



RADLEY

2021 Academic Scholarship Examination Paper

STAGE TWO

BIOLOGY

23 – 25 February 2021

Time allowed: 30 minutes

Total marks: 33

PLEASE WRITE IN BLACK INK

You will be given a passage to read on a Biological topic. Please study this carefully and use the information in it, and your own knowledge, to answer the questions which follow.

Write your answers on lined paper, with your name clearly marked at the top of each page

You are expected to be able to write accurate, grammatical, well-punctuated prose throughout.

Dictionaries / Calculators are not allowed.

There are 33 marks available for this Examination.

Conserving Cusuco's Cloud Forest



Cusuco National Park, North West Honduras, June 2010. I had just finished the first year of my undergraduate degree studying Natural Sciences. It was the first night of **jungle** training; we were on the receiving end of a hurricane's torrential rain and this inexperienced camper had failed to put her hammock up correctly. Fortunately, however, this gave me the opportunity to stay up, drying out by the camp fire discussing all things cloud forest with a local guide and it was evident from the wide range of topics covered that Cusuco was a forest rich in **biodiversity** but also one facing a variety of threats. In

the weeks that followed I took part in various biological surveys and quickly discovered how tough they were. Although they may be charismatic, studying mammals largely involves walking for miles, staring at the ground and getting excited about their poo!

Cusuco first became a National Park in 1987 because Honduras wanted to protect mountain forests due to their key function of providing drinking water to surrounding communities. This also led to the beginning of annual surveys in the Park in 2006 by Operation Wallacea, which prompted recognition of its high levels of biodiversity and **endemism**.

However, patches of **deforestation** have continued appearing throughout the park. Groups of hunters still came because enforcement of protective laws was ineffectual.

Deforestation affects the **watershed** but educational programs about the forest's importance for water supply have been set up. The government also set up military patrols to reduce habitat loss and **degradation**. Mammals are so **elusive** population changes can be at risk of going unnoticed as they get rare. During my study, we found that there have been declines across most mammalian types since surveys began, although the army patrols have made the decline slower.



The use of freely available satellite data on forest change (you can look at this for yourself at www.globalforestwatch.org) identified hotspots of deforestation and other likely human effects. Camera trapping is becoming increasingly predominant for mammal surveys. They are ideal for studying elusive mammalian species and the risk of misidentification – relatively common through the use of **spoor** (i.e. tracks and signs) – to defer mammalian presence in transect surveys is reduced. In Cusuco these cameras have proved the presence top predators such as jaguar (*Panthera onca*) and highlighted the rarity of Baird's tapir (*Tapirus bairdii* – a type of South American wild boar) for which Cusuco should be an area of **population** stronghold.

Details of my studies have been sent to to local Government, forestry managers, patrol wardens, legislative enforcement officers and **conservation** charities to help them. Similar to recent calls on

climate action, there is no room for waiting if mammal population collapses are to be avoided. Business as usual will not be enough – we have to do more, and now.

Adapted from an article by Hannah Hoskins for Operation Wallacea, who run Radley College's Sixth Form Expeditions to Honduras and Sulawesi - www.opwall.com



Using the information in the passage and your own knowledge, answer these questions:

1. What is meant in the passage by the words underlined as follows:
 - i. Jungle
 - ii. Biodiversity
 - iii. Endemism
 - iv. Deforestation
 - v. Watershed
 - vi. Habitat Degradation
 - vii. Elusive
 - viii. Spoor
 - ix. Population
 - x. Conservation[10]
2. Describe three ways in which information could be collected about the Mammal species present in Cusuco National Park. [3]
3. Describe the various features which set mammals apart from other types of animal. [4]
4. Name two other types of vertebrate besides mammals. [2]
5. Describe some of the problems that can be caused by deforestation (pictured). Explain why they are important. [2]
6. Baird's tapirs are herbivores eaten by jaguars. Write down a food chain that involves these and other organisms referred to in the passage. [2]
7. Explain three ways in which humans can cause problems in Cusuco [3]
8. The Jaguar, Panther and Lion have the scientific names *Panthera onca*, *Panthera pardus* and *Panthera leo* respectively. What can this tell us about them? Explain why scientific names can be useful. [2]
9. The UK used to have its own species of tapir-like animal: the wild boar. These went extinct due to over-hunting in the 1600's but some have been re-introduced to the UK in recent years, something which has been controversial for some people. Write a short paragraph to discuss the pros and cons of reintroducing an animal like the wild boar, and explain whether you think it is a good idea or not? [5]

TOTAL = 33 MARKS