Croc!

LOST GIANTS TO LIVING LEGENDS

Teacher Resource

A companion guide to the primary school self-guided worksheet

MUSEUM AUSTRALIAN NATIONAL MARITIME MUSEUM

Australian Government

QUEENSLAND MUSEUM

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MUSEUM AND ART GALLERY NORTHERN TERRITORY

NORTHERN TERRITORY GOVERNMENT

This exhibition is a collaboration between the Australian National Maritime Museum, Queensland Museum and Museum and Art Gallery of the Northern Territory.

How to use this guide

This teacher resource is a companion guide to the student worksheet. You can use this resource when guiding your students through the exhibition *Croc! Lost Giants to Living Legends*.

This teacher resource includes Australian Curriculum links, exhibition notes, fun facts, notes for teachers and answers to the student activities.

All activities are linked to the Australian Curriculum.

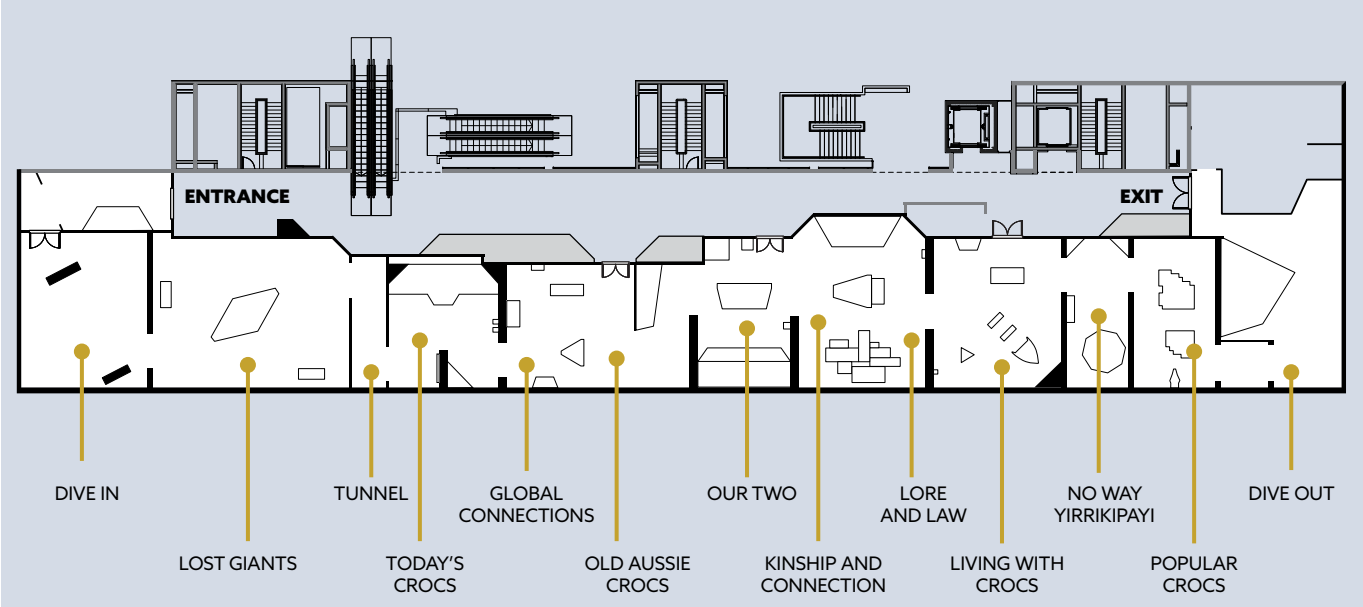
Activity	Curriculum links	Section of the exhibition
1	Mathematics Numeracy	***Lost giants***
2	Geography Numeracy Literacy	***Today's crocs***
3	HAAS – History Intercultural understanding Numeracy	***Global connections***
4	Science	***Our two***
5	The Arts – Visual arts Aboriginal and Torres Strait Islander Histories and Cultures	***Kinship and connection*** ***Lore and law***
6	English Literacy	***Popular crocs*** ***No Way Yirrikipayi!***

Please note, you do not have to complete the activities in order. Each activity is self-contained and is not dependent on another activity to complete.

Recommended time to explore the exhibition: 90 minutes

Time to complete the activities: 60 minutes (approximately).

Estimated times for each activity are included throughout the teacher resource, as a guide.



List of symbols


Link to Australian Curriculum


Discussion questions


Answer questions: activities for students to complete individually or in small groups in the exhibition


Challenge yourself: extension tasks for older students or gifted and talented students


Support tasks: alternative activities for students with additional support needs


Approximate time it will take to complete an activity or visit a point of interest


Back at school: extra learning tasks to complete in the classroom, after the excursion.


