

Assessment Report

New Zealand Scholarship Biology 2021

Standard 93101

Part A: Commentary

Candidates that took time to analyse and understand the question(s), and plan and integrate their answers that considered information provided were better able to write more concise and accurate answers and gain higher marks.

Candidates who took the time to unpack the question(s) and understood the relevant biological principals were better able to justify how or why they apply in the context provided. Using the relevant information in their answers, they were able to display in depth understanding of the concepts in the question.

Part B: Report on performance standard

Candidates who were awarded Scholarship with **Outstanding Performance** commonly:

- wrote concise answers that were well planned and addressed each aspect of a question
- avoided any unnecessary repetition by planning answers and managing to coherently link different ideas together in a logical progression
- comprehensively addressed each aspect of a question
- displayed high level literacy skills including clear and concise comparisons
- integrated evidence from the resource material into their answers in the appropriate place to support their statements
- used biological language accurately and efficiently
- did not include irrelevant material in their response
- made inferences based on connections between different parts of the resource material.

For Question One

- related genetic changes in camelids to selection pressures in their environments, and were able to discuss the role humans have played in their evolution
- correctly explained natural selection in relation to the differing environments and selection pressures
- used their thorough understanding of speciation (allopatric and sympatric), natural selection and the processes that have led to evolution of camelids
- used evidence from the resource material to discuss the impact of genetic changes on the evolution of old and new world camelids with links to the adaptive advantage of these.
- discussed human domestication, translocation and hybridisation of camelids with justification made about the impact these have played on evolution.

For Question Two

- used their knowledge of breeding strategies to evaluate the success of sea lions in their respective colonies
- gave a comprehensive discussion on the founder effect, genetic drift, allele frequencies linking to larger bottlenecks



- referred to the context of the question, accurately interpreting information and graphs supplied and using these to support their discussions.

For Question Three

- justified the use of biological control agents, by comparing their efficiency and overall impact on the ecosystem as a whole
- presented a balanced discussion of the positive and negative impacts on both the ecosystem and individual species when control agents are released.

Candidates who were awarded **Scholarship** commonly:

- planned answers to ensure they largely avoided unnecessary repetition and had a logical flow to their writing
- answered all parts of the questions fully
- related the points they made back to the question
- justified the relevance of the evidence they extracted from the resource material
- made links between the resource material and their broad understanding of Levels two and three Biology content
- used accurate language and biological terms throughout their answers e.g. K and r strategy (including clearly writing the letter K or r to avoid confusion of which letter they wrote), agonistic (NOT agnostic) behaviours, mimicry, allopatric speciation, adaptive radiation

For Question One

- identified various processes of evolution and types of speciation correctly
- linked loss of land bridges, geographic isolation AND lack of gene flow to allopatric speciation
- identified which group of camelids they were discussing clearly
- used examples of specific genes from the resource and linked these to the impact of the environment rather than just re-stating their functions
- evaluated the role of humans in the evolution of camelids (extinction, domestication, selective breeding, hybridization, translocation)
- made a clear distinction about whether they were writing about natural selection or artificial selection

For Question Two

- interpreted unfamiliar graphs correctly and meaningfully integrated information from them to support their answers
- identified differences in prey and dive depth as possible reasons for different mean masses of sea lions
- justified the difference in mean mass between two populations of sea lions with respect to the energy gained from more/less abundant and varied food sources and the energy used to gather food
- linked deeper dives to both the food found at the varying depths and different energy requirements to catch it.
- linked the size of a population to the differences in intraspecific competition for food and territories
- discussed the impact of a small founding population (not the current population size) on allele frequencies with respect to Founder Effect and Genetic Drift
- differentiated between the Founder Effect and the role that Genetic Drift plays in it
- linked K-strategy breeding behaviours and territoriality to reproductive success and identify the negative impact these behaviours may also have using examples.

For Question Three

- made clear comparisons between the two control agents when evaluating their effectiveness
- evaluated risks and benefits of the release of biological control agents, relating their release to the overall impact on the ecosystem as a whole.
- wrote a thorough, balanced discussion of the possible positive and negative impacts on both ecosystems and individual species of the release of the control agents.

Candidates who were **not** awarded Scholarship commonly:

- did not answer all three questions
- only answered part of each question instead of addressing all the points asked
- rewrote or paraphrased large amounts of the resource material in their answer
- included a large amount of irrelevant material not linked to the question e.g. a long discussion on the benefits of adaptations for bipedalism when referring to the migration of humans into North America 10-12 kya
- used vague language e.g. "The impact on the wasps will be short and quick" rather than "This will cause the number of wasps to decrease rapidly"
- did not use correct biological terms e.g. polygyny, mimicry, different selection pressures, geographic isolation, K/r selected, lack of gene flow, founder effect
- used biological terms incorrectly e.g. polygamy or polyandry instead of polygyny, interspecific instead of intraspecific, agnostic instead of agonistic, sympatric instead of allopatric
- did not justify why the resource material was relevant to a question
- referred incorrectly to the species in the resource material (seals instead of sea lions, Old World/New World monkeys instead of camelids)
- did not support their discussion with evidence from the text or their own biological knowledge.

For Question One

- generalised genetic changes in camelids without referring to specific genes or linking these to the selection pressures in their environment and the adaptive advantage those genes provided
- understood the basis of allopatric speciation but were vague about how this would have worked and did not link this to 'temporary' land bridges and subsequent loss gene flow
- referred to selective breeding without linking this to the prior domestication of camelids
- did not link the changes in camelids to the role of natural selection, instead using vague language around the role of the environmental pressures.

For Question Two

- interpreted the resource information incorrectly about the mean mass and dive depth of sea lions, or failed to use this information to support their answers
- did not identify the breeding strategies demonstrated by sea lions
- didn't justify the mean mass difference of sea lion populations with respect to the energy gained from different diets, energy expended on catching the food nor possible presence of alleles for greater mass in the small founding population.
- rewrote large parts of the question without fully understanding the impact of territories on the successful breeding behaviours of sea lions
- incorrectly assumed the predation risk would be higher around the Auckland Islands as no predators exist around mainland New Zealand
- misunderstood the effect of predators on sea lions, incorrectly linking small body mass to avoiding predation
- linked a small body mass to being more streamlined and could therefore dive deeper
- discussed the breeding behaviours as hierarchical rather than territorial

For Question Three

- wrote out information from the resource about the two control agents without linking this to a justification of how this would make them a good control agent
- outlined information about the two control agents independently without clearly comparing the two
- assumed incorrectly that the biological control agents described in the question would end up using honeydew
- did not link the release of the control agents to a reduction in the number of wasps
- did not link the reduction in wasp numbers to a subsequent increase in honeydew availability
- explained role of honeydew at start of answer but then did not explain how reduced wasp numbers affected this to explain impact of the control agents
- understood the broad concept of biological control agents but failed to compare two agents with clarity
- wrote a long discussion on the situation in the beech forest prior to the arrival of wasps rather than a discussion of the possible ecological impacts after release of the control agents
- wrote a long discussion about the current situation in the beech forests rather than a discussion of the possible ecological impacts after release of the control agents.

Previous years' reports

[2020 \(PDF, 138KB\)](#)

[2019 \(PDF, 160KB\)](#)

[2018 \(PDF, 95KB\)](#)

[2017 \(PDF, 42KB\)](#)

[2016 \(PDF, 192KB\)](#)