

2025 NCEA Assessment Report

Subject:	Biology
Level:	3
Achievement standard(s):	91603, 91605, 91606

General commentary

Successful candidates accurately described biological processes and biological terms. They demonstrated usage of biological language appropriate at Level 8 of the curriculum to make links between key ideas. Successful candidates also attempted all three questions, responded to the question asked, and attempted to address all bullet points that supported each question. Candidates who achieved at higher levels demonstrated depth of understanding the questions and addressed the stem of the questions.

Candidates need to ensure their handwriting is legible so their answers can be understood accurately.

Report on individual achievement standard(s)

Achievement standard 91603: Demonstrate understanding of the responses of plants and animals to their external environment

Assessment

The examination was comprised of three questions, with candidates needing to respond to all. The questions required candidates to apply their understanding of plants and animals in their external environments. Question Two required candidates to interpret graphical information. The questions related to the guidance provided in the 2025 assessment specifications.

Commentary

Higher-achieving candidates used the bullet points in the questions to structure clear, direct responses. Many other candidates simply paraphrased the resource or included unnecessary detail. To demonstrate Level 8 biological understanding, candidates needed to use accurate biological terminology instead of vague definitions. Candidates often identified advantages but did not link them to increased survival or reproductive success, as required.

In Question One, candidates showed developing understanding, though some needed clearer distinction between light types and their associated phytochromes. For example, candidates mixed up red light with Pr and far-red light with Pfr. Many candidates also did not understand that Pfr was the active form.

In Question Two, many candidates were observed to show inadequate understanding of biological clocks. Candidates are reminded to note the differences between diurnal and circadian rhythm and the reasons why bees continue to forage during the eclipse.

In Question Three, many candidates showed emerging understanding, with some needing a clearer grasp of kin selection and the role of genetically related offspring.

Grade awarding

Candidates who were awarded **Achievement** commonly:

- defined the explicit concepts and some inferred, and stated relevant facts, but often did not link these to survival or provide deeper explanation
- presented the differences between a short-day plant (SDP) and a long-day plant (LDP)
- described the phytochrome system
- described diurnal activity and how the environmental cues are used for homing
- described foraging behaviour either on sunny days and / or total eclipse days
- outlined at least some advantages and / or disadvantages of being in a hierarchy below the alpha.

Candidates who were awarded **Achievement with Merit** commonly:

- linked some concepts to the context and explained them in relation to survival, with ideas generally well-organised into paragraphs
- explained the individual adaptive advantages of the relationships, responses or behaviours but did not link them together or relate them to overall greater reproductive success
- explained components such as phototropism or why the poinsettia is an SDP, but did not relate these to LDP responses or how growers manipulate flowering out of season
- explained the foraging behaviour of the bees at various times but did not relate these to each other or to their survival or reproductive success
- mentioned hierarchy maintenance behaviours and the advantages or disadvantages of living in a pack, but frequently did not show understanding of kin selection and its significance
- explained key concepts well but failed to link these to the big picture of each question.

Candidates who were awarded **Achievement with Excellence** commonly:

- made clear links in sequential, logical, and clear discussion, showing a strong understanding of biological processes, across the three diverse questions asked, and made comprehensive links between those and the idea of survival and reproductive success
- showed understanding of photoperiodism and the phytochrome system in detail and the significance in terms of growing a SDP in the summertime
- discussed the significance of a biological clock in terms of the honey bees behaviour before, during, and after an eclipse
- discussed the behaviours of wolves in a pack, including kin selection, and compared and contrasted the advantages and disadvantages in terms of survival / reproductive success
- linked aspects of the questions coherently and applied their biological understanding effectively to the specific contexts asked.

Candidates who were awarded **Not Achieved** commonly:

- defined some biological concepts in the questions
- partially described key terms such as photoperiodism, hierarchy, territory, diurnal, circadian, etc.
- used text from the resource material to describe key concepts and did not use the context of the question
- summarised information about a topic but did not address the actual question
- did not attempt all questions.

Achievement standard 91605: Demonstrate understanding of evolutionary processes leading to speciation

Assessment

The examination was comprised of three questions, with candidates needing to respond to all. The questions required candidates to apply their understanding of evolutionary processes leading to speciation in their external environments. The questions related to the guidance provided in the 2025 assessment specifications.

Commentary

Many candidates demonstrated a comprehensive understanding about the biological processes involved in evolution and speciation. Candidates provided accurate descriptions of evolutionary concepts and linked the context material provided in the question.

Candidates who received higher grades demonstrated a wide knowledge of content, which included an in-depth understanding of the processes of speciation and explaining patterns in evolution. Some candidates were able to discuss the scientific evidence for evolution in considerable detail.

Candidates who presented coherent and articulate responses could justify, analyse, and evaluate their responses, which often resulted in a high level of achievement for this standard.

Poor handwriting and literacy skills made it difficult to interpret some candidates' responses. Some candidates did not attempt all three questions, which limited their achievement.

Grade awarding

Candidates who were awarded **Achievement** commonly:

- described speciation, reproductive isolating mechanisms (RIMs), and species
- identified that RIMs were prezygotic and were reducing gene flow between the two groups of flies
- identified relevant RIMs and their function for Question One
- described convergent evolution, analogous structure, selection pressure, and divergent evolution
- identified relevant selection pressures that influenced similarities in species (naming structure and function) for Question Two
- provided examples of scientific evidence relevant to the context
- described hybridisation and polyploidy
- described sympatric, allopatric speciation, punctuated equilibrium, and gradualism.

