

Adelaide International Bird Sanctuary educator's kit

This document is designed to provide information and suggested lesson plans for upper primary teachers of years 5, 6 and 7 to discuss the Adelaide International Bird Sanctuary and the migration of shorebirds with their students.

The Adelaide International Bird Sanctuary (AIBS) is being created to help protect resident and migratory shorebirds that gather along the coast of Gulf St Vincent in the north-west of Adelaide, and it will cover a 60 kilometre stretch of coast, from the Barker Inlet to the township of Port Parham.

Creating a safe haven for migratory and local shorebirds, the sanctuary will help improve the water quality, protect against the impacts of climate change and provide opportunities for local and international tourism.

The purpose of this kit is to provide activities that will give students the opportunity to find out more about the significance of the Adelaide International Bird Sanctuary. The activities have been designed to enhance the learning opportunities around a visit to the Sanctuary.

NRM Education has many coast and marine, and bird resources available for loan. Check the [loan library](#) to see what resources you can access, such as posters, books and equipment to supplement the students' learning.

Key objectives

For students to gain an awareness and understanding of:

- the valuable environment that sits along the low energy coast of the upper St Vincent Gulf
- migratory shorebirds, the distances they travel, the habitat required to sustain them and the ecosystems that support the birds and other animals
- the rich marine biodiversity in the area, including fish, crustaceans and marine mammals
- the fragile nature of mangrove and samphire systems and the threats to the coastal environment within South Australia
- the mechanisms used to protect this valuable environment and how they help protect the habitat and biodiversity of the upper Gulf St Vincent.

Students will recognise and respect the significance of protecting this valuable habitat as a sanctuary and the actions that are taken to achieve this at a local, national and global scale.



Overview

Awareness: Pre-visit background information, lesson suggestions, resource links and extension ideas.

- Habitats
- Shorebirds
- Ecosystems
- Conservation

Understanding: Activity Day at the AIBS with NRM Education – need to add our content

Reflection: Post-visit background information, lesson suggestions, resource links and extension ideas.

- Protection of species
- People's values



Figure 1. Red-capped Plover (Photo Martin Stokes, Department of Environment, Water and Natural Resources)



Habitats

Background information:

Much of the Adelaide International Bird Sanctuary lies adjacent to the [Upper Gulf St Vincent Marine Park](#), protecting connected habitats from the coast into the sea. The sanctuary will be one of the longest continuous coastal reserves in the state, second only to the Coorong.

The Gulf is a low energy coast, which means it has relatively calm waters. This provides the ideal environment for habitats such as mangroves and seagrass to grow. There are some of the largest temperate seagrass meadows in the world, some of the largest and most diverse areas of temperate saltmarshes in Australia and some of the largest areas of grey mangrove in Australia.

The Dry Creek salt fields consist of diverse and relatively pristine saltmarsh and wetland habitat that is declining elsewhere in the region and across the state due to urban encroachment, pollution and agricultural development. Continued protection of this habitat from development and degradation is critical.

Two wetlands of national significance occur in the area – the Port Gawler and Buckland Park Lake, and the Barker Inlet and St Kilda wetland.

There is a diverse range of habitats within the AIBS. These include:

- mangrove forests
- saltmarshes
- samphires (type of Saltmarsh)
- mudflats
- estuaries – tidal creeks
- coastal wetlands
- seagrass meadows
- sandy beaches

This range of habitats supports a large amount of biodiversity and wildlife.



Lesson suggestion:

- Find out what students already know about the coastline of the Gulf St Vincent. What do they think the environment looks like? Do they do recreational activities in this environment with their families and, if so, what can they recall?
- Discuss what is a habitat? Brainstorm the many different habitat types that might be found in the AIBS. List the range of habitats somewhere visual.
- In small groups or individually get the students to choose a habitat type and try to answer the following questions. They can use words or drawings to answer.
For example if they choose mangrove forests:
 - I think a mangrove forest is.....
 - I think a mangrove forest looks like....
 - I think you might find these animals living there.....

- Once the students have had an opportunity to demonstrate their prior knowledge, get them to research their chosen habitat type to create a poster, presentation, booklet or even a diorama.
Suggested research:

- Find a definition for the habitat type
- Organisms that live in the habitat
- Interesting facts and pictures
- Threats to the habitat
- Benefits to the ecosystem (i.e. Seagrass meadows are critical nurseries for fish.)

Adjust the level of research information required depending on the students' year level.

