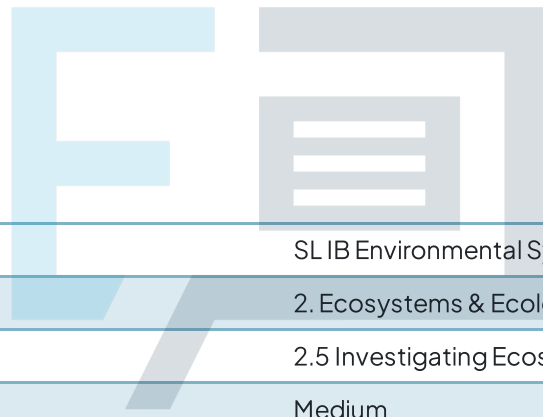




# 2.5 Investigating Ecosystems

## Question Paper



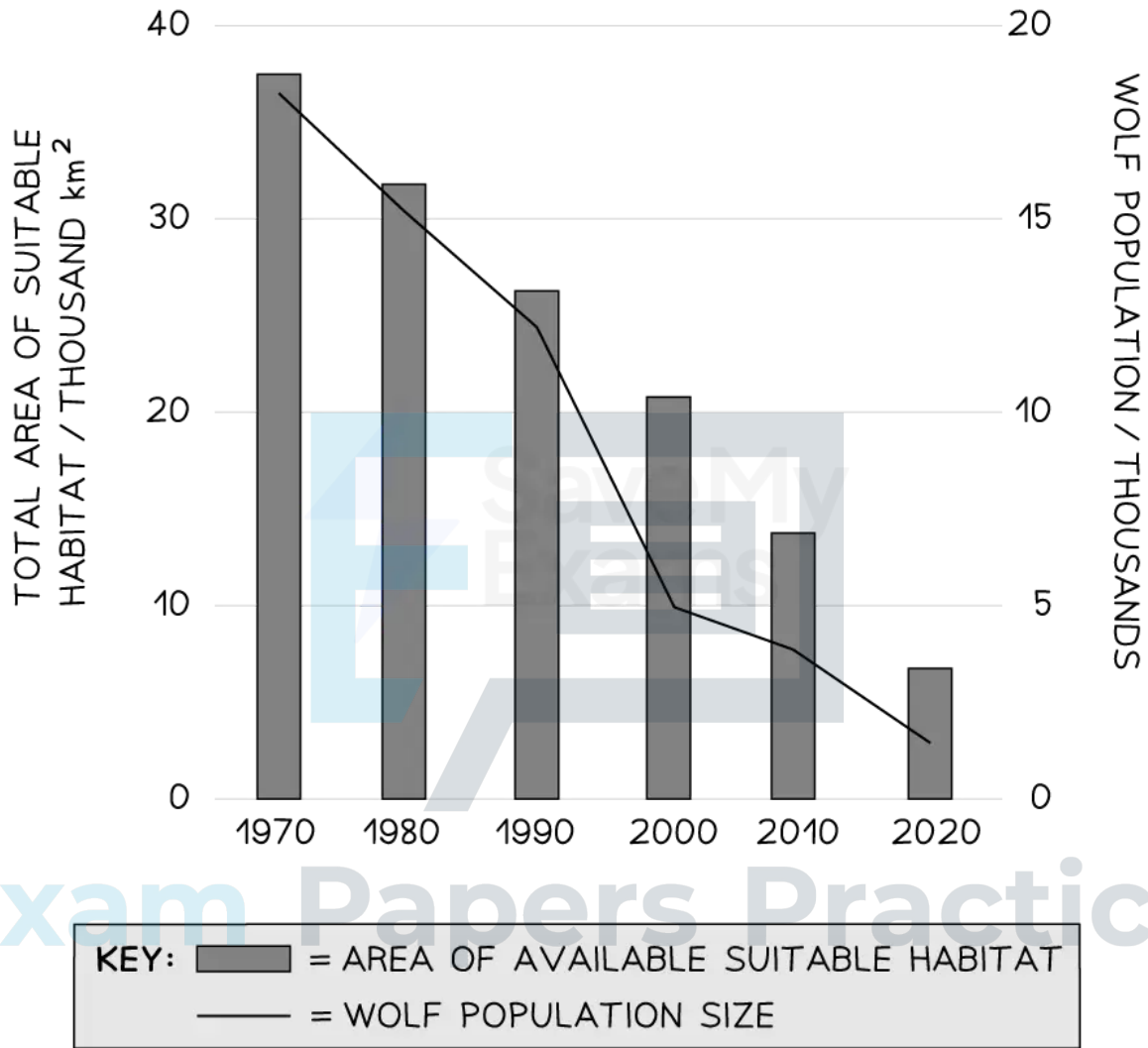
Course	SL IB Environmental Systems & Societies (ESS)
Section	2. Ecosystems & Ecology
Topic	2.5 Investigating Ecosystems
Difficulty	Medium

# Exam Papers Practice

To be used by all students preparing for  
SL IB Environmental Systems & Societies (ESS)  
Students of other boards may also find this useful

**Question 1a**

The figure below shows the data for a wolf population and the amount of suitable habitat that is available to the wolves.



