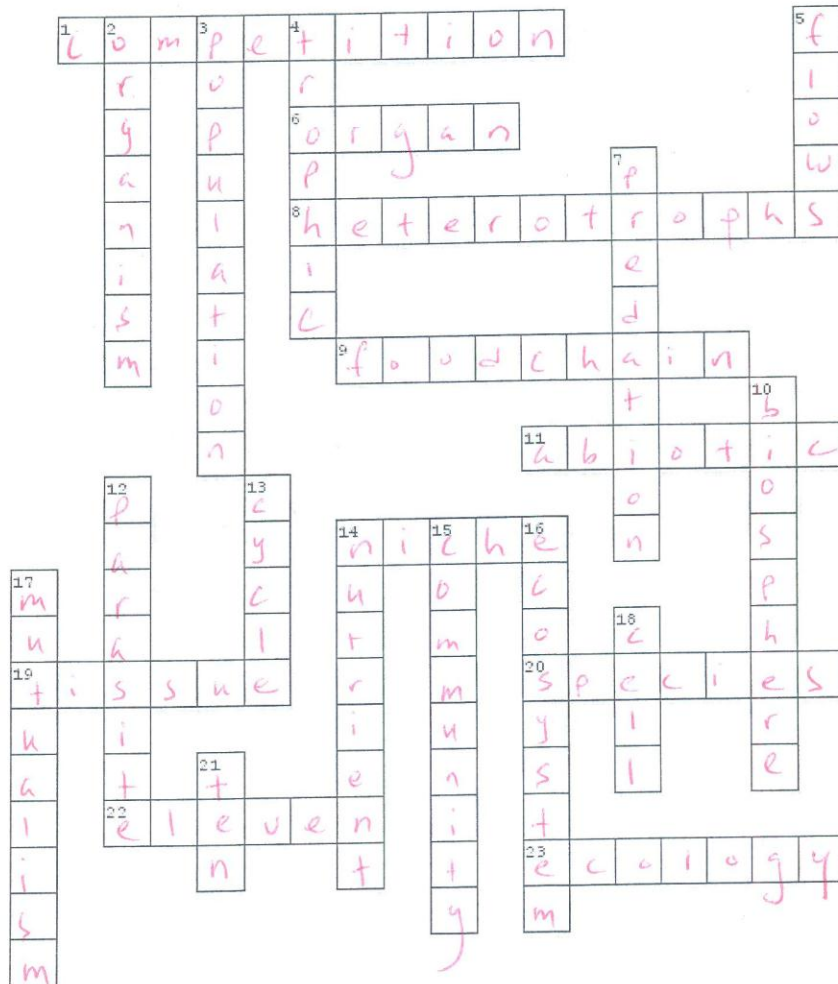
1. Be able to define each term on the previous page.
2. What are the levels of organization in a multicellular organism?
3. State the functions of the eleven organ systems in a human.
4. What are the levels of organization studied by ecologists?
5. Be prepared to provide information regarding the biome covered by your travel brochure.
6. Be able to provide two biotic factors and two abiotic factors.
7. Choose an organism and describe its niche in its ecosystem.
8. What is the main energy source for life on Earth?
9. How does energy move through an ecosystem?
10. Write a balanced chemical equation for photosynthesis.
11. Draw a concept map for the types of organisms discussed in class.
12. Study the food chain below. Identify the trophic level occupied by each organism.

marsh grass -> grasshopper -> mouse -> hawk
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13. Review the background material on owl pellets provided with the owl dissection handouts.
14. a) Name three types of ecological pyramids.  
b) What types of pyramids can be inverted?
15. Name five types of species interactions. Be able to give an example of each and/or identify the type existing between two organisms given background info.
16. a) Be able to draw a concept map for the types of nutrients discussed in class.  
b) How do nutrients move through an ecosystem?  
c) Be able to label a diagram of the water (hydrologic) cycle.  
d) Be able to state the processes involved in the carbon cycle.  
e) Be able to draw a concept map for the nitrogen cycle.
17. List seven environmental problems, caused by humans, which disrupt natural cycles.
18. There are five levels of risk for species. What are they?