Candidates who were awarded **Achievement with Merit** commonly:

- explained how RIMs have likely caused the formation of the two groups of flies by linking in the resource material
- explained how genetic differences have started to occur between the groups of flies, but the short time period has not been long enough for complete speciation
- explained how convergent evolution and analogous structures were linked by using information in the resource material
- identified the correct selection pressures and explained how these have led to similar features in the lamprey and the eel
- explained how polyploidy produces hybrid frogs by linking to the resource material
- demonstrated understanding that the polyploid frogs were reproductively isolated from other frogs due to gametic isolation as well as behavioural isolation.

Candidates who were awarded Achievement with Excellence commonly:

- discussed how relevant RIMs have led to the formation of the different groups of flies by making full use of the resource material
- discussed convergent evolution in the lamprey and eel by explaining their distant relatedness and linking named selection pressures to analogous structures in these species
- discussed how polyploidy can produce hybrid frogs, and why the process of speciation in treefrogs is an example of sympatric speciation and not allopatric speciation.

Candidates who were awarded **Not Achieved** commonly:

- defined the terms inaccurately or insufficiently at Level 8 of the curriculum and sometimes without relating it to the question
- repeated information from the given context without additional information or explanation
- provided examples that were not related to the context given in the question
- did not attempt all the questions.

Achievement standard 91606: Demonstrate understanding of trends in human evolution

Assessment

The examination comprised three questions, with candidates needing to respond to all. The questions required candidates to apply their understanding of trends in human evolution. The questions related to the guidance provided in the 2025 assessment specifications.

Commentary

Candidates generally demonstrated good understanding of human evolution concepts and were able to apply their understanding to the questions.

Successful candidates were able to link anatomical, behavioural, and cultural evidence across different parts of each question, producing cohesive and well-justified responses. Those who did not reach Excellence often had accurate knowledge but lacked integration or evaluation of ideas across the question, with some candidates reciting memorised answers that did not fit the question (e.g. evolution of tools or use of fire or simply stating the trends in chronological order).

Question One was accessible for most candidates. While many candidates could identify bipedal features, a significant number struggled to explain *how* these features resulted in increased energy efficiency, often stating that they did so without providing mechanistic detail of energy conservation. Overall, knowledge of specific knee adaptations was weaker than the other adaptations for bipedalism.

In Question Two, many candidates did not address the concept of positive feedback, despite it being explicitly stated in the question stem.

In Question Three, successful candidates were able to recall or include the specific dates associated with the two migrations in the Out of Africa hypothesis. The 'and' within bullet points was frequently overlooked (e.g. clothing **and** shelter, specialised adaptation **and** inbreeding, abstract thought **and** communication). The term inbreeding was frequently mistaken for interbreeding.

Grade awarding

Candidates who were awarded **Achievement** commonly:

- described the adaptations in the Australopithecine or *H. sapiens* that were an advantage to bipedalism

- provided descriptions, not just statements
- correctly identified waddling or swaying motion in chimpanzee locomotion but did not link to Australopithecine or *H. sapiens*
- described how clothing, shelter, abstract thought, and communication aided survival
- attempted questions that were unfamiliar (e.g. advantage and disadvantage of biological evolution on cultural evolution).

Candidates who were awarded **Achievement with Merit** commonly:

- explained how the hand changed and the influence of this
- explained how abstract thought and communication helped *H. sapiens*
- linked ideas to energy expenditure, survival, and reproduction, and explained how these features provided an adaptive advantage
- explained the selection pressure of climate change that led to the evolution of bipedalism and demonstrated understanding of change from forest to savannah
- explained some advantages and disadvantages of biological evolution on cultural evolution
- included explanation of the positive feedback loop between tools, food, and brain growth but did not include the changes to hominin hands in the positive feedback loop
- did not include explanation of the specialised adaptations of Neanderthals and Denisovans.

Candidates who were awarded **Achievement with Excellence** commonly:

- discussed the the skeletal features of the pelvis, knee, and femur that enabled bipedalism and the advantages and disadvantages of bipedalism
- explained the cooler and drier climate change linked to spreading out of resources as a selection pressure for bipedalism
- discussed the positive feedback loop between hominin hand changes, tool use, access to nutrition, brain growth, and improvement in tool culture
- discussed the advantages and disadvantages of biological evolution on cultural evolution
- discussed the Out of Africa hypothesis in terms of two waves of dispersal and the evolution of *H. sapiens* from *H. erectus* in Africa before dispersing
- described specialised adaptations of Neanderthals and Denisovans and explained the effects of inbreeding on them
- discussed how geography, inbreeding and / or adaptations impacted the dispersal of Neanderthals and Denisovans
- discussed how abstract thought and communication helped *H. sapiens* in their dispersal with supporting examples
- integrated knowledge, using detailed and relevant examples to support and justify explanations of both *how* and *why* these outcomes occurred.

Candidates who were awarded **Not Achieved** commonly:

- missed the benefit of each adaptation of bipedalism in their response
- rewrote the information from the question without answering the question
- did not describe features of the hands
- did not attempt all questions or wrote pre-memorised responses that were irrelevant to the questions
- outlined Neanderthal adaptations for the cold but could not describe these adaptations or link them to the impact on dispersal.