



# Developing Interest and Relating Scientific Learning to the Wider World

## Investigating in Science

ACCESS THE SCIENCE EXEMPLARS ONLINE AT [www.tki.org.nz/r/assessment/exemplars/sci/](http://www.tki.org.nz/r/assessment/exemplars/sci/)

LEVEL 1 2 3 4 5

## Kākāpō

### THE LEARNING CONTEXT

The teacher's intended outcomes were for the students to:

- develop an interest in issues related to New Zealand's endangered species
- independently choose a topic, ask questions, and use resources to seek relevant information and ideas.

The intended outcomes were aligned to the following "big ideas":

- Scientific research can be used to help or exploit people and the environment.
- Scientists take account of and build on the work of previous scientists.

The students completed a number of classroom-based activities and field trips and were visited by conservation officers. They then carried out individual research-based learning projects on an endangered native bird. The teacher encouraged the students to take a personal interest in their projects. Samantha developed an increasing interest in native bird conservation and became a very active volunteer in the local bird conservation programme.

The students began by recording definitions of terms such as "endangered", "native", "exotic", "biodiversity", "ecosystem", and "adaptation". They created a mind map headed "What I know now about endangered species" and participated in a range of activities about endangered species taken from the Auckland Zoo teacher support material and *Making Better Sense of the Living World*. Then they discussed the following questions:

- What could happen to New Zealand's endangered species in the future?
- What are we doing about it?
- What can we do about it?

They also discussed food chains and food webs, how they are constructed, and how they apply to New Zealand flora and fauna. The students then focused on their individual projects.

### Teacher-student conversation

On completion of the individual projects:

Teacher: Samantha, can you talk to me about your kākāpō study?

Samantha: The kākāpō is endangered because the food it needs to survive isn't always available, or it's being consumed by competitors. The rimu tree is very important for the kākāpō. It needs rimu berries to breed successfully – the fruit is essential for its chicks.

Teacher: Where did you find your information?

Samantha: Books, the kākāpō conservation website, and the conservation officer who came and talked to our class.

Teacher: Tell me about the visiting speaker.

Samantha: I found her talk very interesting. I thought to myself, this might be something I could do in later life.

### WHERE TO NEXT?

To move Samantha towards the next learning step, the teacher could help her to focus on:

- sustaining her interest in conservation organisations, for example, the Kiwi Conservation Club (developing interest and relating scientific learning to the wider world)
- reflecting on the processes she uses to gather information and recognising areas for improvement (investigating in science).

The teacher could:

- encourage Samantha to research and undertake learning and action opportunities related to endangered species
- give Samantha opportunities to carry out practical investigations that challenge her to make selective, accurate, and detailed observations and to look for and suggest patterns and relationships.

### CURRICULUM LINKS

*Science in the New Zealand Curriculum*  
**Achievement Objectives**

#### Level 4: Making Sense of the Nature of Science and Its Relationship to Technology

Students can plan and carry out a "fair test" and make decisions about whether the conclusions drawn from an investigation are soundly based.

*Science in the New Zealand Curriculum*, page 32  
[http://www.tki.org.nz/r/science/curriculum/p32\\_33\\_e.php](http://www.tki.org.nz/r/science/curriculum/p32_33_e.php)

#### Levels 3 and 4: Developing Scientific Skills and Attitudes

**Information gathering:** Students can:

- identify trends and relationships in recorded observations and measurements by making links within organised data
- use organised data and scientific ideas to suggest an answer to their selected questions and problems and make an evaluation of their investigation.

*Science in the New Zealand Curriculum*, page 46  
[http://www.tki.org.nz/r/science/curriculum/p44\\_51\\_e.php](http://www.tki.org.nz/r/science/curriculum/p44_51_e.php)

#### Level 4: Making Sense of the Living World

Students can:

- investigate and describe special features of animals or plants which help survival into the next generation
- use simple food chains to explain the feeding relationships of familiar animals and plants and investigate effects of human intervention on these relationships.

