

# Stage 1: Going, going, gone... species on the brink

## Concept:

- Students will be able to explain the concept of a threatened species, protected species and extinction.
- Identify threatened species of Western Australia's coastal habitats.
- Understand how human activity can impact the survival of a species.

## Student inquiry:

- What is a threatened species?
- What are the differences between threatened, endangered, and extinct species?
- What threatened species occur in Western Australia's marine and coastal environments?
- How do human actions impact on the survival of species?
- What actions can you do to protect threatened species?

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### AUSTRALIAN CURRICULUM - SCIENCE

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#### Year 4

Living things depend on each other and the environment to survive (ACSSU073)

Science knowledge helps people to understand the effect of their actions (ACSHE062)

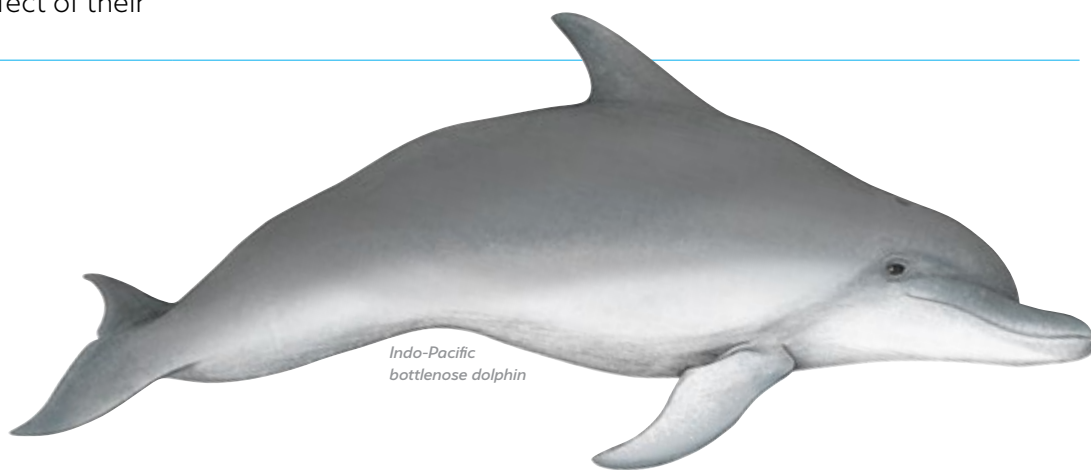
#### Year 5

Living things have structural features and adaptations that help them to survive in their environment (ACSSU043)

#### Year 6

The growth and survival of living things are affected by physical conditions of their environment (ACSSU094)

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*Indo-Pacific  
bottlenose dolphin*



*Green sawfish*

## Background information for teachers

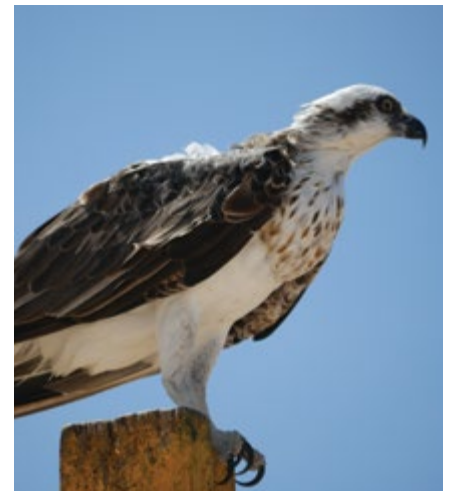
### The extinction situation in Australia

Australia's terrestrial and marine habitats support a diverse range of species, many that are unique and are found nowhere else in the world. Since European settlement more than 200 years ago, more than 130 of Australia's known species have disappeared from the wild. Today close to 1800 species of plants and animals are on the national threatened species list.

Over millennia many species have disappeared from the wild, dinosaurs and the megalodon shark are well-known examples of this. However, unlike the environmental factors that led to the end of their existence on earth, species today are facing extinction at exceedingly fast rates as a result of human activities. Increasing growth of the human population, habitat loss and destruction, invasive species, disease, pollution and unsustainable hunting are having significant impacts.