Point of interest

Curriculum areas


English


Maths


Science


History


Geography


Visual Arts

Cross-curriculum priorities


Aboriginal and Torres Strait Islander Histories and Cultures


Asia and Australia's Engagement with Asia


Sustainability

General capabilities


Critical and creative thinking


Digital literacy


Ethical understanding


Intercultural understanding


Literacy


Numeracy

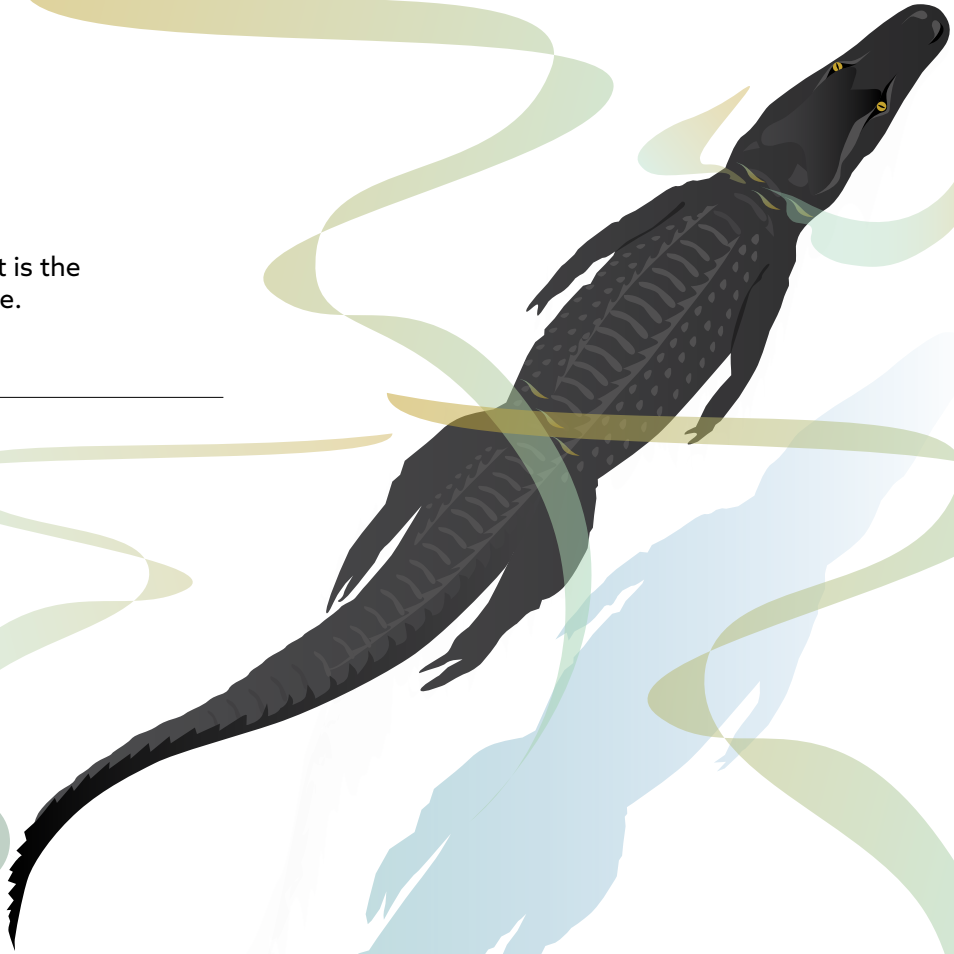

Personal and social capability

Dive in

Before you enter the exhibition

When you think of crocodiles, what is the first word you think of? Write it here.

_____



5 minutes

Lost giants

Measurement

Foundation: AC9MFM01

Identify and compare attributes of objects and events, including length, capacity, mass and duration, using direct comparisons and communicating reasoning.

Elaboration: using language to describe the measurement attributes of length, mass, capacity and duration, and connecting the words with the appropriate attribute; for example, using words like "tall", "short", "wide", "long", "high" to describe the attribute of length.

Year 3: AC9M3M01

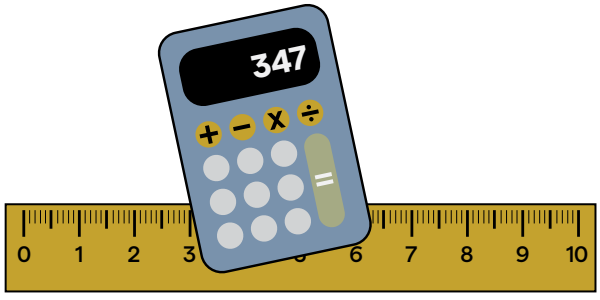
Identify which metric units are used to measure everyday items; use measurements of familiar items and known units to make estimates.

Elaboration: estimating the height of a tree by comparing it to the height of their friend and quoting the result as "the tree is about three times as tall"; estimating the capacity of a fish tank by using a litre milk carton as a benchmark.

Year 6: AC9M6M01

Convert between common metric units of length, mass and capacity; choose and use decimal representations of metric measurements relevant to the context of a problem.

Elaboration: identifying and using the correct operations when converting between units including millimetres, centimetres, metres, kilometres, milligrams, grams, kilograms, tonnes, millilitres, litres, kilolitres and megalitres.



Section information

What does this large creature remind you of?

Students might respond with 'dinosaur'. However, crocodiles are not living dinosaurs!

Dinosaurs and crocodilians share an ancient ancestor but evolved separately. The first crocodilians (ancestors of today's crocodiles, alligators, caimans and gharial) evolved about 200 million years ago in the Triassic period and lived alongside the dinosaurs.

113 million years ago, *Sarcosuchus*, the 'Supercroc' appeared. 'Supercroc' was 10–12 metres long – twice as big as today's biggest crocs.

Hint: this is the answer to the first activity question!