Resource links:

- [Gulf St Vincent Bioregion Fact Sheet](#) (look under Life in Our Bioregions Resource)
- Australian Museum – [Coastal habitats](#) and [Animals of Coastal habitats](#)

Extension ideas:

- What is a habitat? Student resource 1 found in the [Hands on for Habitat Kit](#)
- [Looking at Habitat Diversity through Birds – a learning sequence](#) – NRM Education Kit (look under Terrestrial Birds to download the Teachers Kit)



Australian Curriculum Version 8.2:

Subject/Cross-curriculum priority	Year Level	Content Descriptions
SCIENCE	Year 5	Living things have structural features and adaptations that help them to survive in their environment (ACSSU043) Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE083)
	Year 6	The growth and survival of living things are affected by physical conditions of their environment (ACSSU094) Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE100)
	Year 7	Interactions between organisms, including the effects of human activities can be represented by food chains and food webs (ACSSU112) Some of Earth's resources are renewable, including water that cycles through the environment , but others are non-renewable (ACSSU116) Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (ACSIS125)
HASS	Year 5	Work in groups to generate responses to issues and challenges (ACHASSI102) The environmental and human influences on the location and characteristics of a place and the management of spaces within them (ACHASSK113)
	Year 6	Work in groups to generate responses to issues and challenges (ACHASSI130)
	Year 7	Classification of environmental resources and the forms that water takes as a resource The way that flows of water connect places as they move through the environment and the way these affect places (ACHASSK183)
ENGLISH	Year 5	Clarify understanding of content as it unfolds in formal and informal situations, connecting ideas to students' own experiences and present and justify a point of view (ACELY1699) Plan, draft and publish imaginative, informative and persuasive print and multimodal texts, choosing text structures, language features , images and sound appropriate to purpose and audience (ACELY1704) Use a range of software including word processing programs with fluency to construct, edit and publish written text , and select, edit and place visual, print and audio elements (ACELY1707)
	Year 6	Participate in and contribute to discussions, clarifying and interrogating ideas, developing and supporting arguments, sharing and evaluating information, experiences and opinions (ACELY1709)
	Year 7	Plan, rehearse and deliver presentations, selecting and sequencing appropriate content and multimodal elements to promote a point of view or enable a new way of seeing (ACELY1720) Plan, draft and publish imaginative, informative and persuasive texts, selecting aspects of subject matter and particular language, visual, and audio features to convey information and ideas (ACELY1725)
SUSTAINABILITY	OI.2	All life forms, including human life, are connected through ecosystems on which they depend for their wellbeing and survival.



Shorebirds

Background information:

Each summer, at the peak of the migration season, the mudflats, mangroves and saltmarshes along the coast of Gulf St Vincent support an estimated 27,000 shorebirds, with 12 species occurring in internationally significant numbers.

Shorebirds (or waders) can be found along the shores of beaches, coastlines, estuaries and wetlands. They congregate in large flocks and feed in shallow waters with their bills in water, mud or sand looking for insects, snails, worms and crabs.

Shorebirds include plovers, sandpipers, stints, curlew, knot, stipes, godwits and oystercatchers. Terns are often included with shorebirds, although they are not waders but seabirds that feed by diving for fish.

Many species of shorebirds and terns are long-distance migrants. The routes that they travel are called **flyways**. The places where they pause to feed are called **stopovers** or **staging sites**. Shorebirds need time to feed and rest but disturbance can cause the birds to fly away, using up valuable food reserves.

The migratory shorebirds that visit from across the globe include [Grey Plover](#), [Sharp-tailed Sandpiper](#), [Ruddy Turnstone](#), [Red Knot](#), [Great Knot](#), [Curlew Sandpiper](#), [Common Greenshank](#), [Eastern Curlew](#), and [Bar-tailed Godwit](#). Many of these migratory shorebirds travel from as far away as Siberia and Alaska, passing through up to [22 countries](#) as they travel the [East Asian-Australasian Flyway](#) to reach the coast of Gulf St Vincent. From September to March migratory birds visit in large numbers and can be seen in great abundance and diversity across the AIBS. Some of these shorebirds, such as the Curlew Sandpiper, Ruddy Turnstone, Red Knot and Great Knot, are listed as threatened species.

The resident shorebirds that visit across Australia throughout the year include [Black Swan](#), [Red Capped Plover](#), [Red-necked Stint](#), [Sooty Oystercatcher](#), [Banded Stilt](#) and the [Royal Spoonbill](#).

The creation of the Adelaide International Bird Sanctuary will ensure these birds have a safe haven for the future.



