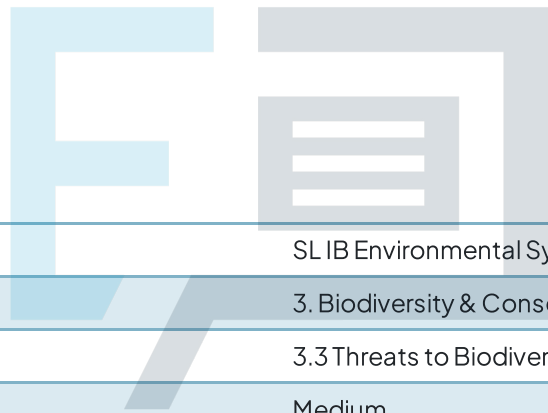




3.3 Threats to Biodiversity

Mark Schemes



Course	SL IB Environmental Systems & Societies (ESS)
Section	3. Biodiversity & Conservation
Topic	3.3 Threats to Biodiversity
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

1a

Indicative Content	Commentary
<p><i>This plant has become an endangered species because:</i></p> <p>Any three from the following:</p> <ul style="list-style-type: none">• It is large / colourful SO it is easy to detect; [1 mark]• It may be taken by collectors; [1 mark]• It may be sold / (illegally) traded / used in traditional medicine; [1 mark]• It may be destroyed due to the (bad) smell; [1 mark]• It's habitat is being destroyed / named reason for habitat destruction e.g. effect of grazing / building / agriculture / deforestation; [1 mark]• Other possible reasons e.g not easily pollinated / flowers infrequently / flowers for a (very) short time; [1 mark]	<p>Endangered species are organisms that face a high risk of extinction in the wild. This critical status is typically caused by a combination of factors, These factors can be natural, but often, they are human-induced</p> <p>Examples of factors are:</p> <ul style="list-style-type: none">• Pollution• Habitat loss and fragmentation• Invasive species• Climate change• Human disturbance• Genetic isolation

1b

Indicative Content
<p><i>It is sometimes necessary to conserve a plant species outside its natural habitat (ex-situ) because:</i></p> <p>Any three from the following:</p> <ul style="list-style-type: none">• Their natural habitat may be decreased / degraded / damaged/lost due to climate change/human activity; [1 mark]

- The population is very low; [1 mark]
- In the wild / *in-situ*, sexual reproduction is difficult if numbers are low; [1 mark]
- Assisted reproduction can be easier to carry out *ex-situ*; [1 mark]
- Breeding *ex-situ* can maintain the gene pool; [1 mark]
- *Ex-situ* conservation allows protection from grazers / competing species/humans/collectors/(illegal) traders; [1 mark]
- *Ex-situ* conservation allows protection from disease; [1 mark]

2a

Indicative Content

The meerkat is less likely than the elephant to become endangered because:

Any **three** from the following:

- Meerkats reproduce faster / have larger number of offspring / shorter life cycle / shorter gestation period (than elephants); [1 mark]
- Meerkats are of no use to humans / are not hunted / poached, whereas elephants are hunted/poached/exploited (for ivory); [1 mark]
- Meerkats are protected in burrows, whereas elephants are exposed / out in the open; [1 mark]
- Meerkats are small/camouflaged, whereas elephants are large / obvious / easy to locate / hunt / poach; [1 mark]
- Meerkats have a (wide) variety of food (sources), whereas elephants have limited food sources / one main food source; [1 mark]
- Meerkats require less food / water, whereas elephants require large amount of food/water; [1 mark]

2b

Indicative Content	Commentary
<p><i>The Red List has many more vertebrates than invertebrates because:</i></p> <p>Any two from the following:</p> <ul style="list-style-type: none">• People / scientists /biologists are more interested in vertebrates (than invertebrates); [1 mark]• Vertebrates are more widely researched / surveyed (than invertebrates); [1 mark]• Vertebrates are larger / more visible so are easier to survey / it is easier to estimate their numbers (than invertebrates); [1 mark]• Vertebrates may be under more pressure / more endangered / at greater extinction risk (than invertebrates); [1 mark]• We may not be aware of many invertebrates that are endangered as they are harder to survey / are more cryptic / hidden; [1 mark]	<p>The Red List of Endangered Animals is a widely recognized and authoritative assessment of the conservation status of animal species worldwide. It is maintained by the International Union for Conservation of Nature (IUCN) and is a critical resource for tracking and identifying species that are at risk of extinction</p>

3a

Indicative Content

i) An invasive species is:

- A species that has moved / has been moved into a (new) ecosystem where it was previously unknown / in which it did not previously exist; [1 mark]

ii) The negative effects that invasive species can have on an ecosystem include:

Any **three** from the following:

- Invasive species may be carnivorous/predators so will prey on (many) native / existing species **OR** native / existing species may not have adaptations / defences / ability to avoid new predators; [1 mark]
- Invasive species will compete with native / existing predators (in the ecosystem) for food **OR** herbivorous alien species will compete with native / existing herbivores (in the ecosystem) for food; [1 mark]
- Invasive species will compete with native species for other named resource(s) e.g. space/territory, breeding/nesting sites, etc.; [1 mark]
- Invasive plant species will compete with existing species for named resource(s) e.g. light, minerals, water, space, etc.; [1 mark]
- Invasive species may introduce diseases that native/existing species have no immunity against; [1 mark]
- Invasive species may change the environment so that native/existing species cannot survive **OR** destroy habitats that native/existing depend on (for survival); [1 mark]

3b

Indicative Content

Other possible reasons for the very low numbers of Bali starlings in the wild include:

Any **three** from the following:

- Habitat destruction; [1 mark]
- Competition for food / food shortage / (introduction of) invasive (bird) species that outcompete Bali starling; [1 mark]
- Predation / (introduction of) invasive species that consumes / hunts / predated on Bali starling; [1 mark]
- Disease(s) / new pathogen(s); [1 mark]
- Pollution / pesticide/insecticide use; [1 mark]
- Removed from wild (to zoos) to conserve species; [1 mark]
- Problems finding a mate; [1 mark]

4

Indicative Content	Commentary
<p><i>i) The relationship between wolf population size and the amount of suitable habitat between 1970 and 2020 can be outlined as follows:</i></p> <ul style="list-style-type: none"> • As the amount of available suitable habitat decreases / declines, the wolf population size gets smaller / decreases / declines; [1 mark] 	<p>Your answer for part (i) should link the two variables by identifying the relationship between them, without stating that this is a causal relationship</p> <p>For example, you shouldn't state that decreasing habitat causes wolf population decline (there could just be a correlation between the two variables)</p>
<p><i>ii) The yearly rate of population decline between 1990 and 2000 was:</i></p> <ul style="list-style-type: none"> • Population decrease = 12 500 - 5 000 = 7 500 • Yearly rate = 7 500 / 10 = 750 • The wolf population is decreasing in size by an average of 750 wolves per year; [1 mark] 	<p>Your answer to part (ii) should use the terminology from the question / figure, making it clear what the answer of '750' is referring to</p>