

## AP Bio Summer Assignment

Mrs. Mason

Welcome to AP Biology! I look forward to a great year. Due to the large volume of content we have to cover, your summer assignment will be to read the Ecology Unit--Chapters 52-56 in **Campbell Biology, 11th Edition** --and complete the following.

Support each of the following main ideas in *4-6 sentences* . Use *many* of the provided chapter terms in your answer, but do not feel that you need to use them all. Please *highlight the terms* that you choose to use in your responses. Use at least one other resource outside of the textbook in each summary and then cite the source. These resources may be reliable websites (not wikipedia), journal articles, books, and/or videos.

Your answers must be typed using *Times New Roman, 12-pt font, double-spaced*. Please be prepared to load them to Canvas on the first day of school. You should have approximately 8-10 pages of typed summary by the end of the summer. Please see the example and video references at the end of this document.

We will start the school year with a short ecology review followed by an ecology assessment before beginning a new unit.

### **Chapter 52: An Introduction to Ecology and the Biosphere**

- Main Ideas

- Earth's climate varies by latitude and season and is changing rapidly.
- The structure and distribution of terrestrial biomes are controlled by climate and disturbance.
- Aquatic biomes are diverse and dynamic systems that cover most of Earth.
- Interactions between organisms and the environment limit the distribution of species.

- Chapter Terms

- climate, microclimate, macroclimate, tropics, abiotic, biotic, biome, climograph, ecotone, canopy, disturbance, tropical dry forests, tropical rain forests, deserts, savannas, chaparral, temperate grasslands, temperate broadleaf forests, northern coniferous forest, tundra, photic zone, aphotic zone, pelagic zone, abyssal zone, benthic zone, benthos, detritus, thermocline, turnover, oligotrophic lakes, eutrophic lakes, littoral zone, limnetic zone, wetlands, estuary, headwater stream, turbid river, coral reef, deep-sea hydrothermal vents, dispersal

## Chapter 53: Population Ecology

- Main Ideas

- Biological processes influence population density, dispersion, and demographics.
- The exponential model describes population growth in an idealized, unlimited environment.
- The logistic model describes how a population grows more slowly as it nears its carrying capacity.
- Life history traits are products of natural selection.
- Many factors that regulate population growth are density dependent.

- Chapter terms

- Population, density, dispersion, mark-recapture method, immigration, emigration, territoriality, demography, life table, cohort, survivorship curve, reproductive table, exponential model, zero population growth, exponential population growth, carrying capacity, logistic growth model, logistic population growth, Allee effect, life history, semelparity, iteroparity, k-selection, r-selection, density dependent, density independent, population dynamics, metapopulation, demographic transition, age structure, ecological footprint

## Chapter 54: Community Ecology

- Main Ideas

- Community interactions are classified by whether they help, harm, or have no effect on the species involved.
- Diversity and trophic structure characterize biological communities.
- Disturbance influences species diversity and composition.
- Biogeographic factors affect community diversity.
- Pathogens alter community structure locally and globally.

- Chapter terms

- Interspecific interactions, interspecific competition, competitive exclusion, ecological niche, resource partitioning, character displacement, predation, aposematic coloration, cryptic coloration, herbivory, symbiosis, parasitism, parasite, host, endoparasites, ectoparasites, mutualism, commensalism, facilitation, species diversity, species richness, Shannon diversity, biomass, invasive species, trophic structure, food chain, food web, energetic hypothesis, dominant species, keystone species, nonequilibrium model, disturbances, intermediate disturbance hypothesis, ecological succession, primary succession, secondary succession, evapotranspiration, species-area curve, zoonotic pathogens, vector

○

## **Chapter 55: Ecosystems and Restoration Ecology**

- Main Ideas

- Physical laws govern energy flow and chemical cycling in ecosystems.
- Energy and other limiting factors control primary production in ecosystems.
- Energy transfer between trophic levels is typically only 10% efficient.
- Biological and geochemical processes cycle nutrients and water in ecosystems.
- Restoration ecologists return degraded ecosystems to a more natural state.