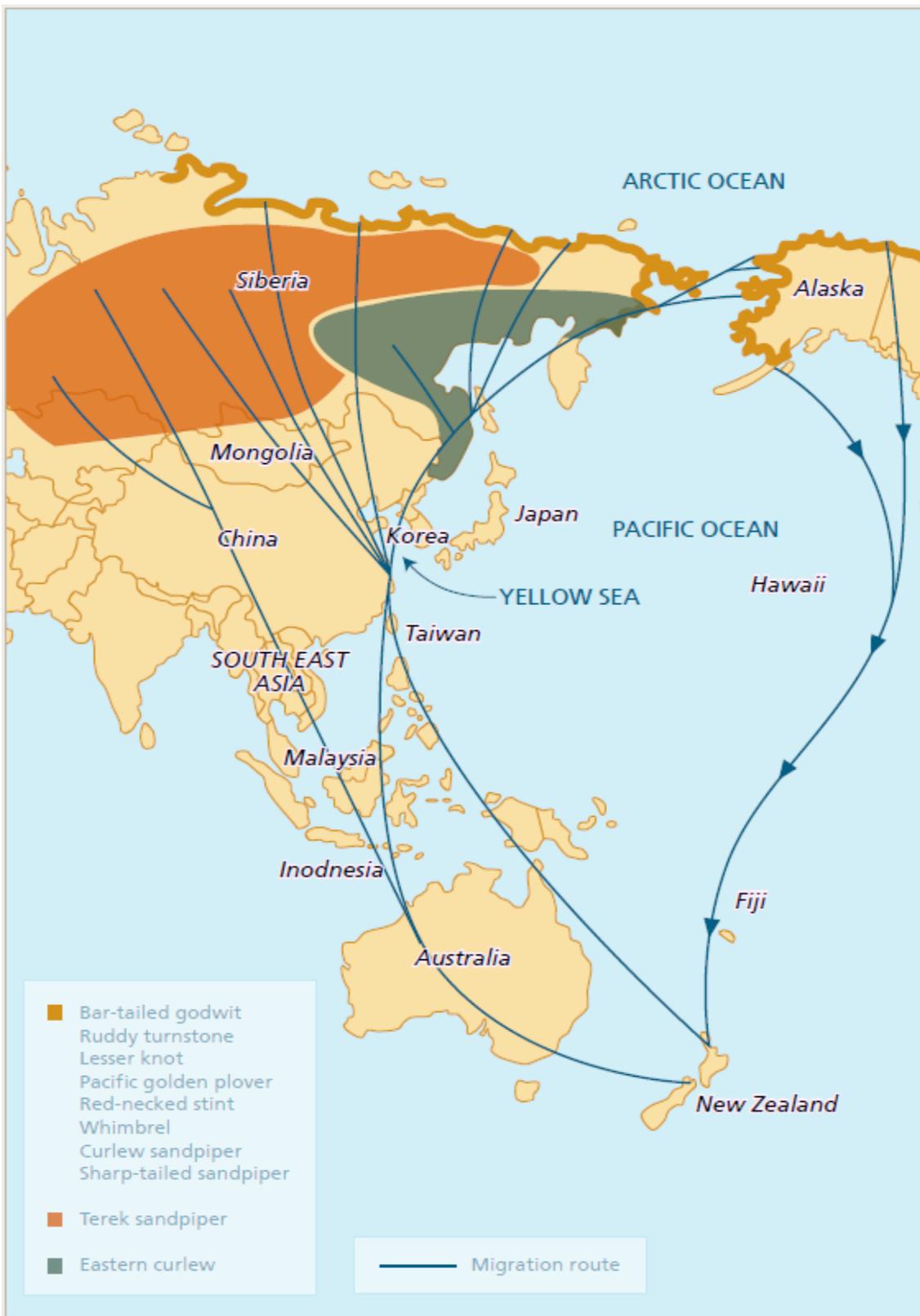


Figure 2. The East-Asian Australasian Flyway. Source: Saltfields – creating the Adelaide International Bird Sanctuary, The Department of Environment, Water and Natural Resources.



Government of
South Australia



Natural Resources
Adelaide and Mt Lofty Ranges

Lesson suggestion:

- Have a class discussion about shorebirds. What are they and where can they be found? Shorebirds are sometimes called waders – this may give the students a clue as to where these birds live. How might they be different to other birds?
- Watch the [video "An Introduction to Shorebirds on the Samphire Coast"](#)
- Have the students draw a picture of a shorebird and prepare an information card. Students can use the [Birdlife Australia – find a bird](#) website to find information for their bird card. Research suggestions:
 - What does it eat? Are there any animals that might eat them (consider feral animals like foxes)?
 - In what habitat would you expect to find this bird at the Adelaide International Bird Sanctuary?
 - Will this particular bird be there all year round or only at certain times of the year?
 - What adaptations does it have to aid its survival? The [Feathers, Flyway and Fast Food](#) resource has information about birds and their features.
 - If it is a migratory bird, show information about its flyway and stopover countries.

Adjust the level of research information required depending on the student's year level.
- Consider using the information cards for further learning. Get the students to share the information on their bird to other students in small groups or to play games such as celebrity head.

Resource links:

- [Birdlife Australia – find a bird](#)
- [Birdlife Australia – educational materials](#)
- [OzCoasts – Shorebird counts](#)

Extension ideas:

- [Wetland Birds Teacher Information Pack](#) – NRM Education Kit
- [Feathers, Flyway and Fast Food](#) – produced by Environment Australia.