Name: Key  
 Date: April 15/13

## Review - Test #2



### Across

- ✓1 each organism can be harmed by this type of species interaction
- ✓6 a group of different types of tissues that work together to perform a single function
- ✓8 animals, fungi and bacteria
- ✓9 involves a series of steps in which organisms transfer energy by eating and being eaten
- ✓11 a type of factor in an ecosystem (ie/ temperature)
- ✓14 unique role of a species within an ecosystem
- ✓19 muscle, epithelial, nerve and connective are examples
- ✓20 group of organisms so similar to one another that they can breed and produce fertile offspring
- ✓22 number of organ systems in the human body
- ✓23 the scientific study of interactions among organisms and between organisms and their environment (surroundings)

### Down

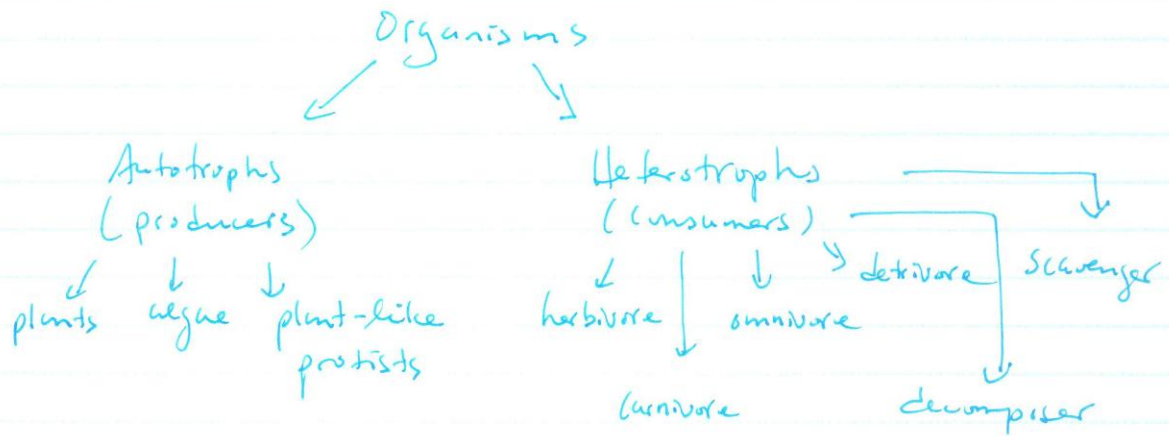
- ✓2 a single living thing
- ✓3 group of individuals that belong to the same species and live in the same area
- ✓4 \_\_\_\_\_ or feeding level
- ✓5 energy \_\_\_\_\_ through an ecosystem
- ✓7 the interaction between a coyote and deer is an example of this type of species interaction
- ✓10 extends from about 8 km above Earth's surface to as far as 11 km below the surface of the ocean
- ✓12 tick, flea or tapeworm
- ✓13 nutrients \_\_\_\_\_ through an ecosystem
- ✓14 an essential element
- ✓15 a collection of different populations that live together in a defined area
- ✓16 a collection of all the organisms that live in a particular place together with their nonliving, or physical environment
- ✓17 relationship in which both organisms benefit
- ✓18 basic unit of all forms of living things
- 21 percentage of energy that moves from one trophic level to the next



1. Defining terms  $\rightarrow$  see notes.
2. There are four levels of organization:
  1. cell
  2. tissue
  3. organ
  4. organ system.
3. Functions of organ systems  $\rightarrow$  see notes
4. There are seven levels of organization studied by ecologists:
  1. organism
  2. species
  3. population
  4. community
  5. ecosystem
  6. biome
  7. biosphere
5. Biome Travel Brochure  $\rightarrow$  see handout
6. 

<u>biotic factors</u>	<u>abiotic factors</u>
animals	light
plants	temperature
7. Niche - unique role
8. The sun is the main ~~source~~ source of energy.
9. Energy flows through an ecosystem
10.  $6\text{CO}_2 + 6\text{H}_2\text{O} \xrightarrow{\text{light}} \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$

11.



12. (general) marsh grass → grasshopper → mouse → hawk  
 producer 1st consumer 2nd consumer top consumer

or

(more specific) producer → herbivore → 1st carnivore → top carnivore.

