

GCSE Combined Science: Trilogy

Worksheet: Extinction

TIME 35 min	TOTAL 31 marks	CALCULATOR Allowed	DIFFICULTY Easy, Medium
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Topics: Extinction

NAME	CLASS	DATE
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- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Answer all questions in the spaces provided.
- In all calculations, show clearly how you work out your answer.
- The marks for questions are shown in brackets.

01

A species of parrot lives only in the forests of one island. Each km² of forest supports about 2 parrots.

Between 1996 and 2006 the area of forest fell from 720 km² to 540 km², because forest was cleared to grow crops.

01.1

Calculate the decrease in the number of parrots that the forest can support.

Decrease in number of parrots =

[2 marks]

01.2

Give **one** factor, other than the loss of habitat, that can contribute to the extinction of a species.

[1 mark]

0 2

A species of frog lives only in the wetlands of one valley. Each hectare of wetland supports about 25 frogs.

Between 1993 and 2008 the area of wetland fell from 120 hectares to 66 hectares, because wetland was drained for building.

0 2 . 1

Calculate the decrease in the number of frogs that the wetland can support.

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Decrease in number of frogs =

[2 marks]

0 2 . 2

Give **one** factor, other than the loss of habitat, that can contribute to the extinction of a species.

.....

.....

[1 mark]

0 3

Extinction occurs when there are no remaining individuals of a species still alive. Several different factors can contribute to the extinction of a species.

0 3 . 1

Table 1

Example	Factor (letter)
A volcano erupts and destroys all of the forest on the only island where a species of snail lives.	
A fungus that kills frogs is carried to a new country.	
Cats brought to an island hunt a species of bird that nests on the ground.	
An introduced species of snail eats the same food as a native snail and reproduces faster.	

Table 1 gives four examples. For each example, write the letter of the factor it describes.

- A a new predator
- B a new disease
- C a new, more successful competitor
- D a single catastrophic event

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[4 marks]

0 3 . 2

Which event is most likely to cause the extinction of many species all over the world at the same time?

Tick (✓) **one** box.

A collision with a large asteroid

☐

A new predator arriving on an island

☐

A new disease of one species of tree

☐

Hunting of one species by humans

☐

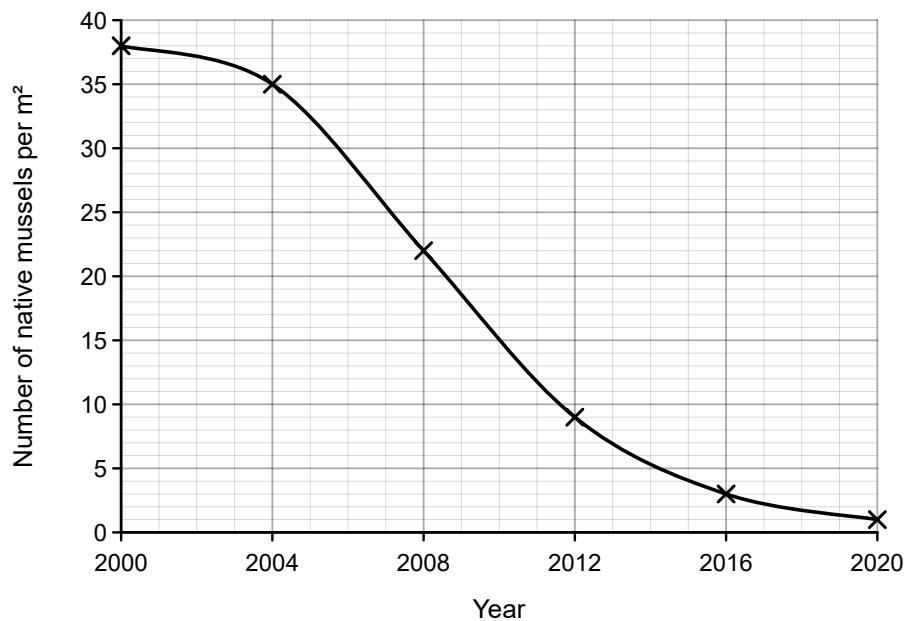
[1 mark]

0 4

A species of native freshwater mussel lives in a lake. In 2002 an invasive species of mussel was accidentally brought into the lake on a boat. The invasive mussels attach themselves in large numbers to the native mussels and to the lake bed, and they filter the same food from the water.

Figure 1 shows the population density of the native mussel.

Figure 1



0 4 . 1

Use Figure 1 to estimate the number of native mussels per m² in 2010.

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Number per m² =

[1 mark]

0 4 . 2

Calculate the percentage decrease in the number of native mussels per m² between 2000 and 2016.

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.....

Percentage decrease = %

[2 marks]

0 4 . 3

Explain how the invasive mussel could cause the native mussel to become extinct in the lake.

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[3 marks]

0 4 . 4

Suggest **one** way that people could reduce the risk of the invasive mussel spreading to other lakes.

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.....

[1 mark]

.....

0 5

A species of flightless bird lived only on one small island. The birds nested on the ground. In 1880, ships brought rats to the island for the first time. Rats eat eggs and chicks.

Table 2 shows the number of breeding pairs of the bird on the island.

