***Unit 2 AP Environmental Science Learning Targets/Success Criteria***

**The Living World: Biodiversity**

**6-8% of AP Exam**

**Unit Enduring Understandings:**

1. Ecosystems have structure and diversity that change over time.

**EXPECTATIONS:**

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| **Topic** | **Learning Targets (I can …) and** Success Criteria (I am learning how …)  *Learning targets are in bold with their success criteria listed beneath* | **✔** |
| **2.1** | **Explain levels of biodiversity and their importance to ecosystems.** |  |
|  | Biodiversity in an ecosystem includes genetic, species, and habitat diversity. |  |
|  | The more genetically diverse a population is, the better it can respond to environmental stressors. Additionally, a population bottleneck can lead to a loss of genetic diversity. |  |
|  | Ecosystems that have a larger number of species are more likely to recover from disruptions. |  |
|  | Loss of habitat leads to a loss of specialist species, followed by a loss of generalist species. It also leads to reduced numbers of species that have large territorial requirements. |  |
|  | Species richness refers to the number of different species found in an ecosystem. |  |
| **2.2** | **Describe ecosystem services.** |  |
|  | There are four categories of ecosystem services: provisioning, regulating, cultural, and supporting. |  |
|  | **Describe the results of human disruptions to ecosystem services.** |  |
|  | Anthropogenic activities can disrupt ecosystem services, potentially resulting in economic and ecological consequences. |  |
| **2.3** | **Describe island biogeography.** |  |
|  | Island biogeography is the study of the ecological relationships and distribution of organisms on islands, and of these organisms’ community structures. |  |
|  | Islands have been colonized in the past by new species arriving from elsewhere |  |
|  | **Describe the role of island biogeography in evolution** |  |
|  | Many island species have evolved to be specialists versus generalists because of the limited resources, such as food and territory, on most islands. The long-term survival of specialists may be jeopardized if and when invasive species, typically generalists, are introduced and outcompete the specialists. |  |
| **2.4** | **Describe ecological tolerance.** |  |
|  | Ecological tolerance refers to the range of conditions, such as temperature, salinity, flow rate, and sunlight that an organism can endure before injury or death results. |  |
|  | Ecological tolerance can apply to individuals and to species. |  |
| **2.5** | **Explain how natural disruptions, both short and long-term, impact and ecosystem.** |  |
|  | Natural disruptions to ecosystems have environmental consequences that may, for a given occurrence, be as great as, or greater than, many human-made disruptions. |  |
|  | Earth system processes operate on a range of scales in terms of time. Processes can be periodic, episodic, or random. |  |
|  | Earth’s climate has changed over geological time for many reasons |  |
|  | Sea level has varied significantly as a result of changes in the amount of glacial ice on Earth over geological time. |  |
|  | Major environmental change or upheaval commonly results in large swathes of habitat changes. |  |
|  | Wildlife engages in both short- and long-term migration for a variety of reasons, including natural disruptions. |  |
| **2.6** | **Describe how organisms adapt to their environment.** |  |
|  | Organisms adapt to their environment over time, both in short- and long-term scales, via incremental changes at the genetic level. |  |
|  | Environmental changes, either sudden or gradual, may threaten a species’ survival, requiring individuals to alter behaviors, move, or perish. |  |
| **2.7** | **Describe ecological succession.** |  |
|  | There are two main types of ecological succession: primary and secondary succession. |  |
|  | A keystone species in an ecosystem is a species whose activities have a particularly significant role in determining community structure. |  |
|  | An indicator species is a plant or animal that, by its presence, abundance, scarcity, or chemical composition, demonstrates that some distinctive aspect of the character or quality of an ecosystem is present. |  |
|  | **Describe the effect of ecological succession on ecosystems.** |  |
|  | Pioneer members of an early successional species commonly move into unoccupied habitat and over time adapt to its particular conditions, which may result in the origin of new species. |  |
|  | Succession in a disturbed ecosystem will affect the total biomass, species richness, and net productivity over time. |  |