Copyright © Save My Exams. All Rights Reserved

Suggest **one** possible method for estimating the wolf population size.

[1 mark]

**Question 1b**

Outline **two** reasons why collecting this type of data on wolves might be challenging.

[2 marks]

### Question 2a

Lichens are organisms that grow well on stone walls in unpolluted air. Lichens grow less well in polluted air.

Car exhaust fumes contain sulfur dioxide that pollutes air.

A scientist investigates the effect of pollution by cars in a city.

This is their method:

- Measure the percentage area of a stone wall in the city centre covered by lichen
- Repeat this measurement at different distances from the city centre

The table shows their results.

Distance from city centre in km	Percentage area covered by lichen (%)
0	0
2	6
4	20
6	30
8	50
10	64
12	70

Explain the results shown in the table.

**Exam Papers Practice** [2 marks]

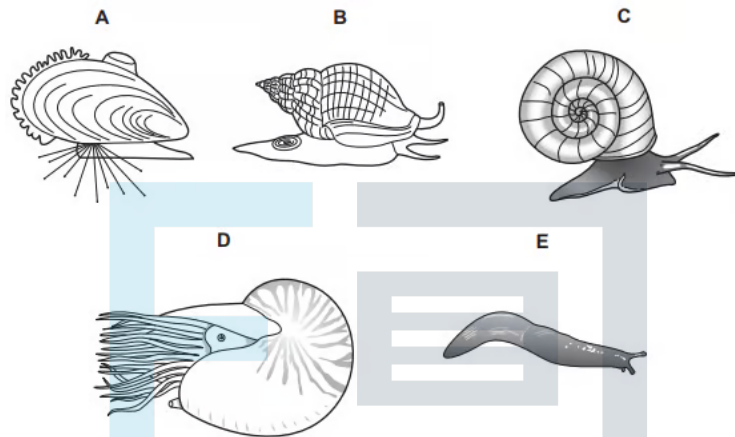
### Question 2b

Describe a method to measure the percentage of a stone wall covered by lichen.

[4 marks]

### Question 3a

Use the dichotomous key provided to identify the organisms below.



KEY		
1 (a)	Body is completely or partly covered in a shell	Go to 2
(b)	Body is not completely or partly covered in a shell	<i>Limax flavus</i>
2 (a)	Shell is attached to rocks by thin threads	<i>Mytilus edulis</i>
(b)	Shell is not attached to rocks by thin threads	Go to 3
3 (a)	Shell is a spire that comes to a point	<i>Buccinum undatum</i>
(b)	Shell is not a spire that comes to a point	Go to 4
4 (a)	Animal has tentacles	<i>Nautilus pompilius</i>
(b)	Animal has 2 tentacles	<i>Planorbis planorbis</i>

[5 marks]

### Question 3b

Identify **three** limitations of using dichotomous keys for identifying organisms.

[3 marks]



# Exam Papers Practice

### Question 4a

A group of students compares the distribution of plant species in two fields using the following method:

- Use random sampling
- Use a 0.5 m × 0.5 m quadrat
- Count the number of each species in a quadrat
- Repeat this method for five quadrats in each field

The tables below show the students' results.

Species	Field A						
	Number of plants in each quadrat						Number of plants per m <sup>2</sup>
	First	Second	Third	Forth	Fifth	Mean	
Dandelion	7	0	6	3	4	4	16
Buttercup	2	1	0	3	2	2	6
Violet	1	0	2	1	2	1	5
Heather	2	3	1	2	1	2	7

Species	Field B						
	Number of plants in each quadrat						Number of plants per m <sup>2</sup>
	First	Second	Third	Forth	Fifth	Mean	
Dandelion	7	3	2	1	2		
Buttercup	0	0	0	0	0	0	0
Violet	0	0	0	1	0	0	0
Heather	0	0	0	0	0	0	0

- i) Describe how the students would obtain random samples from each field. [2]
- ii) Calculate the mean number of dandelions per quadrat in field B. [1]
- iii) Calculate the number of dandelions per m<sup>2</sup> in field B. [1]
- [4 marks]**

**Question 4b**

Describe the differences in species distribution in field **A** and field **B**.

[3 marks]



Exam Papers Practice