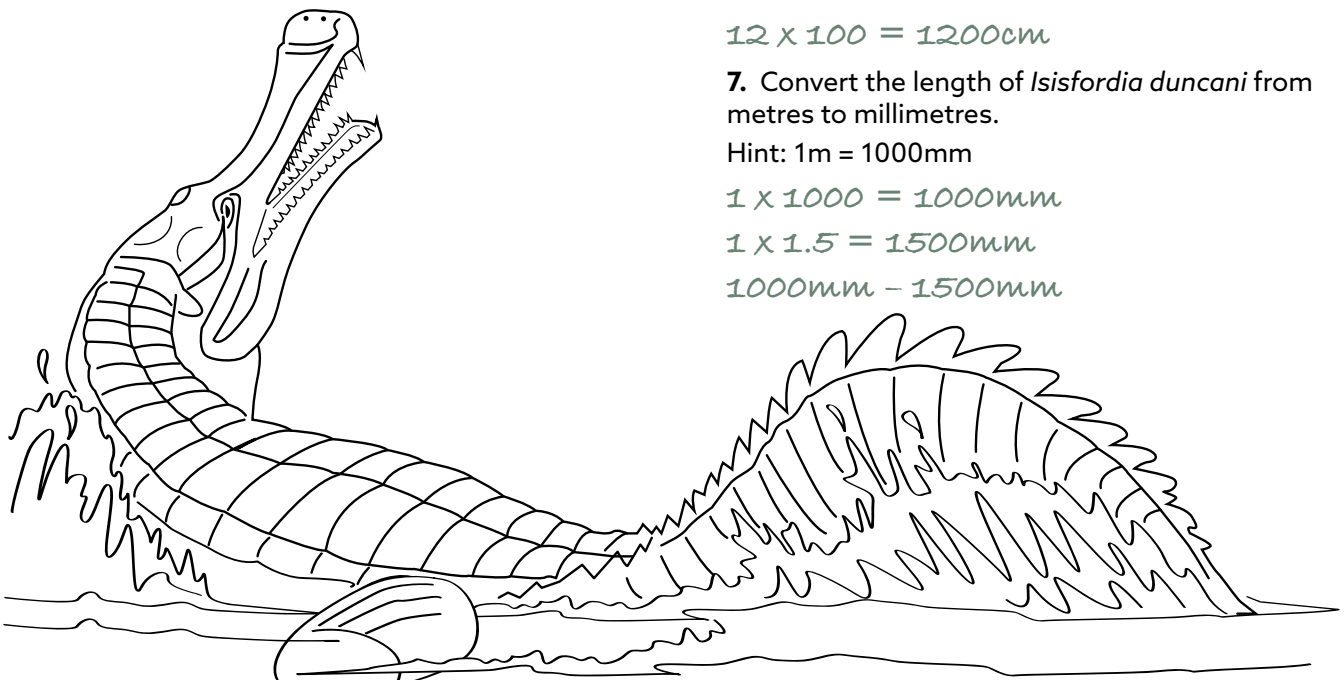
Fun fact

Crocodiles are the biggest reptiles on Earth.

Teacher notes

Students are encouraged to attempt all maths activities and questions in the 'Supercroc' section. However, if you are looking for differentiated activities, see suggestions below:

- All learners: Activity 1, questions 1–2
- Foundation to Year 2, and students with additional support needs: Activity 1 alternative activity, questions 4–5
- Years 3 and above: Activity 1, question 3
- Years 5 and 6: Activity 1 extension activity, questions 6–7.



Activity 1

1. How long is the Supercroc?

12m

2. How long is the croc from Australia, *Isisfordia duncani*?

1–1.5m

3. Find a partner. Use your partner's arm span as 1 unit of measurement. Compare the length of the Supercroc to your partner's arm span. How many times longer is the Supercroc?

I estimate that the Supercroc is about 8.5 times longer than my partner's arm span.

Teacher notes

This answer is based on the average arm span of a 10-year-old child.

4. Circle the word that describes the length of the Supercroc?

(Long) Short

5. What is something that is longer than a Supercroc?

Olympic swimming pool, aeroplane, a cricket pitch, etc

6. Convert the length of the Supercroc from metres to centimetres.

Hint: 1m = 100 cm.

Remember to show your working and include the unit of measurement.

12 x 100 = 1200cm

7. Convert the length of *Isisfordia duncani* from metres to millimetres.

Hint: 1m = 1000mm

1 x 1000 = 1000mm

1 x 1.5 = 1500mm

1000mm – 1500mm

10 minutes

Today's crocs

Geographical distribution, creating maps and using cartographic conventions

Year 3: AC9HS3S02

Locate, collect and record information and data from a range of sources, including annotated timelines and maps.

Elaboration: acquiring geographical information from schools in geographically contrasting parts of Australia and neighbouring countries and recording that information by constructing and annotating maps, using the appropriate cartographic conventions, including map symbols, title and north point.

Year 4: AC9HS4S02

Locate, collect and record information and data from a range of sources, including annotated timelines and maps.

Elaboration: using graphic organisers, timelines, maps, graphs or tables to display data and information (for example, a food web; consequence wheels for an issue; creating a timeline related to the First Fleet; mapping locations of different types of vegetation, the loss of native species, the movement of peoples over time, or social, cultural and religious groups in Australia's society) and using digital applications as appropriate.

Year 5: AC9HS5S02

Locate, collect and organise information and data from primary and secondary sources in a range of formats.

Elaboration: constructing timelines, maps, tables and graphs using appropriate digital applications and cartographic conventions, such as border, source, scale, legend, title and north point, to display data and information; for example, the movement of peoples over time in a colony, a sequence of key events, the population growth of an Australian colony, cultural and religious groups in Australia at different times, information on needs and wants.

