Shorebird Competition Supporting Unit of Work Years 3-4

NSW Science & Technology – Living World

This unit of work has been prepared as a suggested unit to be used to develop student learning and understanding of threatened shorebirds in Australia and support participation in the ANSTO Shorebirds Competition (student entries for the competition could be completed as a separate Visual Arts unit). In this unit, students will study migratory shorebirds to support their investigation of the classification, life cycle and survival of living things. In doing so, students will examine the real and complex threats to this type of bird and consider ways in which they can contribute to their survival.

The unit is based on one 50 minute science lesson per week, however activities can be adapted to be made longer or shorter to suit individual class requirements.

Additional information and resources for teacher have been included at the end of the lesson outlines.

Outcomes + Thinking Skills	**Inquiry Questions**	**Content**
ST2-4LW-S - Compares features and characteristics of living and non- living things **ST2-1WS-S** - Questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations. *Design and Production Skills* •Identifying and defining • Researching and planning *Thinking Skills* - Scientific thinking - Systems thinking	How can we group living things? What are the similarities and differences between the life cycles of living things? How are environments and living things interdependent?	<u>Classification of living things</u>: *Students*: • collect data and identify patterns to group living things according to their external features, and distinguish them from non-living things (ACSSU044) SysT • identify that science involves making predictions and describing patterns and relationships (ACSHE050, ACSHE061) SciT <u>Life cycles of living things</u>: *Students*: • identify that living things have life cycles (ACSSU072) • conduct an investigation into the life cycle of plants and/or animals (ACSSU072) SciT <u>Survival of living things</u>: *Students*: • describe how living things depend on each other and the environment to survive, for example: (ACSSU073) SysT – bees and flowers – birds eat and disperse seeds

Cross-curriculum Priorities and General Capabilities

- Sustainability
- Critical and creative thinking
- Ethical understanding
- Information and communication technology capability
- Literacy
- Numeracy Personal and social capability

<table>
<tr><th colspan="3">Suggested Learning and Teaching Sequence</th></tr>
<tr><th>Lesson</th><th>Activity</th><th>Resources</th></tr>
<tr><td>1</td><td>What is migration?
Why do animals migrate?
Do you know some animals that migrate?
What do you know about birds that migrate?
We are going to learn about some amazing birds that can fly over 11,000km straight! These birds travel the distance from Earth to the moon and back in their lifetimes. One shorebird, the bar-tailed godwit, holds the world record for the longest non-stop flight ever recorded for any bird species!
<u>Pack your Bags activity</u>
In groups, make a list of everything you/your family do to prepare for a long trip away somewhere.
Students share responses and these are noted on table on the board.
As a class, discuss similar ways migratory birds might prepare before a long flight (ie – pack your bag with correct clothing = change in feathers; pack food = feed and store extra weight; pack a map = use instinctive navigational route [East Asian-Australian Flyway]; get your family together = migratory birds travel together at the same time and take turns leading the flock; sleep well the night before= rest before flight).
Complete Activity Sheet 1 with students, labelling the essential things a shorebird does to help prepare for a long flight.</td><td>See Teacher Resources for background reading

Activity Sheet 1</td></tr>
<tr><td>2</td><td>What is classification?
Discuss/explain examples of how we classify or group things: living/non-living, types of animals (eg mammals, birds, fish, reptile, amphibian).
Explain that scientists classify things to help us to study them.
We are picking one of these groups to look at closer – birds.
In small groups, students brainstorm what all birds have in common. Share ideas as a class. (eg all birds have feathers – they are the only type of animal to have them!)
Display images of different types of birds (a simple selection such as shorebird, penguin, owl and parrot). How are these birds different? Consider their features as well as their habitat and behaviour. Explain that these are just a few of the different types of birds in our world. Have students draw a table in their work books to list the differences between the four types of birds discussed. Library books on each type of bird or website resources could be used to assist.
Share responses as a class
<u>Classification “Celebrity Heads” game</u>
Select some students to sit in front of a white board. Above each student, write a classification of a living thing (eg bear, dog, owl). Students take turns to ask one “yes/no” question until they guess the animal.</td><td>Types of birds:
https://www.bioexplorer.net/animals/birds/

