**APES Chapter 4: Biodiversity and Evolution**

**Note Taking Focus Questions**

**Directions:** Use the Cornell Method of note taking as you answer the questions below. Your notes must be **hand written** to receive credit for them. Within your notes, use the title for each subsection of notes which is *in italics and underlined.*

**Core Case Study p.78**

*Why are Amphibians Vanishing?*

1. What has happened to the populations of amphibians since 1980?

2. Explain the reasons why we should care if amphibian species become extinct.

**Section 4-1**

*4 Components of Biodiversity*

1. Define the term biodiversity.

2. Define and explain each for the 4 components of biodiversity discussed on p. 80-81 in italics – species diversity, genetic diversity, ecosystem diversity, functional diversity.

**Section 4-2**

*Evolution Accounts for Diversity*

1. Define the term biological evolution and explain how it happens through natural selection.

2. Explain how populations and not individuals evolve.

3. What is an adaptive trait?

4. List and explain the two limitations on adaptation through natural selection.

**Section 4-3**

*Geological Processes Affect Natural Selection*

1. What are two important effects on evolution and the distribution of life that tectonic plate drift has?

*Climate Change Affects Natural Selection*

2. How has the earth’s climate changed over time?

3. How have these changes in climate effected evolution?

*Catastrophes Affect Natural Selection*

4. What are some large scale catastrophes that can cause widespread destruction of ecosystems?

**Section 4-4**

*All Species Eventually Become Extinct*

1. Define the term extinction.

2. When environmental conditions change dramatically, what 3 choices do species have?

3. Define the term endemic species.

4. Where are they found, and give two reasons why they are especially vulnerable to extinction?

5. What is the background extinction rate – define it, give what it is based on, list the average annual %.

6. What is a mass extinction – define it, how many have happened, how does it provide an opportunity?

**Section 4-6**

*Roles Species Play In Ecosystems*

1. What is the difference between a habitat and a niche?

 (over)

2. What is the difference between species that are *generalists and specialists*? (Include the scope of their niche, what types of food they eat, and their tolerance for environmental conditions for each.)

*Case Study: The Giant Panda*

3. Is the giant panda a generalist or a specialist? What makes it so?

4. Describe some of the reasons why the giant panda is endangered?

3. What is the difference between *native and nonnative species*?

4. What are some additional names for nonnative species?

5. What are two things that can happen when a nonnative species is introduced into an area?

6. What are *indicator species*? Give some examples of indicator species.

7. What are *keystone species*? List a few important facts about them and describe one example.

*Case Study: The American Alligator*

8. For what reasons was the American alligator hunted to near the brink of extinction?

9. Why is the alligator a keystone species? What does it do that makes it so ecologically important – makes in a keystone species?

**Science Focus 4.3: Searching for the Causes of Amphibian Decline p. 94**

1. List and explain the causes for amphibian decline mentioned in this reading.

**Tying it all Together “Amphibians and Sustainability” p. 96.**

1.. If you were forced to choose between saving the giant panda form extinction and saying amphibians, which would you choose? Why?

2. How would you respond to someone who says that because extinction in s natural process, we should not worry about the loss of biodiversity when species become extinct largely as a result of human activities?