### What does this mean for marine life in Western Australia?

Western Australia offers some of the richest and most diverse marine habitats in the world. Five of the world's seven marine turtle species nest on sandy beaches of the mainland and islands, dugongs, dolphins and whales feed, rest and breed in coastal waters, shorebirds and seabirds breed, rest and feed along the shores. Sadly, many of these species are at risk of extinction. Habitat preferences makes them susceptible to threatening processes caused by anthropogenic activities. Life history characteristics, such as being long lived, slow to mature and having low reproductive rates can add to a species vulnerability, as it takes longer for these species to replace their numbers once in decline.



**Top left:** Green turtle nesting. Photo – Paul Bester **Top right:** Osprey. Photo – Felicity Kelly/DBCA  
**Above:** Roseate terns roosting. Photo – Grant Griffin/DBCA

## Defining a threatened species

Under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) species, subspecies and a variety of native wildlife are listed as threatened or specially protected if they are at risk of extinction, are rare, or otherwise in need of special protection. They then assigned a conservation status:

**Extinct** – there is no reasonable doubt that there are no living members of the species.

**Extinct in the wild** – the species is known only to survive in captivity with no living members existing in the wild.

**Critically endangered** – the species is at extremely high risk of extinction in the wild.

**Endangered** – the species is at a very high risk of extinction in the wild.

**Vulnerable** – the species is at high risk of extinction in the wild.

**Conservation dependent** – the species is dependent on a conservation action to keep it from going extinct.

Under the EPBC Act a species that is not listed as threatened may also be granted protection as:

- a **migratory** species due to being listed under international conventions and agreements that Australia is party to,
- a **marine** species that has been specially listed by the Minister of Environment, or
- a **cetacean**, all species of whales and dolphins are protected in Australian waters.

In Western Australia the *Wildlife Conservation Act 1950* also provides for protection of species deemed at risk from extinction across their range. This allows for protection of species that may not yet be listed as threatened nationally but that in Western Australia may be facing significant threats such as population decline, are rare, or deemed to need special protection.



Above left: Shorebirds foraging on Simpson Island Nature Reserve. Photo – Carolyn Williams/DBCA



Above right: Green sawfish. Photo – David Morgan

CASE STUDY

## Humpback whales make a comeback

Today there are many groups including state and federal governments, conservation organisations and individuals both in Australia and internationally working together to help remove species from the threatened species list.

The protection of the humpback whale is an example demonstrating how the protection of a species can have positive results, including population recovery.

In Australia hunting of humpback whales for their blubber and oil began in the 18th Century. By the 20th Century, it was evident that numbers of whales, including the humpback whale had declined significantly with less than 1000 individual humpback whales remaining. In 1963 whaling was banned in Western Australia and by 1978 all whaling stations had closed. In 1982 a total international ban on whaling humpback whales was put into place. This protection spread with the International Whaling Commission moratorium on commercial whaling in 1986.

Today, humpback whales are still listed as vulnerable, however, their population size is on the increase with some scientist recommending they be removed from the threatened species list.

Humpback  
whale



## Teacher directions:

1. Explain to the students that they are going to investigate threatened species that are found in Western Australia's coastal environments. As a class introduce the first inquiry question by asking students if they know the meaning of the following words.

**extinct    endangered    threatened    vulnerable    protected**

Ask the students if they know any species that have become extinct? Can they name any species that are threatened today?

2. To introduce students to different species that are threatened or specially protected, give the students Activity sheet 1.1 to complete. The activity can be completed as individuals or in groups. The resources listed below may help students answer the questions.
3. As a class, brainstorm reasons why these animals are threatened or specially protected? What has happened to them? Are they affected by human activity? Hunting, recreation, coastal development, pollution, predators etc. Create a list of the student's answers. Discuss the ideas as a class.
4. Divide the students into small groups and let them know that they are going to investigate a threatened or protected species found in Western Australia's coastal environment. Assign each group one of the animals from Activity sheet 1.1. Using Activity sheet 1.2 each group is to investigate what is putting pressure on the survival of their species and what can be done to help it?

Have each group present their species to the class, listing the pressures and the solutions. As a class discuss: Does more than one species face the same pressure? Why do you think this might be? Can a solution help more than one species? Why is it important to help protect these species? What will happen if we don't?

