

A Level Biology A
H420/02 Biological Diversity

Question Set 1

1 The Madidi National Park, in the South American rainforest, is home to a wide variety of species.

The largest predator in the area is the jaguar. These large cats are well camouflaged and hunt mostly at night. A single individual can cover a very large area.

(a) In 2007 the Wildlife Conservation Society (WCS) attempted to estimate the population of jaguars in the Madidi National Park.

- Digital camera traps were placed in areas that jaguars were likely to visit.
- If an infrared beam was broken by an animal, the camera was activated.
- The camera then took a photograph of the animal.

(i) Suggest why it was **not** appropriate to estimate the number of jaguars using the capture-recapture technique.

The estimate will be inaccurate because of the low numbers but also it's dangerous to capture jaguar.

[2]

(ii) Most studies estimate the population density of jaguars in the South American rainforest to be 5 individuals per 100 km².

In the 2007 study:

- 100 camera traps were set up covering an area of 271 km².
- 28 images of 9 different jaguars were recorded.

How well do these results support a population estimate of 5 individuals per 100 km²?

[4]

9 jaguars in 271 km² means there are about 3.3 jaguars per 100 km² which is lower than the estimate (5 per 100 km²). Hence the result does not support the estimate. To ensure the observed result is reliable, the study should be repeated. Some of the reasons why the estimate is higher than observed is because some jaguars may not have been photographed or since many individuals not trapped population could be higher than estimate.

(iii) Other evidence used to estimate the jaguar population includes footprints and reports of sightings by local humans.

Suggest one disadvantage of each of these methods for estimating the size of the jaguar population.

human sightings seeing / counting the same jaguar twice

footprints might disappear before recording

[2]

- (b) The Madidi National Park is also home to approximately 260 000 humans who support themselves by means of cattle-farming, and the production of timber and brazil nuts (a large nut harvested from a local native tree).

Conservationists have been working with:

- local people to promote sustainable use of these resources; and
- government agencies to maintain the quality of the national park.

Explain why the Madidi National Park is an example of conservation rather than preservation.

It's conservation because there are local people there. If it was preservation people would not be there. Farming and nut production are not consistent with preservation. Active measures allow the biodiversity to be maintained. Preservation would leave the park untouched by people. [3]

Total Marks for Question Set 1: 11

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