Year 6: AC9HS6S02

Locate, collect and organise information and data from primary and secondary sources in a range of formats.

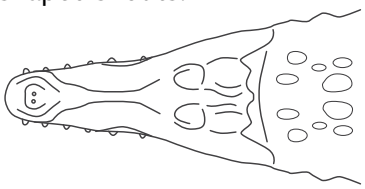
Elaboration: creating maps, using spatial technologies and cartographic conventions as appropriate, including border, source, scale, legend, title and north point, to show information and data such as location; for example, a large-scale map to show the location of places and their features in Australia and countries of Asia; a flow map or small-scale map to show the connections Australia has with Asian countries such as shipping or migration.

Section information

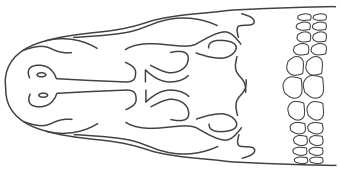
This section explores the global distribution and unique characteristics of the 27 species of crocodilians around the world.

These 27 species are divided into three families of crocodilians.

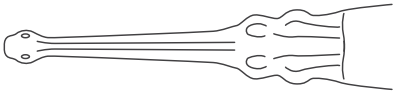
1. Crocodiles have 'V' shaped snouts.



2. Alligators have 'U' shaped snouts.



3. Gharials have 'I' shaped snouts.



Divide students into three teams: Crocodiles (V snouts), Alligators (U snouts) and Gharials (I snouts). Use the skull interactive to answer the questions. Ask students to raise their hand when they see the answer.

- Where do crocodiles live? Where do alligators and caiman live? Where do gharials live?
- Which crocodilians are the biggest? Which are the smallest?
- Which crocodilians are endangered?

Activity 2

The world is a very big place, but a map helps us to see large areas at one time. A map is a drawing of a large area on a smaller scale.

All maps must include **BOLTSS**:
B = border
O = orientation (north arrow)
L = legend (key)
T = title
S = scale
S = source

This map shows where the three crocodilian families live, but it is missing some of the BOLTSS!

Fill in the gaps to complete the map.

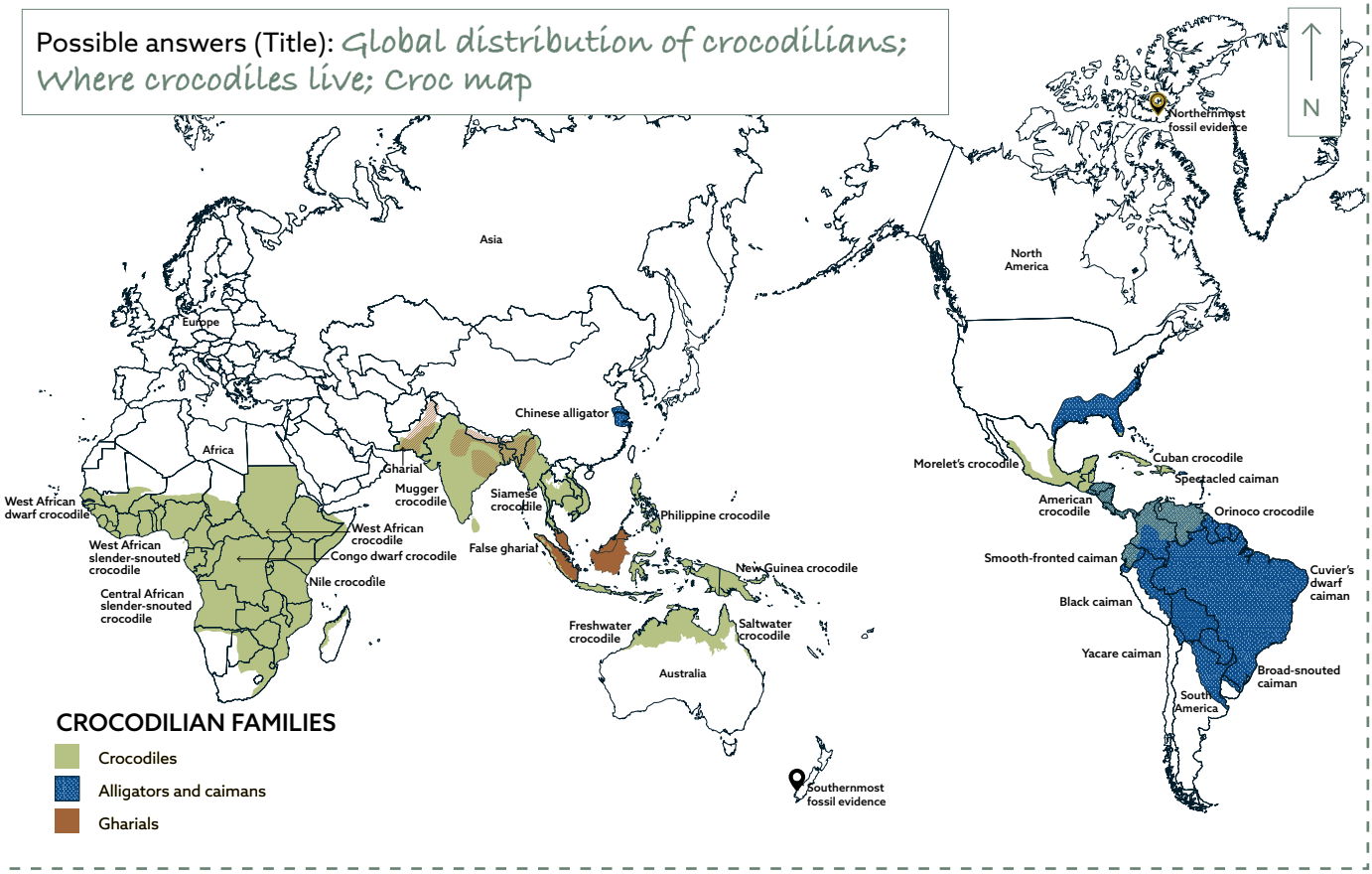
Legend	
	Crocodile
	Alligator and Caiman
	Gharial