Table 2

Year	Number of breeding pairs
1870	1200
1890	760
1910	310
1930	85
1950	0

0 5 . 1

Calculate the percentage decrease in the number of breeding pairs between 1870 and 1910.

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Percentage decrease = %

[2 marks]

0 5 . 2

Suggest why the arrival of rats caused this species of bird to become extinct.

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[3 marks]

0 5 . 3

Suggest **one** other factor that may have contributed to the extinction of this bird.

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[1 mark]

0 6

Two species of bird live in the same forest.

- Species S feeds only on the seeds of one type of pine tree.
- Species G eats seeds, fruits and insects from many different plants.

A disease is killing many of the pine trees in the forest. Table 3 shows the results of surveys in the forest.

Table 3

Year	Number of pine trees per hectare	Number of pairs of species S	Number of pairs of species G
2010	120	46	52
2015	85	31	50
2020	40	12	49

0 6 . 1

Describe how the numbers of the two bird species changed between 2010 and 2020.

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[2 marks]

0 6 . 2

Explain why species S is much more likely than species G to become extinct in this forest.

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[3 marks]

0 6 . 3

Calculate the percentage decrease in the number of pine trees per hectare between 2010 and 2020.

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.....

Percentage decrease = %

[2 marks]

END OF QUESTIONS

Original practice questions written to match the specification. Not produced by, affiliated with or endorsed by AQA.

Mark scheme

GCSE Combined Science: Trilogy · Worksheet: Extinction · 31 marks

Question 1 (3 marks)

01.1 [2 marks]

Answer: 360

- decrease in area = $720 - 540 = 180 \text{ km}^2$ (1)
- $180 \times 2 = 360$ (1)

Notes: An answer of 1080 (the number the remaining forest can support) scores 1 mark.

01.2 [1 mark]

- new predators (1)
- new diseases (1)
- new, more successful competitors (1)
- a single catastrophic event, e.g. a volcanic eruption or an asteroid collision (1)
- changes to the environment / climate (1)
- hunting by humans (1)

Any 1 of the points above.

Question 2 (3 marks)

02.1 [2 marks]

Answer: 1350

- decrease in area = $120 - 66 = 54$ hectares (1)
- $54 \times 25 = 1350$ (1)

Notes: An answer of 1650 (the number the remaining wetland can support) scores 1 mark.

02.2 [1 mark]

- new predators (1)
- new diseases (1)
- new, more successful competitors (1)
- a single catastrophic event, e.g. a volcanic eruption or an asteroid collision (1)
- changes to the environment / climate (1)
- hunting by humans (1)

Any 1 of the points above.

Question 3 (5 marks)

03.1 [4 marks]

Answer: D; B; A; C

- volcano: D (1)
- fungus: B (1)
- cats: A (1)
- introduced snail: C (1)

03.2 [1 mark]

Correct: A collision with a large asteroid

Question 4 (7 marks)

04.1 [1 mark]

Answer: 15

- 15 (allow 14–16) (1)

04.2 [2 marks]

Answer: 92.1%

- $(38 - 3) \div 38 \times 100$ (1)
- 92.1 (%) (1)

Notes: Allow 92.

04.3 [3 marks]

- the invasive mussel is a new, more successful competitor (1)
- it takes the food that the native mussel needs / covers the native mussels so they cannot feed (1)
- it takes the space on the lake bed (1)
- so native mussels die or cannot reproduce, and their numbers fall (1)
- until there are too few left to breed (1)

Any 3 of the points above.

04.4 [1 mark]

- clean and check boats and equipment before moving them to another lake (1)
- do not move water, plants or animals between lakes (1)
- restrict boats from moving between lakes (1)

Any 1 of the points above.

Question 5 (6 marks)

05.1 [2 marks]

Answer: 74.2%

- $(1200 - 310) \div 1200 \times 100$ (1)
- 74.2 (%) (1)

Notes: Allow 74 or 74.17. An answer of 74.2 scores 2 marks.

05.2 [3 marks]

- rats were a new predator (on the island) (1)
- the birds had no adaptations / defences against rats (e.g. they nested on the ground) (1)
- rats ate eggs / chicks, so fewer young survived to breed (1)
- (so) deaths were greater than births / the population kept falling (1)
- the birds could not fly away / lived only on this island, so they could not escape (1)

Any 3 of the points above.

05.3 [1 mark]

- rats may have competed with the birds for food (1)
- rats / people may have brought a new disease (1)
- habitat destruction by people who arrived on the ships (1)
- hunting by people (1)

Any 1 of the points above.

Question 6 (7 marks)

06.1 [2 marks]

- species S decreased (from 46 to 12 pairs) (1)
- species G stayed about the same (52 to 49 pairs) (1)

06.2 [3 marks]

- species S depends on only one food source, the pine seeds (1)
- as the pine trees die there is less food for S, so fewer survive and breed (1)
- species G can eat other foods, so it is less affected by the loss of the pine trees (1)
- if all the pine trees die, species S will have no food at all (1)

Any 3 of the points above.

06.3 [2 marks]

Answer: 66.7%

- $(120 - 40) \div 120 \times 100$ (1)
- 66.7 (%) (1)

Notes: Allow 67.