Differences between some types of birds<table><tr><td>Shorebirds</td><td>Penguins</td><td>Owls</td><td>Parrots</td></tr><tr><td></td><td></td><td></td><td></td></tr></table></td></tr>
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<table>
<tr><td>3</td><td>First reading: Circle by Jeannie Baker. Read text to class, giving students time to view the illustrations.
In small groups, have students re-tell the story of the Godwits life to each other.
What is a life cycle?
Discuss the text in the context of it telling the lifecycle of these birds.
<u>Life cycle wheel</u>
Using the information provided in the text, students use Activity Sheet 2 to label and construct a life cycle wheel for the bar-tailed godwits.
Extension activity: Students mark the migration path of the bar-tailed godwits on a world map.</td><td>Circle by Jeannie Baker
Alternative picture books:
Windcatcher: Migration of the Short-tailed Shearwater by Diane Jackson Hill and Craig Smith
Red Knot by Nancy Carol Willis

Activity Sheet 2</td></tr>
<tr><td>4</td><td>The bar-tailed godwit is an Australian threatened species.
What is a threatened species?
What is a threat?
When we read Circle, pay close attention to what might be a threat to the godwits (look closely at the images of the text for extra information)
Second reading: Circle
As a class, discuss what students noticed are the threats to the Godwit in this text?
In student workbooks, draw a table to list the threats to the godwits from nature and caused by humans.
Discuss what students have recorded. Are there any threats to the godwit that we can reduce?</td><td>Refer teacher resources for background reading

Threats to godwits<table><tr><td>Natural threats</td><td>Threats caused by humans</td></tr><tr><td></td><td></td></tr></table></td></tr>
<tr><td>5</td><td><u>Local shorebirds</u>
Select a species of threatened shorebirds to study with your class (one that might visit your local community or a place known to the students). Show students some information specific to this species (see teacher resources for youtube videos and website resources).
Provide students with information, or allow them to conduct their own research to learn more about this species using Activity Sheet 3. Provide students with a picture of the chosen species of shorebird to label individual characteristics.</td><td>Refer teachers resources for additional information on some species

Activity Sheet 3</td></tr>
<tr><td>6</td><td>Continue with research. Share and discuss findings as a whole class.</td><td></td></tr>
<tr><td>7</td><td><u>Assessment task</u>
Using what they have learnt about the chosen shorebird, students should consider what they can do to help them. Students work in pairs or individually to complete Activity Sheet 4 and use this as a planning sheet to develop a specific way to manage the threat to this species. They should then build a model, draw a design, create a presentation or short film to present their idea to the class.</td><td>Activity Sheet 4</td></tr>
<tr><td>8</td><td>Continuation from previous lesson. May also include presentation to class.</td><td></td></tr>
<tr><td colspan="3">Assessing student learning</td></tr>
<tr><td>Formative</td><td colspan="2">Monitor students’ developing understanding throughout the unit.</td></tr>
<tr><td>Summative</td><td colspan="2">Assessment task: Investigate and design a way to address some of the threats faced by a selected shorebird (lesson 7-8). This activity will allow students to demonstrate their knowledge and understanding of the characteristics of the shorebird and its lifecycle, their interdependence with their environment and the impact of humans.</td></tr>
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Additional activities for other Key Learning Areas:		
English	A student identifies and uses language forms and features in their own writing appropriate to a range of purposes, audiences and contexts **EN2-7B**	Write an information report on a shorebird of own choice. Write a persuasive letter to your local council to help the shorebirds. Create a poem about your favourite shorebird
Mathematics	A student uses simple maps and grids to represent position and follow routes, including using compass directions **MA2-17MG**	Create a map with the flying route of a shorebird outlined. Use compass directions to describe the path the birds fly. Visit a local park or wetland area and collect data on birds sighted (use a bird ID program to help http://www.birdsinbackyards.net/finder). Record data in a table and graph.
Geography	A student: • Describes the ways people, places and environment interact **GE2-2** • Examines differing perceptions about the management of places and environments **GE2-3**	This unit could be adapted to be included into The Earth's Environment content areas: *Perception of environments*; and *Protection of environments*.