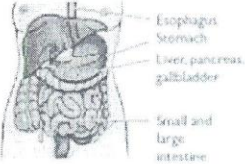
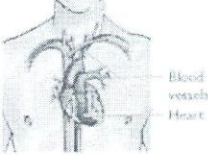
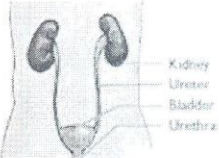
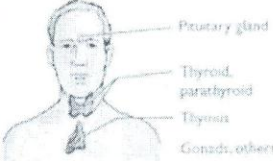
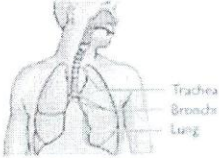

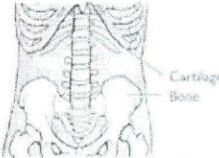
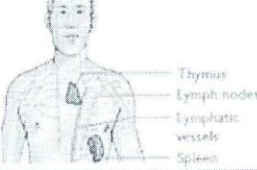
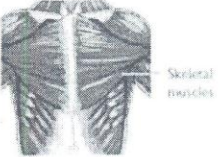


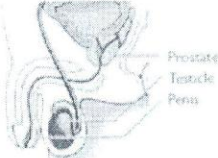
13. Owl pellets ⇒ see handouts.

14-a) pyramid of numbers, energy pyramid, biomass pyramid

b) pyramid of numbers + biomass pyramid.

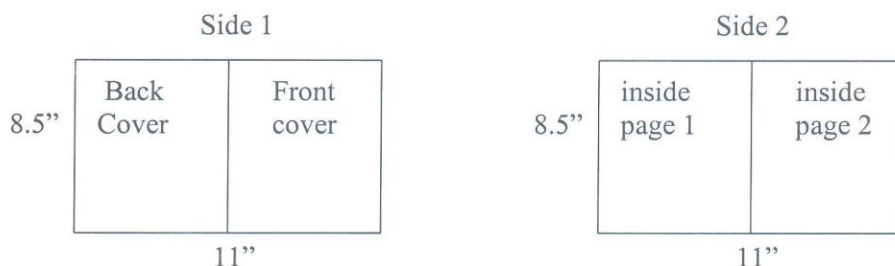
15.

TABLE 9.1 | Organs and Functions of the Human Organ Systems

Organ System	Function	Organ System	Function
<b>Digestive</b>  <p>Esophagus Stomach Liver, pancreas, gallbladder Small and large intestine</p>	<p>Ingests and breaks down food so that it can be absorbed by the body</p> <p>Chapter 7</p>	<b>Cardiovascular</b>  <p>Blood vessels Heart</p>	<p>Enables the transport of nutrients, gases, hormones, and wastes to and from cells of the body</p> <p>Chapter 9</p>
<b>Urinary</b>  <p>Kidney Ureter Bladder Urethra</p>	<p>Eliminates liquid wastes; regulates water balance</p> <p>Chapter 11</p>	<b>Endocrine</b>  <p>Pituitary gland Thyroid, parathyroid Thymus Gonads, others</p>	<p>Secretes hormones into bloodstream for regulation of body activities</p> <p>Chapter 16</p>
<b>Respiratory</b>  <p>Trachea Bronchi Lung</p>	<p>Enables gas exchange, supplying blood with oxygen and removing carbon dioxide</p> <p>Chapter 10</p>	<b>Nervous</b>  <p>Brain Spinal cord Nerves</p>	<p>Senses environment; communicates with and activates other parts of the body</p> <p>Chapters 14 and 15</p>
<b>Skeletal</b>  <p>Cartilage Bone</p>	<p>Provides mechanical support for the body; stores minerals; produces red blood cells</p> <p>Chapter 6</p>	<b>Lymphatic and Immune</b>  <p>Thymus Lymph nodes Lymphatic vessels Spleen</p>	<p>Protects against infections</p> <p>Chapter 12</p>
<b>Muscular</b>  <p>Skeletal muscles</p>	<p>Enables movement, posture, and balance via contraction and extension of muscles</p> <p>Chapter 6</p>	<b>Reproductive—Female</b>  <p>Ovary Uterus Cervix Vagina</p>	<p>Produces eggs and supports the development of offspring</p> <p>Chapter 18</p>
<b>Integumentary</b>  <p>Hair Nails Skin</p>	<p>Protects body from environment, injury, and infection; stores fat</p> <p>Chapter 3</p>	<b>Reproductive—Male</b>  <p>Prostate Testis Penis</p>	<p>Produces and delivers sperm and associated fluids</p> <p>Chapter 18</p>

