Year 5 – Tools of The Trade

Teacher Guide and Unit Plan

Learning Intentions

We are learning …

… to identify form and behaviour features that help animals survive in their habitats.

… to explain how the form and shape of a bird's beak help it to survive.

… to test how different beak shapes suit different foods and explain the patterns with evidence.

Success Criteria

We will be successful when…

…we describe how form and behaviour features help birds survive.

… we record, describe and predict how the form of a bird's beak helps it.

… we conduct a fair test, make predictions, collect/graph data, and write a conclusion to explain our observations.

Australian Curriculum	
Learning Area	***Content Descriptions***
Science	
AC9S5U01	examine how particular structural features and behaviours of living things enable their survival in specific habitats
Science as a human endeavour	
AC9S5H02	investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions
Science Inquiry	
Questioning and Predicting AC9S5I01	pose investigable questions to identify patterns and test relationships and make reasoned predictions
Planning and Conducting AC9S5I03	use equipment to observe, measure and record data with reasonable precision, using digital tools as appropriate
Processing, modelling and Analysing AC9S5I04	construct and use appropriate representations, including tables, graphs and visual or physical models, to organise and process data and information and describe patterns, trends and relationships
Evaluating AC9S5I05	compare methods and findings with those of others, recognise possible sources of error, pose questions for further investigation and select evidence to draw reasoned conclusions
Communicating AC9S5I06	write and create texts to communicate ideas and findings for specific purposes and audiences, including selection of language features, using digital tools as appropriate
Cross-Curriculum Priorities	Sustainability
General Capabilities	Literacy, Digital Literacy, Critical and Creative Thinking

Achievement standard

By the end of Year 5 students explain how the form and behaviour of living things enables survival. They identify examples where scientific knowledge informs the actions of individuals and communities.

They construct representations to organise data and information and describe patterns, trends and relationships. They use language features that reflect their purpose and audience when communicating their ideas and findings.

Teacher Background Information

Understanding bird form and behaviour is essential for teaching Year 5 biological sciences, especially when linking learning to a real-world experience such as an excursion to **Hobart Zoo and Aquarium** where Conservation Educators will provide encounters for students to see the function of different bird beaks.

Tasmanian and Australian curriculum guidance emphasises helping students recognise how structural features (form) and behaviours (function) support survival in specific habitats (AC9S5U01). Bird beaks are a key example of evolutionary adaptation that allows different species to successfully access food, reduce competition, and thrive in varied Tasmanian environments.

Migration is a prominent example of a behavioral adaptation, where entire species of birds or other animals travel long distances to avoid harsh seasonal conditions. Birds flying south for the winter ensure access to more abundant food and milder temperatures, allowing them to survive until the following season. This large-scale, coordinated movement is a programmed activity.

Feathers provide insulation, streamline the body for flight, and offer protection from weather and injury. Strong, lightweight flight feathers help generate lift and control movement in the air, while softer down feathers trap warm air close to the body, supporting temperature regulation—an important physical adaptation for conserving energy in various habitats. Feathers can also support behavioural functions such as communication, camouflage, or display, helping birds attract mates or avoid predators.

Claws, like beaks, vary widely in form depending on diet and habitat. Birds with strong, curved talons—such as raptors—use them to grasp and subdue prey, while perching birds rely on flexible, gripping claws to stabilise themselves on branches. These differences in claw shape reflect how birds interact with their environments and access food, similar to the way beak structure influences feeding style and ecological niche. Combined, feathers and claws illustrate the close relationship between physical form and survival behaviour in birds, supporting students' understanding of form–function connection.

Scientific background from Australian education resources explains that a bird's beak is part of its skull, covered in a keratinous sheath, and adapted over generations to suit feeding needs such as cracking seeds, catching prey, filtering water or reaching nectar. These structural features interact with behaviour—such as hunting techniques, foraging strategies, or migration—to increase the likelihood of survival. Adaptations may be physical (e.g., beak shape, feather type, hollow bones) or behavioural (e.g., nest-building, learning hunting strategies). During your visit to Hobart Zoo and Aquarium, students observe Tasmanian and Australian bird species whose beaks illustrate this diversity. For example:

- **Kookaburras** use a long, spear-like beak suited to grasping prey.
- **Parrots and macaws** have strong curved hook beaks ideal for cracking seeds and nuts.
- **Nectar-feeding species**, such as lorikeets, rely on slender beaks designed for accessing deep flowers. These local examples support students to apply scientific reasoning to familiar environments and reinforce the concept that habitat influences adaptation.