Resources for Teachers

Information on migratory shorebird species that visit Australia https://wingthreads.com/about/
Video made by a shorebird enthusiast regarding shorebirds in southern Sydney Birdlife Southern Presentation Port Hacking Shorebirds
Migratory shore birds information https://www.youtube.com/watch?v=fSRrDlrB26w
ABC News article regarding some of the threats faced by shorebirds https://www.abc.net.au/news/2016-06-17/flying-for-your-life-ann-jones/7459288
Sooty Oystercatcher - https://www.youtube.com/watch?v=L8LWiVw8_1E
Pied Oystercatcher – https://www.youtube.com/watch?v=L8LWiVw8_1E
Bird ID http://www.birdsinbackyards.net/finder
Citizen science project: Aussie Backyard Bird Count 19-25 October https://aussiebirdcount.org.au/
Bird monitoring citizen science projects https://birdlife.org.au/get-involved/citizen-science

Activity Sheet 1 – How do Shorebirds prepare for a long flight?

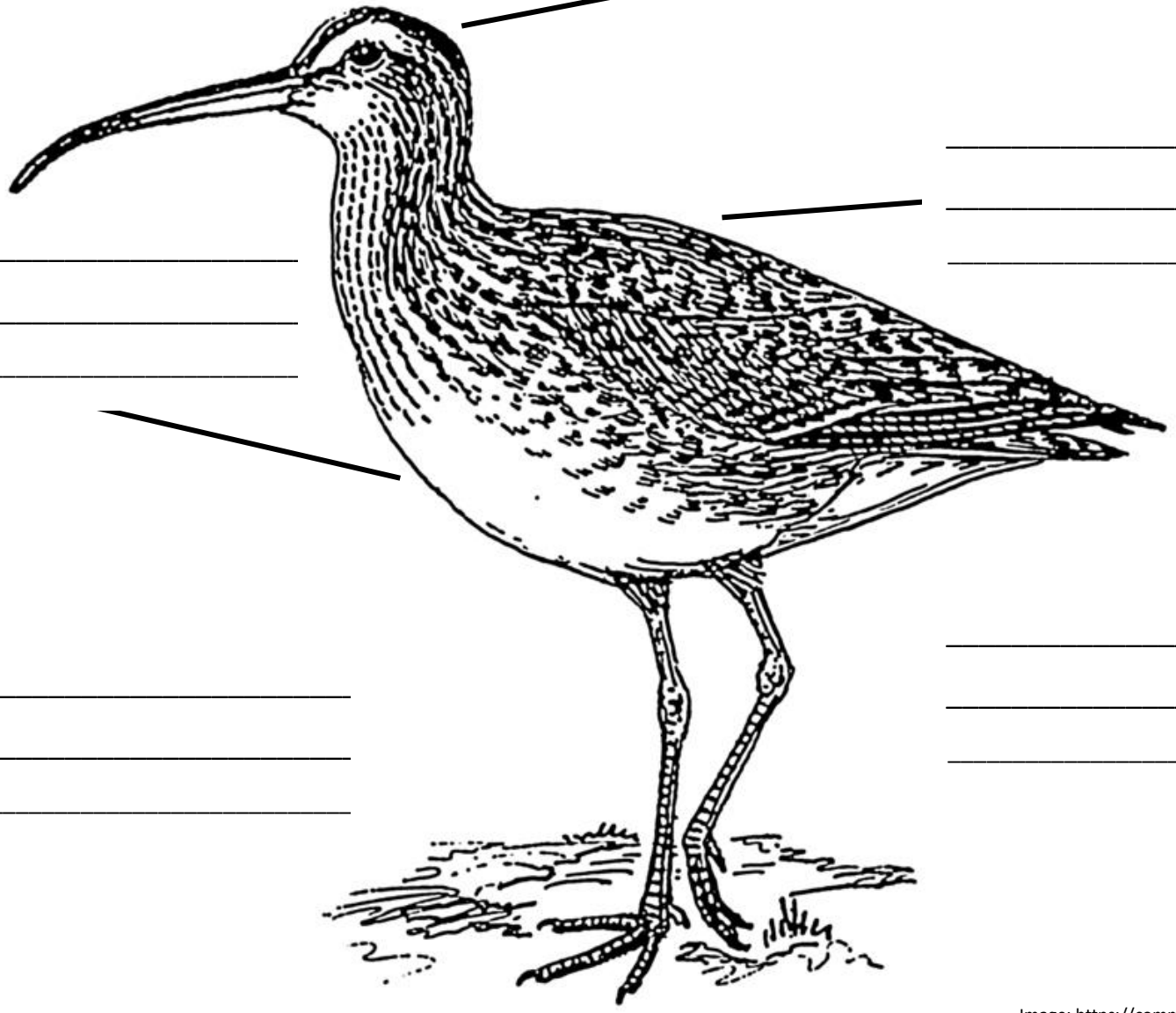
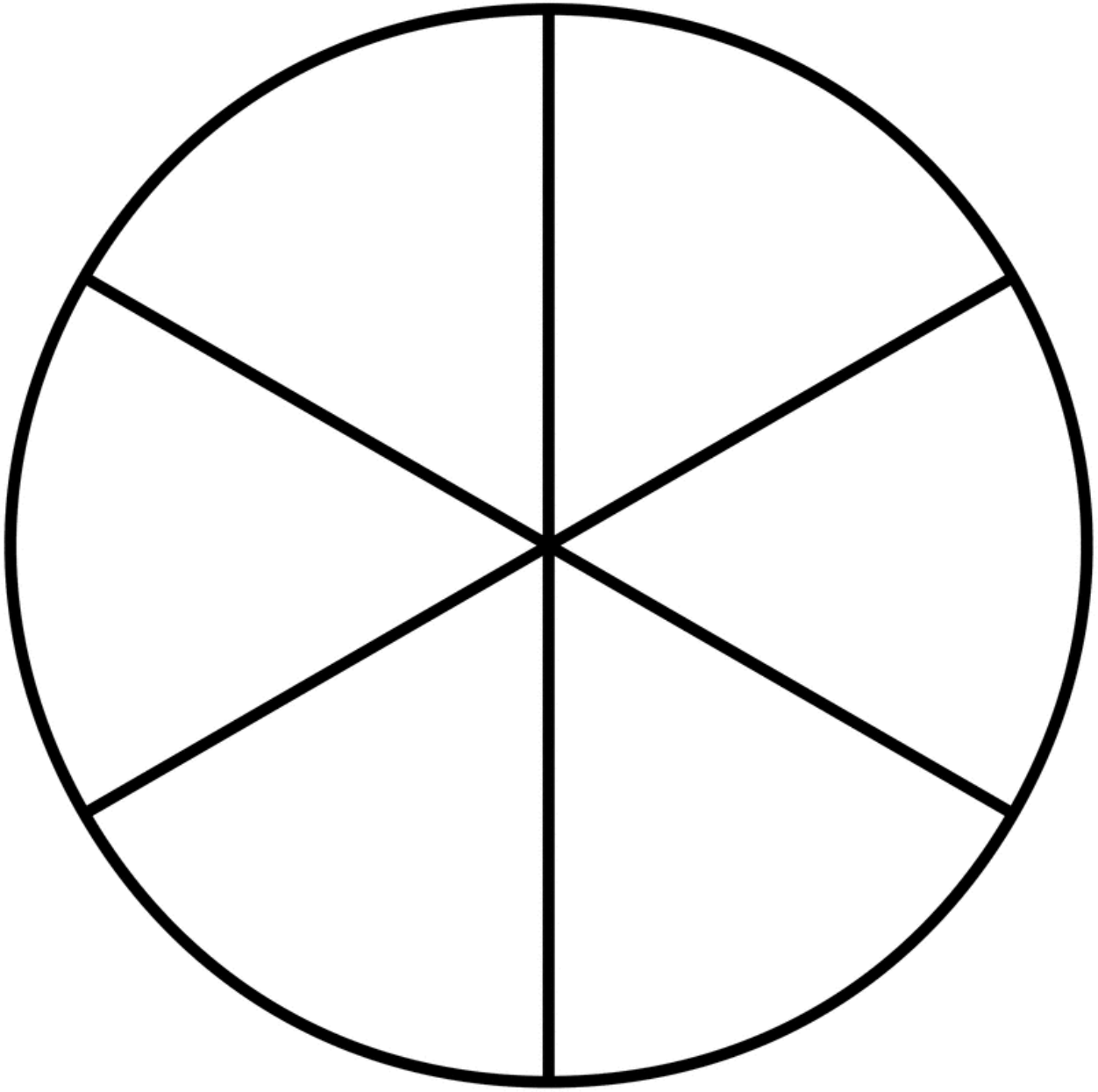


