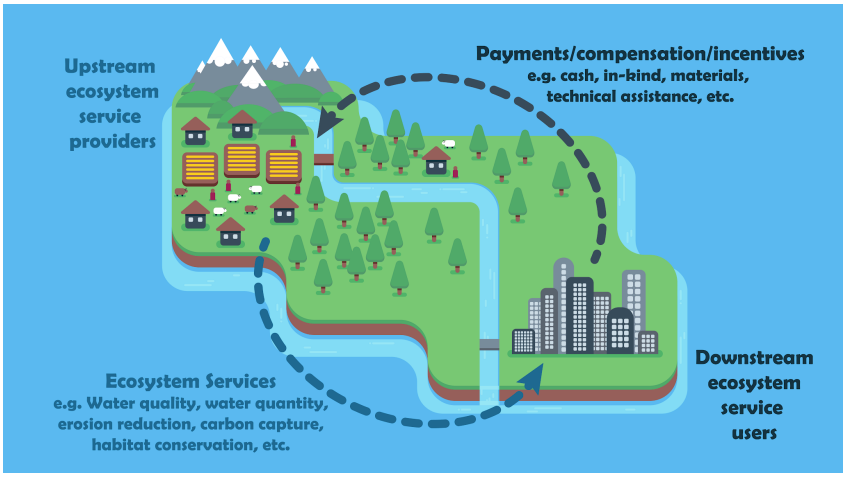
Unit 2: The Living World — Biodiversity

Exam Weighting: 6–8%



Job 12:7-8 (NLT)

"Just ask the animals, and they will teach you.
Ask the birds of the sky, and they will tell you.

Speak to the earth, and it will instruct you.
Let the fish in the sea speak to you."

Mastered	Learning Targets and Knowledge
Topic 2.1: Introduction to Biodiversity	
	I can 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.
Topic 2.2: Ecosystem Services	
	I can describe ecosystem services and the results of human disruptions to those services.
	There are four categories of ecosystem services: provisioning, regulating, cultural, and supporting.
	Anthropogenic activities can disrupt ecosystem services, potentially resulting in economic and ecological consequences.
Topic 2.3: Island Biogeography	
	I can explain the theory of island biogeography and its role in evolution.
	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.
	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.
Topic 2.4: Ecological Tolerance	
	I can explain 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.
Topic 2.5: Natural Disruptions to Ecosystems	
	I can explain how natural disruptions, both short and long-term, impact an 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.
Topic 2.6: Adaptations	
	I can explain 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.
Topic 2.7: Ecological Succession	
	I can describe ecological succession and the effect it has on ecosystems.
	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
	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.

Enduring Understandings
Ecosystems have structure and diversity that change over time. (ERT)

Science Practices	
Concept Explanation	Describe environmental concepts and processes.
	Explain environmental concepts and processes.
Text Analysis	Identify the author's claim.
Data Analysis	Describe patterns or trends in data.
	Describe relationships among variables in data represented.
	Explain patterns and trends in data to draw conclusions.