Australian Curriculum:

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	Year 6	The growth and survival of living things are affected by physical conditions of their environment (ACSSU094)
	Year 7	Interactions between organisms, including the effects of human activities can be represented by food chains and food webs (ACSSU112)
HASS	Year 5	Work in groups to generate responses to issues and challenges (ACHASSI102) The environmental and human influences on the location and characteristics of a place and the management of spaces within them (ACHASSK113)
	Year 6	The geographical diversity of the Asia region and the location of its major countries in relation to Australia (ACHASSK138) Differences in the economic, demographic and social characteristics of countries across the world (ACHASSK139) Australia's connections with other countries and how these change people and places (ACHASSK141)
	Year 7	The way that flows of water connect places as they move through the environment and the way these affect places (ACHASSK183) The influence of environmental quality on the liveability of places (ACHASSK190) Factors that influence the decisions people make about where to live and their perceptions of the liveability of places (ACHASSK188)
ENGLISH	Year 5	Clarify understanding of content as it unfolds in formal and informal situations, connecting ideas to students' own experiences and present and justify a point of view (ACELY1699) Use a range of software including word processing programs with fluency to construct, edit and publish written text , and select, edit and place visual, print and audio elements (ACELY1707)
	Year 6	Make connections between students' own experiences and those of characters and events represented in texts drawn from different historical, social and cultural contexts (ACELT1613)
	Year 7	Plan, draft and publish imaginative, informative and persuasive texts, selecting aspects of subject matter and particular language, visual, and audio features to convey information and ideas (ACELY1725)
SUSTAINABILITY	OI.2	All life forms, including human life, are connected through ecosystems on which they depend for their wellbeing and survival.
ASIA AND AUSTRALIA'S CONNECTION TO ASIA	OI.2	Interrelationships between humans and the diverse environments in Asia shape the region and have global implications.
	OI.5	Collaboration and engagement with the peoples of Asia support effective regional and global citizenship.



Ecosystems

Background information:

An ecosystem is a biological community of interacting organisms and their physical environment. To understand how ecosystems function, it is important to look at the interactions between the abiotic components, such as the sun, rocks, soil and water, and the biotic components, such as the plants, animals and microscopic organisms within the ecosystem.

Most of the food in a marine ecosystem comes from the plants, which are known as the producers as they produce their own food. Energy is passed from one level to another when an animal eats a plant or another animal. This energy passing from one living thing to another is called a food chain. A food web is formed when food chains overlap or connect together; most species eat more than one species of plant or animal.

The ecosystems of the gulf regions provide habitats for a huge range of species, including many that are unique to the region. This is due to a number of factors:

- In ancient times, warm currents ran through South Australian waters. Over time South Australian waters became temperate but the tropical species that had established remained in the warmer waters of the gulfs.
- While the marine species of northern Australia mixed with the Asia region, the marine life of southern Australia has remained geographically isolated for around 65 million years.
- The region has low nutrient concentrations, partly due to Australia's low rainfall and poor soils meaning that very few nutrients travel from land to the coastal waters. You might expect this would mean the diversity of species is low, but it has caused an increase in diversity, particularly with marine invertebrates and algae (seaweed), as they have adapted to the unique conditions of this region.
- The salinity of the Upper Gulfs can change dramatically throughout the year due to high levels of evaporation during summer and no freshwater input. The gulfs have more saline (salty) conditions at the landward end rather than the seawater end. This is called an "inverse" or "reverse" estuary and this high salinity has created ecological conditions that the species have adapted to over time.

Intertidal habitats along the AIBS provide a transition zone between land and marine ecosystems. The plants and animals that live in these zones have successfully adapted to tolerate the often extreme conditions of wetting, drying, salinity, temperature, exposure to sun and submersion.

Sandy beaches, estuarine sand flats and mudflats are the soft-bottomed habitats within the intertidal zone. They mostly occur on low-energy coastlines and have complex food webs. The smaller plants and animals provide food for crustaceans, small fishes and shorebirds.

Mud flats, continually washed by the tide, provide a linking habitat between mangroves and the adjacent seagrass meadows. The larvae of many species settle on and grow in these rich feeding areas.

Many tiny plants and animals live within the 'gaps' between the sand grains on sandy beaches. They provide foraging areas and habitat for migratory and resident wading birds or shorebirds.



Lesson suggestion:

- Discuss with your class how an ecosystem is made up of both abiotic (non-living) and biotic (living) components. As a class come up with a list of abiotic and biotic things they would expect to see at the Adelaide International Bird Sanctuary. Using the background information, lead a discussion with your class on how the abiotic factors, such as soil, water and salt, can affect the living plants and animals.
- Discuss food chains and webs with your class, if possible using examples (NRM Education has Coast and Marine resources for loan). Get the students to choose a biotic (living) organism from the list (e.g. bird, crab, seaweed). Ask them to think about what might feed on that organism, or what it might feed on, to see if they can make a simple food chain with their organism. Food chains can be very long or as short as two species!
- Consider getting the student to make a card with their chosen organism by drawing a simple illustration with a label. Use these in groups or as a class to try and make food webs. Cards could be strung together to make mobiles. Discuss how taking items away from the food chains/webs can mean organisms higher up the chain will go hungry or homeless.

