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**Activity 13: The Processes and Outcomes of Evolution**

**Directions: Read pages 489-496 in your Biology textbooks and answer the following questions in complete sentences.**

**Introduction**

1. **Define Microevolution.**
2. **Define Speciation.**
3. **Define Macroevolution.**
4. **Define Extinction.**

**Challenge**

**How do evolutionary processes lead to changes in biodiversity?**

**Reading**

1. **Identify the four main factors that lead to microevolutionary change.**
2. **What does variation provide for evolution?**
3. **How does this variation arise?**
4. **What are the 2 components of an organisms fitness?**
5. **What advantage do the most “fit” individuals have?**
6. **What would happen without “competition”?**
7. **What is “genetic drift”? What causes “genetic drift”?**
8. **What is “gene flow”? What causes “gene flow”?**
9. **A species is defined a group of living organisms consisting of similar individuals capable of exchanging genes or interbreeding. Organisms of the same species make up a population. Populations share a common “gene pool”. How does migration influence “gene flow” and therefore a “gene pool”?**
10. **How can a barrier impact “gene flow”? What can this lead to?**
11. **Another name for adaptations is adaptive character. Define “adaptation”.**
12. **What is the main difference between “adaptive traits” and “physical adaptations”? Provide an example.**

**Examples of Adaptations**

**Directions: Read about the examples of adaptations on page 493 and describe each of the following:**

1. **A Physical Adaptation in Venomous Snakes**
2. **A Behavioral Adaptation in Honeybees**
3. **A Biochemical Adaptation in Insect-Pollinated Orchids**
4. **What is the first step in the evolution of a new species?**
5. **Briefly discuss how cichlid fish in Africa provide an example of how geographic isolation leads to the development of new species.**
6. **Briefly discuss how the Galapagos finches provide an example of how a group of species evolved through adaptive radiation.**
7. **How did Darwin use this information?**
8. **What did the variations in beak size and shape suggest about food sources?**
9. **Over time, this what happened with the survival of birds?**
10. **What does macroevolution lead to?**
11. **What shapes macroevolution?**
12. **How do scientists study macroevolutionary processes?**
13. **What percent of species that have existed on Earth are believed to be extinct?**
14. **What factors lead to extinction? Provide an example.**
15. **When did the largest know mass extinction occur? What was the cause of this extinction?**
16. **What are the 3 theories scientist debate to explain the extinction of the dinosaurs?**
17. **As taxa have gone extinct, what has occurred as a result?**

**Analysis**

1. **How does each of the following lead to extinction?**
   1. **Environmental changes**
   2. **Lack of population diversity**
2. **In what ways do humans affect speciation, extinction, and biodiversity.**