Use the map to fill in the missing labels in the legend

Trace the dotted line to draw a border around the map.

On the map, orientation points north. Draw an arrow and label it with an 'N' (for north).

Possible answers (Title): Global distribution of crocodilians; Where crocodiles live; Croc map



Why do you think crocodiles are mostly found along the equator (or through the middle) of the world map?

Crocodilians are mostly found in equatorial areas because they need a warm, tropical climate to survive.

Crocodilians are ectothermic. This means that they depend on their environment to maintain their body temperature. Crocodilians cannot generate their own body heat (like mammals).

Crocodilians also require water for swimming and hunting. This means that they need to live in areas that are near waterways, such as the sea, rivers and estuaries.

10 minutes

Global connections

Ancient history, continuity and change, creating timelines

Foundation: AC9HSFS02
Sort and record information including pictorial timelines and locations on pictorial maps or models.

Year 1: AC9HS1K02
Continuity and change between aspects of their daily lives and their parents' and grandparents' childhoods.

Year 1: AC9HS1S02
Collect, sort and record information and data from observations and from provided sources, including unscaled timelines and labelled maps or models.

Year 2: AC9HS2S02
Collect, sort and record information and data from observations and from provided sources, including unscaled timelines and labelled maps or models.

Year 3: AC9HS3K01
Causes and effects of changes to the local community, and how people who may be from diverse backgrounds have contributed to these changes.

Year 3: AC9HS3S02
Locate, collect and record information and data from a range of sources, including annotated timelines and maps.

Year 4: AC9HS4S02
Locate, collect and record information and data from a range of sources, including annotated timelines and maps.

Year 5: AC9HS5S02
Locate, collect and organise information and data from primary and secondary sources in a range of formats.

Year 6: AC9HS6S02
Locate, collect and organise information and data from primary and secondary sources in a range of formats.

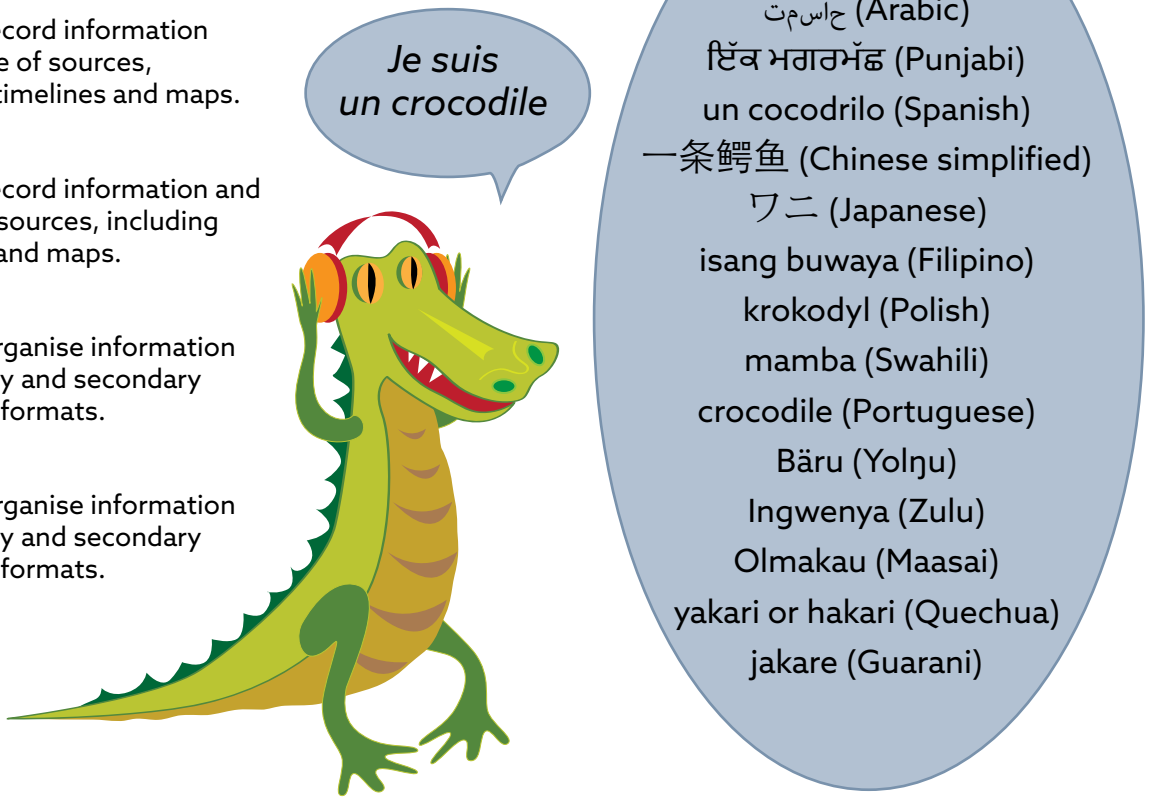
Section information

This section of the exhibition explores the connections between humans and crocodiles across time and cultures.