Resource links:

- [State of the Environment 2013](#) – South Australia Coastal and Marine Environment

Extension ideas:

- Activity 4 – Creating a Beach Web Mobile or Wall Display – [Beach-nesting Birds Educational Kit](#) by Birdlife Australia
- [Wetland Birds Teacher Information Pack](#) – NRM Education Kit



Figure 3. Curlew Sandpipers (Photo Martin Stokes, Department of Environment, Water and Natural Resources)



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	Year 6	The growth and survival of living things are affected by physical conditions of their environment (ACSSU094) Sudden geological changes and extreme weather events can affect Earth's surface (ACSSU096)
	Year 7	Interactions between organisms, including the effects of human activities can be represented by food chains and food webs (ACSSU112) Scientific knowledge has changed peoples' understanding of the world and is refined as new evidence becomes available (ACSHE119)
HASS	Year 5	Work in groups to generate responses to issues and challenges (ACHASSI102) The environmental and human influences on the location and characteristics of a place and the management of spaces within them (ACHASSK113)
	Year 6	Reflect on learning to propose personal and/or collective action in response to an issue or challenge, and predict the probable effects (ACHASSI132)
	Year 7	Reflect on learning to propose personal and/or collective action in response to an issue or challenge, taking into account different perspectives, and describe the expected effects (ACHASSI162) The quantity and variability of Australia's water resources compared with other continents (ACHASSK184)
ENGLISH	Year 5	Clarify understanding of content as it unfolds in formal and informal situations, connecting ideas to students' own experiences and present and justify a point of view (ACELY1699) Use a range of software including word processing programs with fluency to construct, edit and publish written text , and select, edit and place visual, print and audio elements (ACELY1707)
	Year 6	Make connections between students' own experiences and those of characters and events represented in texts drawn from different historical, social and cultural contexts (ACELT1613)
	Year 7	Plan, draft and publish imaginative, informative and persuasive texts, selecting aspects of subject matter and particular language, visual, and audio features to convey information and ideas (ACELY1725)
SUSTAINABILITY	OI.2	All life forms, including human life, are connected through ecosystems on which they depend for their wellbeing and survival.



Conservation

Background information:

The salt fields that stretch 35 kilometres along the Gulf St Vincent coastline were used to produce brine for the commercial production of soda ash from the 1930s until 2013 when production ceased with the closure of the Penrice soda ash factory. During that period the salt fields have developed in to a patchwork of artificial and natural wetlands, providing a diverse range of habitat for migratory birds which are now listed as being of national and international significance for migratory shorebirds. Ongoing planning and action and are required to ensure their conservation.

The conservation significance of this area has also been elevated by the destruction and disturbance of similar shorebird habitats in other locations along the gulf and throughout the world.

The South Australian Government has long been committed to protecting Gulf St Vincent and its varied and unique coastal and marine ecosystems, with numerous areas already protected:

- Upper Gulf St Vincent Marine Park – spans the waters and upper reaches of the Gulf. Includes the Light River Delta, which is of national importance as it is considered one of the most ecologically intact mangrove and saltmarsh systems in SA.
- Adelaide Dolphin Sanctuary – focuses on protecting dolphins and their habitats. The protection of these habitats also helps improve habitat for other species, including shorebirds.
- The Barker Inlet-St Kilda and St Kilda-Chapman Creek Aquatic Reserves – established to conserve mangrove and seagrass communities and to protect fish nursery areas.
- Port Gawler and Torrens Island Conservation Parks – protect important saltmarsh and mangrove habitats.

The South Australian Government is committed to creating an extensive conservation sanctuary over the former Dry Creek salt fields, which will fulfil international, national and state environmental obligations.

The vision of the AIBS is to be an internationally important conservation area on the fringes of Adelaide that safeguards migratory birds, improves the health of Gulf St Vincent and supports sustainable urban development.



Lesson suggestion:

- Who is involved in creating the Adelaide International Bird Sanctuary (AIBS)? As a class think about what types of people might be involved in conservation activities within the AIBS. Come up with a list of all the different people and roles they think might be involved. Some to consider:
 - Government
 - Federal
 - State - [National Parks SA](#), [Department of Environment, Water and Natural Resources](#), [Natural Resources Adelaide and Mt Lofty Ranges](#)
 - Local - Cities of [Salisbury](#) and [Playford](#), [District Council of Mallala](#)
 - Marine ecologists
 - Park Rangers
 - [Volunteers](#)
 - [Citizen Scientists](#)
 - Community groups
 - Organisations such as [Birdlife Australia](#), [Birds SA](#)
- Allow the students to choose a role or organisation from the list and write a short paragraph on how they think the people in these roles or organisations might help to conserve the AIBS. As a class share these ideas. Ask the students are there any of the roles where children could be involved? Lead a discussion about volunteers and citizen scientists and what conservation activities they might be involved in.
- Consider choosing an existing conservation area from the background information provided and, as a class or in small groups, research who might be involved in helping protect these areas.
For example – The [Adelaide Dolphin Sanctuary](#) was an initiative of the South Australian Government to work with community and industry to create and manage a sanctuary for the dolphins of the Port Adelaide River and Barker Inlet. The Government created the Adelaide Dolphin Sanctuary Act 2005, the Port Adelaide Council developed a walking trail, volunteers run the Adelaide Dolphin Sanctuary Action Group, and schools are invited to become Junior Dolphin Guardians.

