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90461

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

Level 2 Biology, 2004

90461 Describe concepts and processes relating to ecology

Credits: Two
2.00 pm Thursday 25 November 2004

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should answer ALL the questions in this booklet.

If you need more space for any answer, use the pages provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–5 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

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Achievement Criteria		
Achievement	**Achievement with Merit**	**Achievement with Excellence**
Describe biological concepts and processes relating to ecology.	Explain biological concepts and processes relating to ecology.	Discuss biological concepts and processes relating to ecology.
Overall Level of Performance		

You are advised to spend 30 minutes answering the questions in this booklet.

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QUESTION ONE: ISLAND RESTORATION

Tiri Tiri Matangi, or Tiri, is a 220-hectare offshore island in the Hauraki Gulf, 28 kilometres north of Auckland. Tiri has a long history of human use and occupation. Its natural cover of coastal broadleaf forest has been almost totally removed by grazing and farming.

When grazing was stopped in 1983, the island vegetation consisted of grass, scrub, bracken fern and remnants of forest.

Management of the island has included
- eradicating the kiore (the Polynesian rat)
- revegetation with native plant species
- controlled release of endangered native birds.

As a result of this management, Tiri now has wider **biodiversity**.

(a) Define biodiversity.

(b) Apart from no longer being eaten by the kiore, **explain** why the numbers of moko skink (a small lizard) on Tiri increased.

(c) **Discuss** why the kiore needed to be eradicated **before** the revegetation and the release of birds occurred.

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Revegetation consisted of planting native trees, particularly nectar-producing and berry-producing species, in and around existing forest remnants to gradually replace grassland and bracken fern with forest.

(d) What is the **trophic** level of nectar-feeding and berry-feeding birds?

(e) **Discuss** how the revegetation process alters the environmental conditions to cause the slow replacement of the grasslands and bracken fern with a forest containing nectar-producing and berry-producing plants.

One species of bird that has been moved to Tiri is the flightless takahē that prefers the open grasslands on the island.

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(f) Predict, with reasons, what will happen to this population of takahē as the revegetation progresses.

(g) **Discuss** how revegetation has affected biodiversity to help ensure the survival chances of the released native birds.

Extra paper for continuation of answers if required.
Clearly number the question.

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Question number