The Hobart Zoo and Aquarium excursion deepens this learning by providing authentic observations that students can use in predictions, data collection, and evidence-based conclusions in your beak-tool experiment.

Year 5 – Tools of the Trade – Unit Plan

	Tuning In	Modelling – I do	Guided Practice- We do	Independent Practice– You do	Plenary	Resources
Lesson 1 – Form and Behaviour Features of Birds						
Learning Intention	We are learning to identify form and behaviour features that help animals survive in their habitats.		**Success Criteria**		We will be successful when describe how form and behaviour features help birds survive.	
Sequence	**Discuss and Record** Show students the poster of birds at Hobart Zoo and Aquarium. Brainstorm and record answers to the following: • What birds live at Hobart Zoo and Aquarium? • What features do these birds have? • How do they behave to help them survive?	**Form** **(noun)** Iwhat somethin *looks like*. The form of a bird includes a light skeleton and wings **(adjective)** to *make, produce* or *construct*. Birds form a beak and a light weight skeleton when they are growing in the egg. **Behaviour (noun)** what something *does*. Its actions and the way it responds to the world around it.	**Reading** – Features of Birds Highlight key features and how they help birds as a group.	Introduce what an infographic is and have students create one. Draft the writing and design in Science books before publishing on a computer.	**Gallery Walk** Display infographics and have students walk to observe them. Students to use Post it Notes to compliment the designer and another for how to improve it.	Science Journal Class set of reading, form and behaviour of birds. Birds at Hobart Zoo and Aquarium poster

Teacher Notes	Record your personal notes and adjustments here.

	Tuning In	Modelling – I do	Guided Practice- We do	Independent Practice– You do	Plenary	Resources
Lesson 2 – How does the shape of a bird's beak help it survive?						
Learning Intention	We are learning to explain how the form and shape of a bird's beak help it to survive.		**Success Criteria**		We will be successful when we record, describe and predict how the form of a bird's beak helps it.	
Sequence	Go through the quiz to Check for Understanding from the previous lesson. You may also like to draw an ideas map in the class Science Journal about how the features of birds help them survive.	Introduce the table **How does the shape of a bird's beak help it survive?** Use the slides that show the different types of bird beaks to model describing the form of it and predicting how it helps them survive. Record one in writing on the white board.	Have students partner up and have a go.	Students work independently or in pairs to complete the columns to describe and predict in the table.	Come together as a class to share ideas and record on an A3 class table for Science Journal. or Think/Pair/Share to apply learning to answer the question If a bird broke it's beak, how could it affect it's wellbeing?	Science Journal How does the shape of a bird's beak help it survive work sheet – 1 A3 and class set at A4 Birds at Hobart Zoo and Aquarium poster
Teacher Notes	Record your personal notes and adjustments here.					

EXCURSION TIME Share the social story with your class and preparing them for their excursion to Hobart Zoo and Aquarium.						
	Tuning In	**Modelling – I do**	**Guided Practice- We do**	**Independent Practice– You do**	**Plenary**	**Resources**
Lesson 3,4 and 5 – How is a bird's beak formed to help it survive?						
Learning Intention	We are conducting an experiment to investigate the structural features and adaptations that help birds to survive in their environment.		**Success Criteria**		We will be successful when we have safely conduct a fair test, followed the steps, recorded observations and data, and synthesised our results with our predictions from last lesson to produce a report.	
Sequence	**Discuss and Record** In Science Journal: What birds did we see at Hobart Zoo and Aquarium? What beaks do the birds at Hobart Zoo and Aquarium have?	Draw a table and record the names of the birds seen and the type of beak that they have. Use the poster to assist.	**Experiment** As a class, read through the experiment and conduct it. This may be a single lesson then students follow up with a series of lessons as required to produce their report based on observations.	**Final Report** The Universal Design of Learning can be used so that students chose their own way to present their findings to the class and teacher. Encourage creativity and allow for multimodal responses.	**Presentation** Students to present their final report to the class.	Science Journal Class set of experiment pro forma. Manipulatives and resources for final report. Equipment as listed for experiment. Birds at Hobart Zoo and Aquarium poster

Teacher Notes	Record your personal notes and adjustments here.

Adjustments

The following adjustments are differentiated to support and engage all students.