Resource links:

- [Adelaide International Bird Sanctuary](#)
- [Saltfields – Creating the Adelaide International Bird Sanctuary Brochure](#)



Australian Curriculum:

Subject / cross-curriculum priority	Year Level	Content Descriptions
SCIENCE	Year 5	Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE083)
	Year 6	Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE100)
	Year 7	Science knowledge can develop through collaboration across the disciplines of science and the contributions of people from a range of cultures (ACSHE223) Solutions to contemporary issues that are found using science and technology , may impact on other areas of society and may involve ethical considerations (ACSHE120) People use science understanding and skills in their occupations and these have influenced the development of practices in areas of human activity (ACSHE121)
HASS	Year 5	Develop appropriate questions to guide an inquiry about people, events, developments, places, systems and challenges (ACHASSI094) The environmental and human influences on the location and characteristics of a place and the management of spaces within them (ACHASSK113)
	Year 6	Develop appropriate questions to guide an inquiry about people, events, developments, places, systems and challenges (ACHASSI122) Examine different viewpoints on actions, events, issues and phenomena in the past and present (ACHASSI127) Reflect on learning to propose personal and/or collective action in response to an issue or challenge, and predict the probable effects (ACHASSI132)
	Year 7	Develop and use criteria to make informed decisions and judgements (ACHASSI161)
ENGLISH	Year 5	Clarify understanding of content as it unfolds in formal and informal situations, connecting ideas to students' own experiences and present and justify a point of view (ACELY1699) Use a range of software including word processing programs with fluency to construct, edit and publish written text , and select, edit and place visual, print and audio elements (ACELY1707)
	Year 6	Make connections between students' own experiences and those of characters and events represented in texts drawn from different historical, social and cultural contexts (ACELT1613)
	Year 7	Plan, draft and publish imaginative, informative and persuasive texts, selecting aspects of subject matter and particular language, visual, and audio features to convey information and ideas (ACELY1725)
HEALTH AND PHYSICAL EDUCATION	Year 5 and 6	Recognise how media and important people in the community influence personal attitudes, beliefs, decisions and behaviours (ACPPS057)
CCP - SUSTAINABILITY	OI.3	Sustainable patterns of living rely on the interdependence of healthy social, economic and ecological systems.



Protection of species

Background information:

Many commercial, industrial and recreational activities benefit from South Australia's diverse coastal and marine resources. The pressure from these activities has environmental costs in the form of pollution, erosion, degradation of habitats, introduction of pests and unsustainable use of some resources. These can significantly impact the species that inhabit the AIBS.

Threats to the St Vincent Gulf bioregion and its dependent species include:

- marine pollution through recreational and commercial fishing, and suburban drainage systems
- storm-water runoff containing pollutants leading to losses of seagrasses and habitat degradation
- overfishing.

Beach habitats are vulnerable to human impacts from both land-based and ocean-based activities, including coastal development, urban run-off, marine pollution, and recreational activities such as bait digging for fishing and, especially, driving on beaches. The beaches are also impacted by humans trampling and collecting living organisms.

Soft-sediment habitats are vulnerable to any activities that disturb the seabed. These can result from urban and industrial development, and include dredging and dumping, stormwater run-off, sewage and industrial discharges, and trawling.

The Government recognises the high conservation values of Gulf St Vincent and the importance of maintaining healthy and productive coastal and aquatic ecosystems. The need for improved conservation efforts to stem the decline of migratory shorebirds, improve the water quality of the gulf and address the risks associated with the closure of the Dry Creek salt fields are also recognised.

The AIBS will protect a number of threatened species and areas, including:

- Shorebirds – out of the 52 species recorded in the salt fields, 29 are protected under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The area also supports 17 species that are listed as rare and two species that are listed as vulnerable under the South Australian *National Parks and Wildlife Act 1972*.
- Coastal saltmarsh - listed as a threatened ecological community under the EPBC Act in 2013.
- The largest Australian population of Bead Glasswort and the Samphire Thornbill, both species found in the salt fields – listed as nationally threatened under the *Environmental Protection Biodiversity Conservation Act 1999*.
- Two wetlands of national significance – Port Gawler and Buckland Park Lake, and the Barker Inlet and St Kilda wetland.

To ensure the protection of migratory shorebirds, the Australian Government has signed bilateral migratory bird agreements with Japan, China and Korea. These agreements require parties to protect migratory shorebirds by protecting and conserving important habitat. The salt fields support a number of species that are subject to these agreements.



Lesson suggestion:

- Have a class discussion about threats to species that inhabit the AIBS. Think about local, national and international factors that impact on some of the species, particularly migratory shorebirds. Why do governments protect certain species? Discuss some of the protection mechanisms in place, such as bilateral agreements with other countries.
- Birdlife Australia has an [Australian Shorebirds ID Sheet](#) that has pictures and names of Australia's Shorebirds. Encourage students to choose a shorebird species and create a "Shorebirds – under Threat" poster, handout or leaflet. Draw or find a picture of the chosen species and include information on threats to the bird and their habitat, and actions that can be taken to help protect them.
- Consider putting the posters up around the school or in the local community.

