

**Worksheet answers**

Environmental factors that affect an ecosystem can be divided into two categories:

- Biotic components (the living components of an ecosystem)**  
 Biotic conditions include the way in which organisms interact with one another and with their local habitat. These components exist between individuals of the same species (intraspecific) and between different species (interspecific). Examples of intraspecific interactions include competition or cooperation. Interspecific interactions include mutualism, competition, predation and parasitism.
- Abiotic components (the non-living physical and chemical factors of an ecosystem)**  
 These factors are numerous and vary dependant upon local habitat. They include factors such as light, radiation, temperature, water, chemicals, gases, wind and soil. In some environments, such as marine environments, pressure and sound can be important abiotic components.

1. After watching the video complete the table below, using at least one example for each factor:

FACTOR	TYPE (BIOTIC OR ABIOTIC)	EFFECT THIS FACTOR HAS ON THE ECOSYSTEM
Amazon River	<i>abiotic</i>	<i>The Amazon River provides and removes excess water to and from the environment. This allows for roles in respiration, photosynthesis and all associated ecosystem activities.</i>
sunlight	<i>abiotic</i>	<i>Sunlight provides the initial energy for photosynthetic producers of the ecosystem. It also provides warmth. The large quantity and even amount of sunlight throughout the year provides good growing conditions for plants.</i>
temperature	<i>abiotic</i>	<i>A stable temperature provides optimum growing conditions for plants and animals. It also provides optimum conditions for enzymatic activity.</i>
rainfall	<i>abiotic</i>	<i>Rainfall provides water to the environment. Water has roles in respiration, photosynthesis and all associated ecosystem activities.</i>
epiphytes	<i>biotic</i>	<i>This is a relationship between plants where one grows on another seeking little or no benefit from the other.</i>
predation	<i>biotic</i>	<i>Predation is a biological interaction where a predator organism feeds on another organism (prey). This interaction is at the heart of the food web and chains of an ecosystem.</i>
carbon storage	<i>biotic</i>	<i>Sequestration of carbon results as plants photosynthesise, removing carbon from the air as carbon dioxide and providing the structure and strength in cells.</i>

2. What names are given to layers of a forest?

*emergent layer: the tallest trees emerge, adequate sunlight*

*canopy layer: primary layer forming the canopy, many plants at this level, light is abundant*

*understorey layer: little light reaches this layer, any plants at this height are small, large numbers of insects in this layer*

3. How do different layers of a rainforest contribute to biomass?

*The emergent layer has little impact as few trees reach it. The canopy layer has a large biomass with abundant sunlight providing large amounts of plants and subsequent biomass. The understorey has a large amount of biomass comprised mostly of decomposers.*

4. Explain why trees of the Amazon rainforest provide a high amount of biodiversity and productivity.

*Large numbers of trees with stable factors such as temperature and sunlight provide good conditions for growth. This in turn provides a large base for ecosystems, resulting in high biodiversity and productivity.*