**APES Chapter 9: Sustaining Biodiversity: Saving Species and Ecosystem Services**

**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.*

**Section 9-1**

*Extinction is Irreversible*

1. Why is the loss of a keystone species especially bad?

2. What is a trophic cascade?

*Extinction Rate*

1. What are some causes of past mass extinctions?

2. How does the current rate of extinction compare to background extinction rate?

3. What is the project extinction rate by the end of this century?

*Why is this a big deal?*

1. What percentage of identified species could disappear?

2. What types of ecosystem services could disappear along with them?

*Some feel the projected extinction rates are too low.*

List and explain the 3 reasons why some scientists feel the projected rates are too low.

*Classification of Species in Decline*

Define the following terms: endangered species, threatened species, regionally extinct, functionally extinct.

*Characteristics that put species in danger of becoming extinct:*

List the characteristics summarized in figure 9-4 on p. 194.

**Section 9-2**

*Why should we care?*

1. List 3 ecosystem services the world’s species provide.

2. List 3 economic services the world’s species provide. Be sure to define bioprospectors and phytochemicals as part of this.

3. Explain the second and third reasons that we should care as listed by the author.

**Section 9-3**

*How do humans accelerate extinctions?*

1. What is the acronym that is designed to help people remember the greatest threats to biodiversity?

*H= Habitat Loss is the Greatest Threat*

1. List some examples of habitats that are being lost and what is happening to them.

2. Define habitat fragmentation including habitat islands in your explanation.

3. How is habitat fragmentation harmful for plant and animal populations?

*I = Invasive Species is the 2nd Greatest Threat*

1. List 4 ways nonnative species have been beneficial – what have they provided?

2. Why are some introduced species harmful?

3. What makes a species considered to be an invasive species?

4. Read the Kudzu vine and bug case study. Summarize how they were introduced and how they are examples of “invasive species”.

5. List some ways that species are accidentally introduced?

6. Read the Burmese Python case study. Summarize how they were introduced, what impact are they having, and why it is difficult to control them.

*Prevention is the Best Way to Reduce Threats from Invasive Species*

1. List and explain the 5 ways that the impact of invasive species could be reduced or prevented.

*P= Human Population Growth*

1. How has human population growth lead to a loss of biodiversity? Discuss several ways.

*P= Pollution*

\**Leave 1 or 2 lines to copy some notes from the power point.\**

1. What is bioaccumulation? Give an example of a chemical that will bioaccumulate and some organisms that have been impacted by that chemical.

*C = Climate Change*

1. What fraction of land animals and plants might be impacted by climate change?

2. Read the Polar Bear case study. Summarize how climate change will impact polar bears.

*O = Overexploitation*

1. List several reasons why organisms are illegally captured or killed.

2. What are some organisms that are being depleted this way?

3. Why has the demand for bushmeat increased?

4. How can the use of bushmeat cause human health problems?

5. What is USAID doing in an effort to reduce the unsustainable hunting?

6. Read the “Disturbing Message from the Birds” case study. Summarize why bird populations are in decline and why we should be concerned.

**Section 9-4**

*How can we sustain wild species?*

*International Treaties*

1. CITES: What does it stand for? year? # of countries? What does the law include? Level of enforcement?

2. CBD: What does it stand for? # of countries? What does the law include? Level of enforcement?

*U.S. Endangered Species Act*

1. Year and basic purpose of the law

2. Who is responsible for identifying and listing species?

3. What are the components of the law? (How are decisions made? Type of protection?)

4. What do opponents of the law say?

5. What do supporters of the law say?

6. How would supporters like to see the law improved?

*Establish Wildlife Refuges/Protected Areas*

1. How many refuges are them and what fraction of endangered/threatened species are found there?

2. What types of activities can take place there?

3. What are the drawbacks to wildlife refuges as a method to protect species?

*Seed Banks, Botanical gardens, and wildlife farms*

1. What are seed banks, and what are the drawbacks to seed banks?

2. What are botanical gardens, and what are there drawbacks?

3. What is a wildlife farm, and how does it help to sustain wild species?

*Zoos and Aquariums can Protect Some Species*

1. What is the long term goal of these zoos, games parks, and animal research centers?

2. How do they help to sustain/increase the animal populations?

3. What are the drawbacks associated with this method?

*Precautionary Principle*

1. What does the precautionary principle say?

2. How do scientists feel that we should apply this to the loss of biodiversity?