### Resources:

- Resource 1: Species profile Posters 1, 2, 3, 4
- Resource 3: Pressures Poster 6

### Additional resources:

- **Marine wildlife of WA's north-west identification guide**  
[dpaw.wa.gov.au/images/documents/conservation-management/marine/20170303\\_marine\\_life\\_northwest\\_finalweb.pdf](http://dpaw.wa.gov.au/images/documents/conservation-management/marine/20170303_marine_life_northwest_finalweb.pdf)
- **Shorebirds and seabirds of the Pilbara coast and islands**  
[dpaw.wa.gov.au/images/documents/conservation-management/wetlands/20170167\\_pilbara\\_shorebirds\\_and\\_seabirds\\_of\\_the\\_pilbara\\_coast\\_and\\_islands\\_web.pdf](http://dpaw.wa.gov.au/images/documents/conservation-management/wetlands/20170167_pilbara_shorebirds_and_seabirds_of_the_pilbara_coast_and_islands_web.pdf)



Green turtle

# Activity sheet 1.1

## Threatened and protected species crossword challenge

- Using your investigation skills, can you identify each species in the pictures in the crossword clues to complete the crossword?
- What is their conservation status or reason for being a protected species?

**Note** – All species can be found in Western Australia’s coastal and marine environments. (You might need to use the resources or the internet to help you.)

The crossword puzzle grid is partially filled with the following words:

- 1 Across: LESSERSANDPLOVER
- 2 Down: U
- 3 Across: K
- 3 Down: K
- 4 Across: (empty)
- 4 Down: (empty)
- 5 Across: (empty)
- 5 Down: (empty)
- 6 Across: D
- 6 Down: (empty)
- 7 Across: (empty)
- 7 Down: V
- 8 Across: G
- 8 Down: RY

Illustrations include a Ruddy turnstone (labeled "Ruddy turnstone") and a Fairy tern (labeled "Fairy tern").

## Crossword clues

### Across:



1.

a *Lesser sand plover*

b *Endangered*



2.

a

b



3.

a

b



4.

a

b



5.

a

b



6.

a

b



7.

a

b



8.

a

b

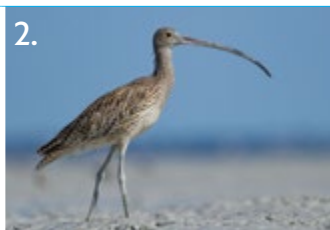
### Down:



1.

a

b



2.

a

b



3.

a

b



4.

a

b



5.

a

b



6.

a

b



7.

a

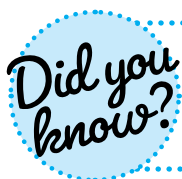
b



8.

a

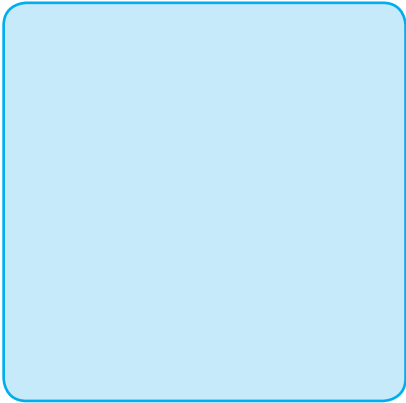
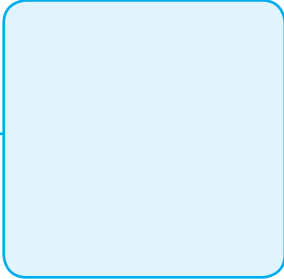


b



All of these species are found in Western Australia's coastal and marine environment. Have you ever seen any of these species before? If yes, which ones and where did you see them?

# Activity sheet 1.2

Pick a threatened species found in one of Western Australia's coastal or marine habitats of your choice. Make a concept map of the different pressures that the species face. Then come up with solutions for each pressure.

SPECIES	PRESSURE	SOLUTION
		<p>1. _____ _____ _____ _____</p> <p>2. _____ _____ _____ _____</p>
		<p>1. _____ _____ _____ _____</p> <p>2. _____ _____ _____ _____</p>
		<p>1. _____ _____ _____ _____</p> <p>2. _____ _____ _____ _____</p>