Fun fact

The word 'crocodile' means *pebble worm*! It comes from the Greek word *krokodilos*, from *krokē* 'pebble' and *drilos* 'worm'. Why do you think crocodiles are called pebble worms?

Do you know the word for crocodile in another language?



Activity 3

Continuity and change are the opposite.

Continuity is when something stays the same over time.

Find an object that shows **continuity** (ie an object that is the same as today).

Teacher notes

Student answers to this activity will vary. Sample answers are included below.

1. What is the object? Where is it from?

Bowl from Papua New Guinea

2. Why do you think we still use this object?

We still use bowls because bowls help us to prepare, serve and eat our food.

Find an object that has **changed** (ie an object that we no longer use).

3. What is the object? Where is it from?

Armour, Ancient Roman (from Egypt)

4. Why was it important for this culture?

This armour was important for the Ancient Romans for ceremonies. It would have been worn by soldiers interested in the local crocodile cult.

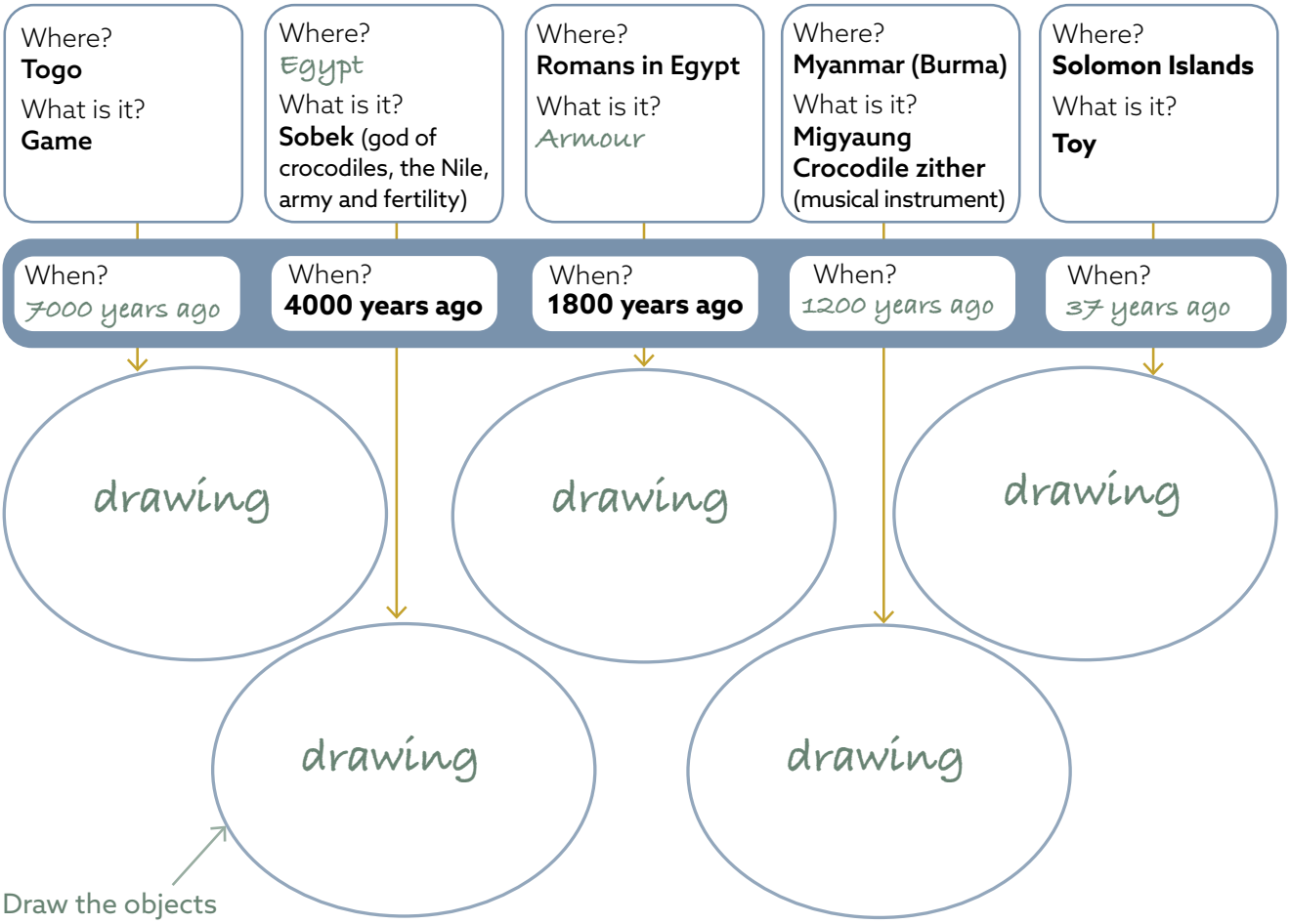
5. Why do you think we don't use this object anymore?

We do not use crocodile armour anymore because crocodiles are a protected species in Australia and modern military protective equipment is made from synthetic materials.