Resource links:

- [State of the Environment 2013](#) – South Australia Coastal and Marine Environment
- [Adelaide International Bird Sanctuary](#)
- [Saltfields – Creating the Adelaide International Bird Sanctuary Brochure](#)
- [Migratory Birds](#) – Department of Environment and Energy



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	Year 6	Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE100) Sudden geological changes and extreme weather events can affect Earth's surface (ACSSU096) Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE100)
	Year 7	Interactions between organisms, including the effects of human activities can be represented by food chains and food webs (ACSSU112) Science knowledge can develop through collaboration across the disciplines of science and the contributions of people from a range of cultures (ACSHE223) Solutions to contemporary issues that are found using science and technology , may impact on other areas of society and may involve ethical considerations (ACSHE120) People use science understanding and skills in their occupations and these have influenced the development of practices in areas of human activity (ACSHE121)
HASS	Year 5	Develop appropriate questions to guide an inquiry about people, events, developments, places, systems and challenges (ACHASSI094) The environmental and human influences on the location and characteristics of a place and the management of spaces within them (ACHASSK113)
	Year 6	Develop appropriate questions to guide an inquiry about people, events, developments, places, systems and challenges (ACHASSI122) Reflect on learning to propose personal and/or collective action in response to an issue or challenge, and predict the probable effects (ACHASSI132)
	Year 7	The influence of environmental quality on the liveability of places (ACHASSK190)
ENGLISH	Year 5	Use a range of software including word processing programs with fluency to construct, edit and publish written text , and select, edit and place visual, print and audio elements (ACELY1707)
CCP - SUSTAINABILITY	OI.2	All life forms, including human life, are connected through ecosystems on which they depend for their wellbeing and survival.
	OI.3	Sustainable patterns of living rely on the interdependence of healthy social, economic and ecological systems.
	OI.4	World views that recognise the dependence of living things on healthy ecosystems, and value diversity and social justice, are essential for achieving sustainability.
	OI.5	World views are formed by experiences at personal, local, national and global levels, and are linked to individual and community actions for sustainability.
	OI.7	Actions for a more sustainable future reflect values of care, respect and responsibility, and require us to explore and understand environments.



People's values

Background information:

Many South Australians rely on the coast and adjacent marine waters for their livelihood. Social and economic benefits from the coast and marine environment include benefits from recreation, tourism, lifestyle, heritage, urban development, commercial fisheries and aquaculture, shipping and transportation, coastal agriculture, mining, manufacturing, science and education.

The Gulf St Vincent has most of Adelaide's population at its doorstep. The main human activities in the region are shipping, fishing, aquaculture, scuba diving, boating and coastal development.

Australians have a close connection with the coast. Many South Australians live on and near the coast and much of their lifestyle, sport and recreation are orientated towards the coast – surfing, boating, fishing, swimming, diving, exploring, bird and whale watching.

Some people have chosen careers associated with the coast and marine environment, thus much of their life is directly influenced by these environments through their work. Some examples include marine biologists; oceanographers; marine ecologists; commercial fishermen; lighthouse keepers; tour operators; captain/crew of shipping operations; military personnel from various sectors of the defence force; life savers; and personnel from various marine fisheries/conservation organisations.

Coastal and marine environments are very important to our heritage. Sacred aboriginal sites, the landfalls of early explorers, historic buildings and settlements, shipwrecks and lighthouses are just a few of the many heritage sites valuable to Australians living today.

Cultural sites occur in all types of coastal and marine environments, including beaches, headlands, estuaries, reefs and the sea. Many groups of Indigenous people consider areas in the sea to be integral parts of their traditional country, known as 'sea country'. Understanding the importance of sea country to Indigenous Australians involves recognising that certain areas of land and sea are central to the identity, culture and social structure of particular groups of Indigenous peoples. It involves recognising the significance of sacred sites, the contemporary importance of traditional hunting, fishing and gathering, and the need to secure an independent economic base while maintaining traditional associations with land and sea.



Lesson suggestion:

- Have a class discussion about how people in Australia feel about coast and marine environments like the AIBS. Why do they think people visit areas like this? What things might they do there? Could people from different backgrounds and cultures value different things about the same place?
- Break the class into small groups. Have each group make a list of five things that they value about the AIBS in order of importance. For example, beach play with family, fishing, swimming, birdwatching, boating etc. Then, have a spokesperson from each group present the list to the class. Put all the lists up on the wall. What values did all groups share? Were there any major differences between the groups? Ask whether it was difficult to place the values in order in the small groups? Reiterate that people can have very different values towards the same place.
- Encourage your students to write down what they value about the AIBS by writing a Caring letter. "I care about the Bird Sanctuary because.....".
- Consider extending students by getting them to investigate multi-cultural perspectives toward the AIBS.

