

Question 30 (7 marks)

Geological and biological history of New Zealand

<i>Event</i>	<i>Time</i>
Australia and New Zealand separated	85–65 million years ago
New Zealand drifted east and subsided, its land mostly under seawater (most fossils are marine)	85–22 million years ago
Mammals became abundant worldwide	60 million years ago
Earliest migratory bird fossils	55 million years ago
New land created by volcanoes in New Zealand	22 million years ago to present
Many new, unique species of birds appear in the fossil record	20 million years ago to present
Islands completely devoid of mammals. Birds occupied niches that were usually occupied by mammals	700 years ago

Use this information and other relevant knowledge to demonstrate how the practice of biology has led to the validation of current theories of evolution.

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The practice of biology has led to the validation of current theories of evolution through many such methods as D.N.A. mapping being used to compare the human genome to that of many primates, the study of divergent evolution and adaptation to environment through Darwin's theory of 'survival of the fittest' and genetic variation.

D.N.A. mapping has led to biologists having a greater picture of the human genome and how it compares to primates in order to

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Question 30 (continued)

Support the theory that the human race is related to the primate family. Through a comparison of human DNA to that of various primates, this theory has been validated.

~~Divergent evolution has also been validated through the study of~~

The study of the effects of divergent evolution has also led to the validation of Darwin's theories on evolution. As species become cut off or isolated from the rest of their population they can no longer breed with the base population.

This leads to a separate gene pool and such organisms will then evolve to adapt to their new environment separate to the rest of the species and will eventually become an entirely new species.

This is apparent in New Zealand through its lack of mammals and such niches now ~~are~~ available to be filled by birds, which evolve to their environment being devoid of mammals with one bird species slowly evolving into two.

End of Question 30