Image: https://commons.wikimedia.org/wiki/File:Curlew_(PSF).png

Activity Sheet 2 –The life cycle of a bar-tailed godwit



Instructions:

Cut around the outside of both circles. Use a split pin to connect the top circle to the bottom.

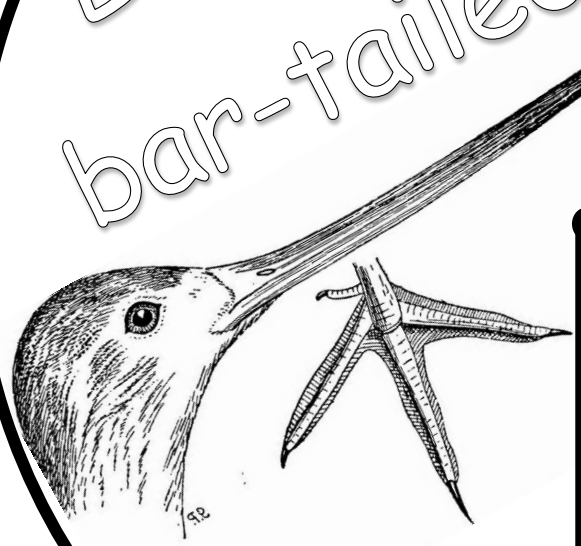
In each of the sections of the divided circle, describe the next part in the life cycle of a bar-tailed godwit.

Choose from the list below (be careful – it has been jumbled!).

Add a picture to each section.

- Migration North
- Migration South
- Rest and feed in Australia
- Rest and feed in South East Asia
- Migration North
- Breeding grounds in Alaska

Life cycle of a bar-tailed godwit



Cut out

Image: https://www.flickr.com/photos/internetarchivebookimages/20427605908/

Activity Sheet 3 – Shorebird Study

What is the name of the shorebird you will study?_____

What does it look like?	Where does it live?
What does it eat?	What threats does it have?
Interesting facts.	How has it adapted to suit its environment?

Activity 4 – How can you help shorebirds?

What is the name of the shorebird you will protect? _____

What is the threat you want to protect the birds from?

_____

_____

_____

_____

What is your idea to reduce this threat?

_____

_____

_____

How will it work?

_____

_____

_____

_____

How will it help the birds?

_____

_____

_____

_____

Would your idea help protect the birds from any other threats?

_____

_____

_____