



LEVEL	1	2	3	4	5
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# Long Haul Birds

## THE LEARNING CONTEXT

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

- identify external features of birds, and explain their adaptations and functions
- use data and information to support an idea.

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

- The structures of living things have particular functions that contribute to individual survival.
- Scientists use evidence to justify their ideas.

The four-week unit on migratory birds began with a visit to the Miranda Shorebird Centre. Subsequent activities, based on the diagnostic task Design a Bird (see *Birds*, Building Science Concepts, Book 3), related to the major features, adaptations, and functions of migratory birds. The activities included:

- discussion of issues relating to conserving the environment for birds that visit the Miranda Shorebird Centre
- brainstorming on "What is migration?" and "Who migrates?"
- differentiating between waders and non-waders
- investigating different beaks, feet, and food webs.

At the completion of the four-week unit the students compared their findings with their initial views on migratory birds.

## Teacher-student conversation

Discussion after the unit:

Teacher: What special things do you think a bird needs to fly a long distance?

Sharon: Lots of food, be able to travel without stopping, big feathers that don't get scruffy. The birds can't fly as well with scruffy feathers, it makes flying harder.

Teacher: How do the feathers on the bird help it to fly to Alaska?

Sharon: They grow new feathers to replace the scruffy ones.

Teacher: How do you think the wing that you drew would help the bird to fly a long way?

Sharon: They have big wings that are stronger to fly further.

Teacher: Does a migratory bird need to have a special kind of eye to see where it is going?

Sharon: They can see in the dark, because they can't stop when they are over the sea.

Teacher: What have you discovered about the feet and legs of migratory birds?

Sharon: Their feet are designed to walk on the mud not to land on the sea, they are not webbed. They don't land on the sea. They need to use their feet to help the legs stay up by their bodies when they fly. They would need super fast legs to use them in the water because they are not webbed. Water would go through the toes on their feet.

## WHERE TO NEXT?

To move Sharon towards the next learning step the teacher could help her focus on:

- collecting further information about migratory animals that live in another part of New Zealand, using resources such as the Internet, and agencies such as the Department of Conservation (DOC) (investigating in science)
- constructing a 3-dimensional model of a migratory bird illustrating all of its features, and explaining the purpose of the features (developing and communicating scientific understanding).

The teacher could:

- evaluate the investigative process during the next science unit (investigating in science)
- get students to practise linking their explanations to their observations (developing and communicating scientific understanding).

## CURRICULUM LINKS

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

### Level 3: Making Sense of the Living World

Students can distinguish between living things within broad groups on the basis of differences established by external characteristics.

*Science in the New Zealand Curriculum*, page 58  
[http://www.tki.org.nz/r/science/curriculum/p58\\_59\\_e.php](http://www.tki.org.nz/r/science/curriculum/p58_59_e.php)

**Levels 1 and 2: Developing Scientific Skills and Attitudes**  
**Information Gathering:** Students can seek information in books and from people.

*Science in the New Zealand Curriculum*, page 45  
[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 2: Making Sense of the Nature of Science and its Relationship to Technology

Students can use a variety of methods to investigate different ideas about the same object or event.

*Science in the New Zealand Curriculum*, page 28  
[http://www.tki.org.nz/r/science/curriculum/p28\\_29\\_e.php](http://www.tki.org.nz/r/science/curriculum/p28_29_e.php)

## REFERENCES

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

Ministry of Education (2001). *Birds: Structure, Function and Adaptation*. Building Science Concepts, Book 3. Wellington: Learning Media.

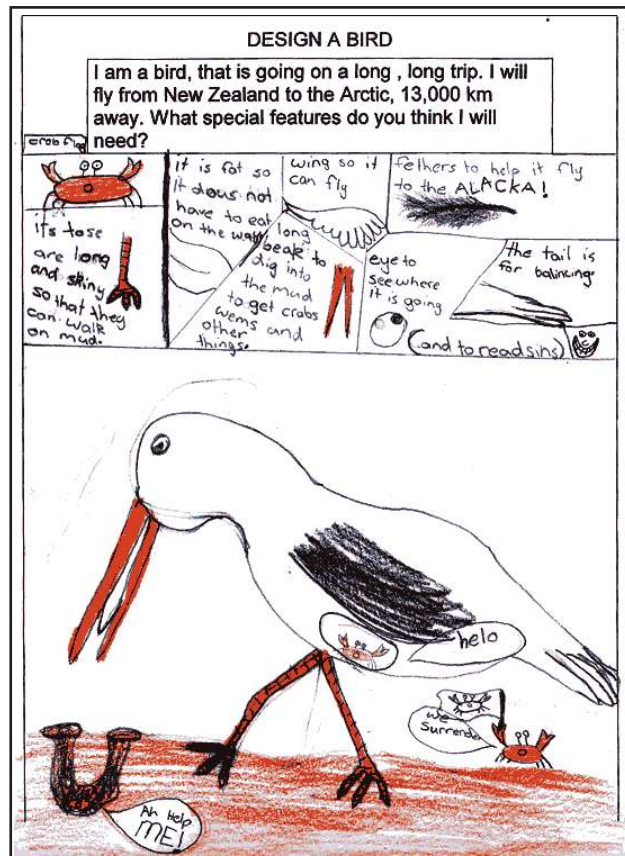


LEVEL 1 2 3 4 5

## Long Haul Birds

### WHAT THE WORK SHOWS

Sharon designed a bird showing the features, adaptations, and functions of a migratory bird. Her captioned drawing shows the features a migratory bird will need for a long flight.



Sharon's initial design of a migratory

### Progress Indicator Investigating in Science

#### Exploring a situation

Sharon *makes a series of observations* and is aware of some important features that the bird requires. She *looks for patterns and relationships* between the features and how they affect the bird's survival. She *describes or represents the observations made with some accuracy and detail* (L3).

#### Processing and interpreting

Sharon's visit to Miranda Shorebird Centre helped her *reach a conclusion to a simple investigation linked to her own understanding* (L2).

### Progress Indicator Developing and Communicating Scientific Understanding

#### Using scientific ideas in constructing explanations

Sharon *constructs a plausible explanation for an experience using some scientific ideas*: "It is fat so it does not have to eat on the way," and to identify specific features, "wing so it can fly" and "the tail is for balancing". She uses diagrams to convey meaning (L3).

#### Reflecting on their understanding

The teacher-student conversation shows Sharon can, with prompting, *describe changes in her own understanding* when reflecting on her design of a migratory bird (L2).