	Enabling	Extending
Content	Partnered learning. Print pictures for students to use.	Design Challenge: Create a new "beak tool" to improve one food task. Test it using the same method and compare results.
Process	Partnered or small group learning. Break tasks down into smaller steps. Frequent check ins.	Constraint Test in experiment: Change one condition (e.g., deeper water, smaller seeds, time limit) and observe how performance changes.
Product	Opportunities to share ideas through dictation of scribing.	Data Literacy: Convert your table into multiple bar graphs and write a comparative analysis paragraph.

Resources

Australian Birds - the ABC's Birds Page

The Backyard Naturalist – Australian Birds - Australia's Most Common Birds - Part 1

Home - Aussie Bird Count

CSIRO - For educators - CSIRO

References

CERES School of Nature & Climate 2024, *Primary Curriculum Activity Teacher Notes: Bird Beaks*, viewed 20 February 2026. [school.ceres.org.au]

Science Learning Hub 2024, *Building Science Concepts: Birds – Structure, Function, and Adaptation*, University of Waikato, viewed 20 February 2026. [sciencelearn.org.nz]

Aussie Bird Count 2026, *Home – Aussie Bird Count*, BirdLife Australia, viewed 20 February 2026. [aussiebird...unt.org.au]

Aussie Bird Count – BirdLife Australia 2026, *Aussie Bird Count: 19–25 October 2026*, viewed 20 February 2026. [birdlife.org.au]

Australian Curriculum Lessons 2025, *Aussie Bird Count Lesson Plan – Years 3–6 Science, Maths & Geography*, viewed 20 February 2026. [australian...ons.com.au]

Year 5 – Form and Behaviour of Birds

Form (noun) what something *looks like*. The form of a bird includes a light skeleton and wings.

(adjective) to *make, produce* or *construct*. Birds form a beak and a lightweight skeleton when they are growing in the egg.

Behaviour (noun) what something *does*. Its actions and the way it responds to the world around it.

Birds have many special physical features that help them survive in their environment.

Figure 1- Macaws have a hook beak.

Their feathers form a protective outer covering that keeps them warm, helps them fly, and can even be used for display. vital for survival.

A bird's beak is another important feature. The shape of a beak can form a specialised tool that helps a bird eat certain types of food—for example, kookaburras have strong, pointed beaks that form an effective shape for catching live prey, while parrots have curved beaks that form powerful seed-cracking tools.

Birds also show behaviours that match their physical features. Many birds migrate, flying long distances to find food or warmer weather. Others build nests using materials like sticks, grass, or even spiderwebs, which can form strong structures depending on what their bodies and habitats allow. Some birds use calls and songs to communicate, warn others of danger, or attract a mate.

Figure 2 - Tasmanian Wedge-Tailed Eagle in its nest.

Together, these physical and behavioural features form the structures and systems birds need to survive, find food, protect themselves, and raise their young.

How does the shape of a bird's beak help it survive?

1) **In your Science Book, write to explain how the shape of a bird's beak can help it survive:**

2) **Predict and Reason – On your excursion to Hobart Zoo and Aquarium, you will see the following birds. Predict how the shape of their beak helps them in the table below.**

Bird	Describe the Beak Shape Use adjectives	Predict how it helps them to survive. Justify your ideas.	After Excursion Was your prediction correct? Why? Or Why not?
Kookaburra 			
Blue Macaw 			
Bleeding Heart Dove 			
Finch 			

Help Hobart Zoo and Aquarium to be sustainable by only printing what you need.

Year 5 – Form – How is a bird's beak formed to help it survive?

Learning Intention: We are conducting an experiment to investigate the structural features and adaptations that help birds to survive in their environment.

Success Criteria: We will be successful when we have safely conduct a fair test, followed the steps, recorded observations and data, and synthesised our results with our predictions from last lesson to produce a report.

Introduction

Birds have different beak shapes that act like tools. These shapes help birds eat certain foods and survive in their habitats. In this investigation, we will test different "beak tools" to model how well they pick up different types of food. Beak types we will model:

- Large hook beak (e.g., macaws): powerful, curved hook
- Long, slender spear beak (e.g., kookaburras): sharp and straight
- Small generalist curved beak (e.g., budgies/rosellas)
- Narrows, slender curved beak for nectar (e.g., swift parrot)
- Tawny frogmouth (wide hooked gape): a broad, trap-like mouth for catching insects

Aim: We are investigating which beak shape works best for different types of food.

Prediction: Use your ideas from last lesson and what you learnt during your excursion to Hobart Zoo and Aquarium to form predictions using the questions below.

Which beak shape will be most effective for each food type? Why?