- Chapter terms

- Law of conservation of mass, primary producers, primary consumers, secondary consumers, tertiary consumers, decomposers/detritivores, detritus, primary production, net primary production, gross primary production, net ecosystem production, limiting nutrient, eutrophication, production efficiency, turnover time, bioremediation, biological augmentation

## Chapter 56: Conservation Biology and Global Change

- Main Ideas
  - Human activities threaten Earth's biodiversity.
  - Population conservation focuses on population size, genetic diversity, and critical habitat.
  - Landscape and regional conservation help sustain biodiversity.
  - Sustainable development can improve human lives while conserving biodiversity.
- Chapter terms
  - Conservation biology, endangered species, threatened species, ecosystem services, introduced species, extinction vortex, minimum viable population, effective population size, movement corridors, biodiversity hot spots, urban ecology, critical load, biological magnification, greenhouse effect, assisted migration, sustainable development

### Example

Main idea--Carbohydrates serve as fuel and building materials.

Terms--monomer, monosaccharides, glycosidic linkage, disaccharides, polysaccharides, starch, glycogen, cellulose, chitin

A carbohydrate is a large biological molecule that is made of many small molecules called **monomers**. The monomers that make a carbohydrate are simple sugars, or **monosaccharides**. Glucose is the monosaccharide that is used during cellular respiration to yield ATP. Two monosaccharides can join via a **glycosidic linkage** and form a **disaccharide**. **Polysaccharides** can be used as energy storage molecules, like **starch** in plants or **glycogen** in animals, or as structural molecules, like **cellulose** in plant cell walls or **chitin** in arthropod exoskeletons.

## Helpful Videos

Population Ecology

[https://youtu.be/RBOsqmBQBQk?list=PL8dPuuaLjXtNdTKZkV\\_GiIYXpV9w4WxbX](https://youtu.be/RBOsqmBQBQk?list=PL8dPuuaLjXtNdTKZkV_GiIYXpV9w4WxbX)

Community Ecology I

[https://youtu.be/GxE1SSqbSn4?list=PL8dPuuaLjXtNdTKZkV\\_GiIYXpV9w4WxbX](https://youtu.be/GxE1SSqbSn4?list=PL8dPuuaLjXtNdTKZkV_GiIYXpV9w4WxbX)

Community Ecology II

[https://youtu.be/mFDiiSqGB7M?list=PL8dPuuaLjXtNdTKZkV\\_GiIYXpV9w4WxbX](https://youtu.be/mFDiiSqGB7M?list=PL8dPuuaLjXtNdTKZkV_GiIYXpV9w4WxbX)

Ecological Succession

[https://youtu.be/mFDiiSqGB7M?list=PL8dPuuaLjXtNdTKZkV\\_GiIYXpV9w4WxbX](https://youtu.be/mFDiiSqGB7M?list=PL8dPuuaLjXtNdTKZkV_GiIYXpV9w4WxbX)

Ecosystem Ecology

[https://youtu.be/mFDiiSqGB7M?list=PL8dPuuaLjXtNdTKZkV\\_GiIYXpV9w4WxbX](https://youtu.be/mFDiiSqGB7M?list=PL8dPuuaLjXtNdTKZkV_GiIYXpV9w4WxbX)

Conservation and Restoration Ecology

[https://youtu.be/Kaeyr5-O2eU?list=PL8dPuuaLjXtNdTKZkV\\_GiIYXpV9w4WxbX](https://youtu.be/Kaeyr5-O2eU?list=PL8dPuuaLjXtNdTKZkV_GiIYXpV9w4WxbX)

Nutrient Cycling

[https://youtu.be/leHy-Y\\_8nRs](https://youtu.be/leHy-Y_8nRs)

---

Use the link below for **purchasing information for Campbell Biology, 11<sup>th</sup> edition**. It's available in hardback and e-book edition. Any format is acceptable. If e-book is purchased it must be available on the iPad.

<https://goo.gl/9RY2wK>

---

Have a great summer and please contact me with questions at [michellemason@thefirstacademy.org](mailto:michellemason@thefirstacademy.org)

- Michelle Mason