Crocodiles have been an important part of many cultures for thousands of years. Find the objects and complete the timeline to discover the deep and enduring connections between humans and crocodiles.

Teacher notes

It is recommended that students are divided into small groups to complete the timeline activity. Each group can complete one section of the timeline (eg all details relating to Egypt). Students can fill in the remaining sections back in the classroom.



Old Aussie crocs

Section information

Ancient Australia was home to a group of crocodiles called the Mekosuchines (mee-co-sue-keens).

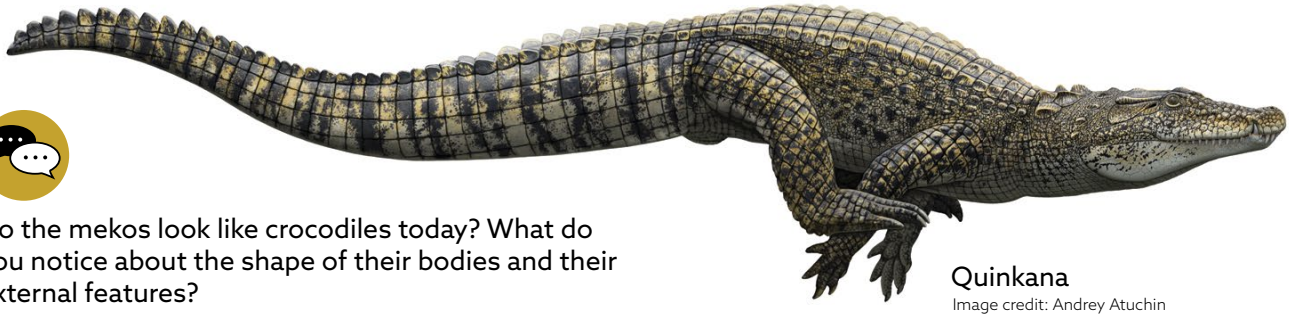
Mekosuchines lived in Australia from 55 million years ago until only 40,000 years ago. We don't know what drove them to extinction, but it may well have been the drying climate.

In this section of the exhibition, you will meet the crocs that used to live in Australia (and two that still do!).

Paludirex
Image credit: Andrey Atuchin

Fun fact

Not all ancient crocs lived in the water; many lived on land. Explore this section of the exhibition and discover where they lived in Australia.



Quinkana
Image credit: Andrey Atuchin

Do the mekos look like crocodiles today? What do you notice about the shape of their bodies and their external features?

Modern-day crocodile
Photo credit: Queensland Museum, Gary Cranitch

5 minutes

Our two

Biological science, adaptations

Year 5: AC9S5U01

Examine how particular structural features and behaviours of living things enable their survival in specific habitats.

Elaboration: identify physical and behavioural characteristics that enable a plant or animal to survive, such as being able to see in dim light and being nocturnal.

Elaboration: investigating how camouflage is used by animals to hide from predators and to ambush prey

Elaboration: using physical or digital simulations to explore how the shape of animals' body parts, such as the beak of a particular bird species, influences their ability to find food and survive in a given environment.

Year 6: AC9S6U01

Investigate the physical conditions of a habitat and analyse how the growth and survival of living things is affected by changing physical conditions.

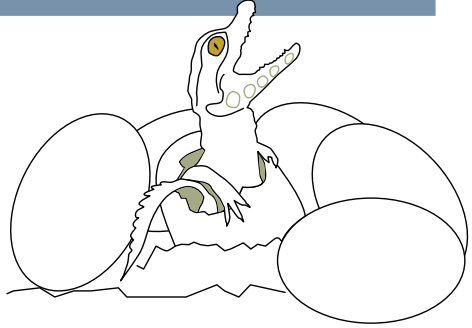
Elaboration: investigating changes in physical conditions that are the result of human activity and exploring the impact of these on living things, such as the impact of urban lighting on nocturnal and migratory animals.

Section information

There are two kinds of crocodiles in Australia – saltwater crocodiles and freshwater crocodiles. This section of the exhibition examines the physical features, behaviours and adaptations of crocodiles.

Fun fact

Crocodiles have no vocal cords. They growl by snorting air through the back of their throat or nostrils. Encourage your students to try the Talking Croc game in the exhibition and see if they are already fluent in crocodile!