Fair Test Conditions

- *Independent variable:* The beak type/tool used to mimic wild behaviour.
- *Dependent variable (measure):* Amount of food collected in the set time.
- *Controlled variables (keep the same):*
    - Same time limit per trial (e.g., 30 seconds)
    - Same number/size of food items in each tray
    - Same container depth and layout
    - Same distance from start line to tray
    - Same rules for what counts as "collected"

Equipment: *Teacher Note: This list is for one station. Set us multiple stations in your classroom for students to work in small groups to complete the experiment.*

Beak tools:

- Pliers or strong nutcracker = large hook beak (macaw)
- Pair of chopsticks = long slender spear beak (heron/kingfisher/kookaburra)
- 2 small spoons= small generalist curved beak (budgie/rosella)
- Pipette = nectar feeder beak
- Wide-mouth tongs + cup = tawny frogmouth (wide gape)

Food models:

- Hard seeds/nuts → dried chickpeas/pebbles/beads
- Soft fruit pieces → soft sponge cubes or marshmallows
- Insects/worms → rubber bands/paperclips/foam "bugs"
- Fish/prey → paperclips in water or small floating beads in a tub
- Nectar → coloured water in narrow cups/test tubes/sippy-lid bottles
- Flower models → cardboard tubes/egg cartons with deep wells

Other:

- 6 shallow trays (one per food type)
- Measuring cups or graduated cylinder (for nectar volume)
- Timer (30–45 seconds per trial)
- Paper towels, cleaning wipes, buckets for spills

Method:

Keep it a fair test — only change the beak (tool), keep everything else the same.

1. Set up 5 stations: seeds, soft fruit, insects, prey in water, nectar.
2. Place the same number of items (e.g., 30) or fixed volume (50ml for nectar) at each station.
3. Choose a beak tool. Read the rules for that station (e.g., no scooping with hands).
4. On GO, collect as many items (or mL of nectar) as possible into a cup within 30 seconds.
5. Record the result in your table.
6. Reset the station (put items back / refill nectar to the line).
7. Rotate and repeat with each beak tool for each food type.
8. Complete at least two trials per combination and calculate an average.

Conduct Experiment and Record Results: Tally results (per 30 seconds)

Trial 1 Beak type / Food type	Seeds (count)	Soft fruit (count)	Insects (count)	Prey in water (count)	Nectar (mL)
Large hook (macaw model)					
Long slender spear (heron/kookaburra)					
Small generalist curved (budgie/rosella)					
Narrow, slender curved beak for nectar (nectar feeder)					
Tawny frogmouth (wide gape)					
Trial 2 Beak type / Food type	Seeds (count)	Soft fruit (count)	Insects (count)	Prey in water (count)	Nectar (mL)
Large hook (macaw model)					
Long slender spear (heron/kookaburra)					
Small generalist curved (budgie/rosella)					
Narrow, slender curved beak for nectar (nectar feeder)					
Tawny frogmouth (wide gape)					

Calculate the average for the experiment by adding results from trial 1 and trial 2 together and divide the answer by 2 (Trial 1 + Trial 2 ÷ 2). Record the averages below.

Beak type	Seeds avg	Soft fruit avg	Insects avg	Prey in water avg	Nectar avg (mL)
Large hook					
Long slender spear					
Small generalist curved					
Long slender curved (nectar)					
Tawny frogmouth (gape)					

Communicate Your Results:

Draw a graph to show how many food items or ml each beak collected using one food group above.

- My chosen food group is_____
- X-axis: Beak type
- Y-axis: Number collected (or mL)
- Title: Effectiveness of Bird Beak Forms When Eating _____

Conclusion:

Answer these questions by writing your results in where they fit best as your evidence to justify your

1. Which beak type collected the most of each food? Justify.

2. Which beak type struggled with certain foods? Why do you think that is?

3. How does each beak shape help birds survive in their habitat (e.g., forest, river, garden, night-time hunting)?

4. What limitations did our model have compared with real birds (e.g., muscles, tongue, saliva, technique, learning)?

Summary:

Write a short report to answer the question and address the accuracy of your prediction and to answer the investigation question *how is a bird's beak formed to help it survive?* Include a prediction using your learning to explain how a broken beak could affect the survival of a bird, use examples. Explain the benefits of the excursion to Hobart Zoo and Aquarium in learning about bird beak formation.

Explain the different beak types with examples of what they eat and a real life bird species.

These can be produced in your own way as long as you have a written speech or report to share your ideas. You may choose:

- Infographic
- Presentation
- 3D model
- video recording
- artwork
- or in any other form that you have agreed upon with your teacher.