*Science in the New Zealand Curriculum*, page 60  
[http://www.tki.org.nz/r/science/curriculum/p60\\_61\\_e.php](http://www.tki.org.nz/r/science/curriculum/p60_61_e.php)



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### WHAT THE WORK SHOWS

Samantha has taken her learning interest beyond the formal classroom environment. Her work clearly illustrates the development of a student's interest and motivation to extend her learning to the wider world, one of the aims of science education.

**How I Can Help**

- Donate money and time to organizations such as Forest and Bird and Department of Conservation.
- Make others in my community aware of our endemic species etc.
- Our responsibility as pet owners to make sure our cats and dogs etc are not allowed to stray, especially at night and to spay and neuter our pets to slow the domestic breeding down so there is less feral animals in the bush and forests.
- Sponsorship opportunities throughout New Zealand, from working with native animals and plants to environmental education and sponsorship of a kakapo bird through business and corporations.
- Keep our environment clean and free of rubbish and pollution of the streams and creeks. Take our rubbish home with us when we leave the forests and bush.

9

Samantha's ideas for helping to protect endangered native species

Hello. My name is Samantha. I am a student, and I am concerned about way we are dealing with our native species. At the moment, my class is doing a project on NZ's endangered species, and I wanted to know if New Zealand is losing interest in our native wildlife. I was thinking this over and thought that wouldn't more people be interested in the conservation of our natives if there was some type of ad on television suggesting that helping our natives could prove to be an awesome experience. I have asked around any adults in particular and 98% of them thought that as long as DOC is doing its job, our natives will be fine. To me, this isn't the case. Something must be done to attract more interest into this extremely important topic. I now know that to some people our wildlife is just there. I'm concerned, and you should be too, so please get this message across and our wildlife may have a better chance for the future. Also, in conclusion, I am studying the kākāpō and, if possible, would you be able to send me some information. After all, more people should want to get involved just like me!!!!

Thank you for understanding.  
Yours sincerely, Samantha

Samantha's email to the Department of Conservation



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## Kākāpō

### Progress Indicator

#### Developing Interest and Relating Scientific Learning to the Wider World

##### Experiencing and showing awe, wonder, and interest

Samantha's interest and work beyond the classroom is described by all of the indicators listed.

##### Caring for the environment

Samantha gets involved in the *debate about the effects of human activity on the living world. She takes effective action to protect the environment.*

##### Engaging in social issues

Samantha *uses and seeks scientific information to debate social issues related to science and the environment and makes a case for effective action.*

Samantha described her initial actions and her views on conservation.

*"I have written a letter to the Department of Conservation.*

*I surveyed people about how they were helping to protect New Zealand endangered species and what actions they can take.*

*Most people don't really care – they don't want to take responsibility. They believe other people will be doing what we all should be doing. We should all pitch in to save our native species."*

As a result of listening to the visiting conservation speaker describe her work in the bird protection programme, Samantha decided to take further action.

*"I decided that I would do more than just come and help. Oh, wow, I can really do something to make a difference. I got my mother to take injured birds to the bird rescue centre. I am at least doing something to help."*

### Progress Indicator

#### Investigating in Science

##### Asking questions

Samantha *generates, discusses, and chooses interesting questions to investigate.*

##### Using systematic approaches and scientific conventions

Samantha *plans and carries out a systematic investigation to gather evidence to test her ideas.*

##### Processing and interpreting

Samantha *uses her findings to draw conclusions related to simple scientific ideas.*

## REFERENCES

Auckland Zoo teacher support material.

Kakapo Recovery Programme:  
[www.kakaporecovery.org.nz/index1.html](http://www.kakaporecovery.org.nz/index1.html)

Kiwi Conservation Club: [www.kcc.org.nz](http://www.kcc.org.nz)

Ministry of Education (1993). *Science in the New Zealand Curriculum*. Wellington: Learning Media.

Ministry of Education (2001). *Making Better Sense of the Living World*. Wellington: Learning Media.