Resource links:

- [Gulf St Vincent Bioregion Fact Sheet](#) (look under Life in Our Bioregions Resource)
- [Multi-cultural perspectives: Indigenous people Module](#) - Marine Education Society of Australasia

Extension ideas:

- [Ocean Culture – People and the Sea Resource](#) – Marine Education Society of Australasia
- [Multi-cultural perspectives: Indigenous people Module](#) - Marine Education Society of Australasia



Australian Curriculum:

Subject / cross-curriculum priority	Year Level	Content Descriptions
SCIENCE	Year 5	Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE083)
	Year 6	Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE100)
	Year 7	Science knowledge can develop through collaboration across the disciplines of science and the contributions of people from a range of cultures (ACSHE223) Solutions to contemporary issues that are found using science and technology , may impact on other areas of society and may involve ethical considerations (ACSHE120)
HASS	Year 5	Develop appropriate questions to guide an inquiry about people, events, developments, places, systems and challenges (ACHASSI094) The environmental and human influences on the location and characteristics of a place and the management of spaces within them (ACHASSK113) Examine different viewpoints on actions, events, issues and phenomena in the past and present (ACHASSI099)
	Year 6	Work in groups to generate responses to issues and challenges (ACHASSI130) Develop appropriate questions to guide an inquiry about people, events, developments, places, systems and challenges (ACHASSI122) Examine different viewpoints on actions, events, issues and phenomena in the past and present (ACHASSI127) Reflect on learning to propose personal and/or collective action in response to an issue or challenge, and predict the probable effects (ACHASSI132)
	Year 7	Develop and use criteria to make informed decisions and judgements (ACHASSI161) The influence of social connectedness and community identity on the liveability of places (ACHASSK191) The influence of environmental quality on the liveability of places (ACHASSK190) Factors that influence the decisions people make about where to live and their perceptions of the liveability of places (ACHASSK188) The way that flows of water connect places as they move through the environment and the way these affect places (ACHASSK183) The quantity and variability of Australia's water resources compared with other continents (ACHASSK184)
ENGLISH	Year 5	Clarify understanding of content as it unfolds in formal and informal situations, connecting ideas to students' own experiences and present and justify a point of view (ACELY1699) Use a range of software including word processing programs with fluency to construct, edit and publish written text , and select, edit and place visual, print and audio elements (ACELY1707)
	Year 6	Participate in and contribute to discussions, clarifying and interrogating ideas, developing and supporting arguments, sharing and evaluating information, experiences and opinions (ACELY1709)
	Year 7	Use interaction skills when discussing and presenting ideas and information, selecting body language , voice qualities and other elements, (for example music and sound) to add interest and meaning (ACELY1804)



HEALTH AND PHYSICAL EDUCATION	Year 5 and 6	Explore how participation in outdoor activities supports personal and community health and wellbeing and creates connections to natural and built environments (ACPPS059)
CCP - SUSTAINABILITY	OI.5	World views are formed by experiences at personal, local, national and global levels, and are linked to individual and community actions for sustainability.



Figure 4. Bar-tailed Godwit, (Photo Paul Wainwright, Department of Environment, Water and Natural Resources)



While people are often aware of environmental issues affecting our coastal environments, they often don't know what they could do to help. It is important to remember everyone can do something to make a real difference to the future health of the Adelaide International Bird Sanctuary.

Activity ideas where students are able to demonstrate what they have learnt about the Adelaide International Bird Sanctuary (AIBS):

- Develop a guide to the plant and animal species found at the AIBS. Students can take pictures while on site at an Activity Day, use pictures from the web or draw them. Share the guide with family and friends to share an awareness of what species inhabit the AIBS.
- Develop interactive workshops on what they have learnt about the AIBS. Run these workshops with other classes in the school. Explore the possibility of running these workshops with other schools in the area or to the local community to spread key messages about the Sanctuary, its significance and how everyone can be involved in its conservation.
- Design a board game with important messages on what people can do to help protect the AIBS. Play the game with friends and family to help them understand these important messages.
- Present at a school assembly or make and display posters about the key messages you have learnt about the significance of the AIBS. Consider contacting local councils to organise displaying the students' posters at Community Hubs such as the local library.
- Hold a debate.

Activity ideas for your students to take action to protect the Adelaide International Bird Sanctuary (AIBS):

- Marine debris is any litter found in the sea. Research common debris. Where does it come from? What are the impacts from debris? What can be done to prevent debris entering the Bird Sanctuary? Students can design a slogan or advertisement highlighting the issue of marine debris and what can be done to prevent it.
- Consider holding a Clean Up event in your schools local catchment or a nearby coastal environment. Take action to prevent litter, waste and other debris from entering waterways and polluting coastal environments.
- Consider investigating how healthy the biodiversity is in your school grounds or in your local area through focusing on birds. Birds are good indicators of health for an ecosystem because they are easily seen in and around your school and through the hills and suburbs.
Use the [NRM Education Kit 'Looking at Habitat Diversity through Birds - A Learning Sequence'](#). The learning activities are divided into two sections. Section 1 asks students to simply observe bird species in the school grounds by undertaking a bird survey and analysing their data (i.e. a bird audit). Section 2 is about researching the birds, communicating with and involving others to plan and take action to improve habitats and thereby attract a greater diversity of bird species. This is an interesting and practical way to start looking at biodiversity in the school grounds.