Introduction to Environmental Science 120  
**Biome Travel Brochure**

You are going to create a 1 page, 2 sided travel brochure to a biome of your choice. Your project will be **word processed** with **color pictures** and information on your biome. You will follow the following format:



**Side One** of your sheet of paper will have the front and back covers of your brochure. The left half of your paper will be the back cover and the right half will be your front cover. The following content must be included:

Back Cover

- /5 5 neat and interesting facts about your biome, not mentioned elsewhere in your brochure
- /3 3 neat and interesting pictures related to the 5 facts above
- /4 4 URLs of sites used to obtain information

Front Cover

- /2 the large, boldfaced name of your biome described using alliteration (**Big Brown Bull**)
- /2 a map of the world, with your biome shaded in
- /2 a catchy slogan as to why we should visit your biome

**Side Two** of your sheet of paper will have the inside pages of your brochure with most of your information. The following content must be included:

Inside Page 1

- /2 average daily temperature of your biome
- /2 chart or graph of seasonal temperatures of your biome (with seasons and numbers)
- /2 average daily precipitation of your biome
- /2 chart or graph of seasonal precipitation of your biome (with seasons and numbers)
- /4 attire guide as how visitors should dress while visiting your biome & why
- /2 at least 2 activities that visitors will participate in while visiting your biome

Inside Page 2

- /4 fauna: 2 animals commonly found in your biome with a picture of each animal and at least 2 special adaptations each has for living in that biome
- /4 flora: 2 plants commonly found in your biome with a picture of each plant and at least 2 special adaptations each has for living in that biome

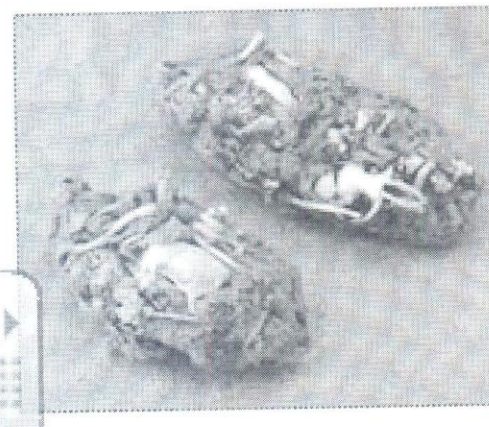
This project is worth 40 points. Brochures should be neat!

Due Date: \_\_\_\_\_



**Owl Pellet Dissection**

Some owls swallow small rodents and birds whole. Pellets begin forming within the digestive tract of an owl as soon as the prey is swallowed. Enzymatic juices break down the body tissues in the prey but leave the bony materials and hair or feathers undigested. Depending upon the prey eaten, the undigested portions may include beaks, claws, scales or insect exoskeletons. This type of material has little nutritional value. These materials form a pellet that is surrounded with the hair or feathers of the prey consumed. The pellet is then orally expelled, or regurgitated, 18 to 20 hours after feeding. Each pellet contains on average 3.3 animals. A one-year study of a particular barn owl revealed the following diet:



- 1407 mice
- 143 rats
- 7 bats
- 5 young rabbits
- 375 house sparrows
- 23 starlings
- 54 other birds
- 2 lizards
- 174 frogs
- 25 moths
- 52 crickets

**Materials:**

- one owl pellet from the barn owl *Tyto alba*
- dissecting needle/toothpicks and tweezers
- magnifying glass
- white glue
- white paper
- bone chart  
([http://www.biologycorner.com/resources/Owl\\_Pellet\\_Bone\\_Chart\\_grid.pdf](http://www.biologycorner.com/resources/Owl_Pellet_Bone_Chart_grid.pdf))
- mounting sheets