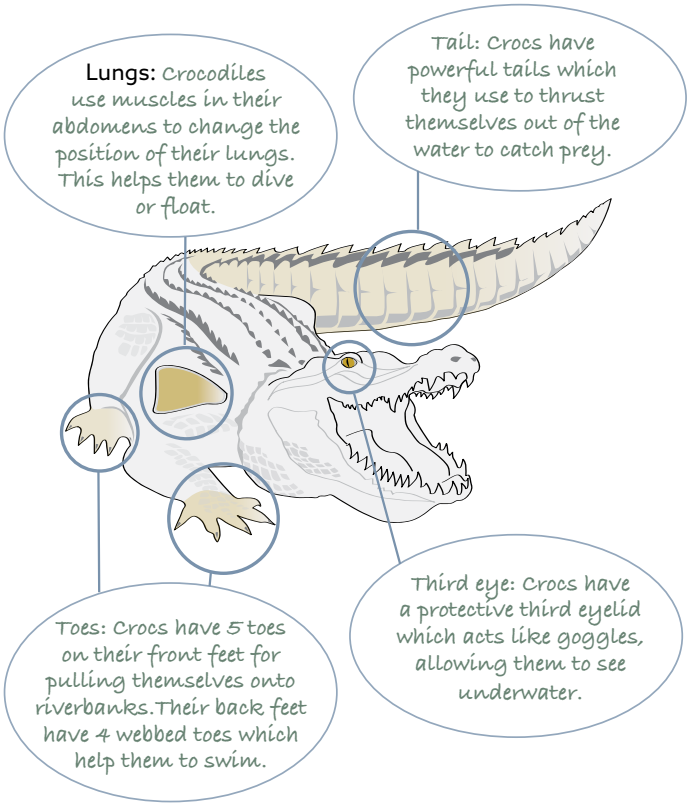


Activity 4

Crocodiles have many physical adaptations which allow them to survive.

Physical adaptations evolve over time, allowing an organism to live in a particular environment.

Use the adaptations interactive to identify the crocodile's physical adaptations. How does this physical adaptation help the crocodile to survive?



Egg hunt!
Find the croc eggs and answer the question.

Crocodiles are oviparous, which means they lay eggs. The gender of baby crocodiles is not set when the eggs are laid. The temperature of the nest determines the gender of the baby croc.

If the nest is 31–33 °C, most hatchlings will be male. If the nest is cooler or hotter than this, they will be female.

If global temperatures continue to rise because of climate change, what will happen to crocodile populations?

If temperatures continue to rise, there will be more female crocodiles (which could lead to an overall increase in crocodile population numbers).

Increased temperatures may also lead to crocodile populations moving south to new, cooler climates.

10 minutes

Kinship and connection & Lore and law

First Nations art

Foundation: AC9AVAFE01

Explore how and why the arts are important for people and communities.

Years 1–2: AC9AVA2E02

Explore examples of visual arts created by First Nations Australians.

Years 3–4: AC9AVA4E02

Explore how First Nations Australians use visual arts to communicate their connection to and responsibility for Country/Place.

Years 5–6: AC9AVA6E02

Explore ways that First Nations Australians use visual arts to continue and revitalise cultures.

Section information

The crocodile is an important part of many Aboriginal and Torres Strait Islander cultures. This section of the exhibition showcases just a few examples of the deep connection between crocodiles and First Nations people.

Fun fact

***Bäru* means crocodile in the Indigenous Yolŋu Language of Northeast Arnhem Land.**

Teacher notes

The best way to complete this activity is as a class group. Encourage students to find the artwork, then guide the students through questions 1–2. Student responses to questions 3–5 and the extension task will vary.

Activity 5

Find the artwork, *Bäru at Baraltja* (painted by Ṉoŋgirrŋa Marawili) and read the information panel aloud to your students. Additional artwork information is below.

Bäru at Baraltja is part of the Saltwater Project (1996). This project is a collection of 80 bark paintings highlighting Yolŋu land ownership, laws, customs and connection to Sea Country.

This painting depicts Bäru (crocodile), the Madarrpa clan totem, and Balin (barramundi), the totem of the Yirrtja clan.

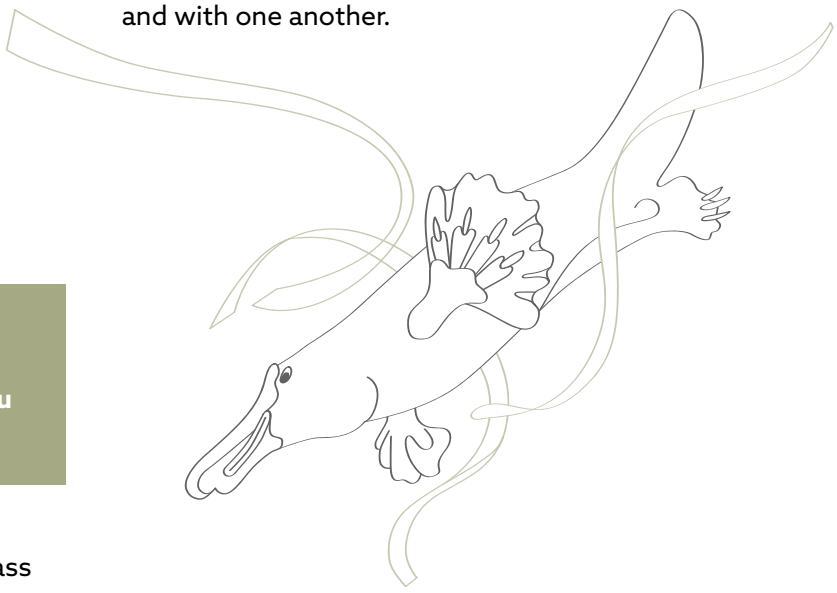
1. Find the artwork, *Bäru at Baraltja* (painted by Ṉoŋgirrŋa Marawili). What colours can you see?

Red, yellow, white and black

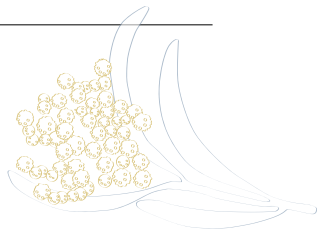
2. What animals can you see in this artwork?

Bäru (crocodile), Mundukul (lightning snake) and Balin (barramundi)

These animals are totems. A totem is a plant or animal that is a person's spiritual emblem. A totem defines a person's or clan's roles, responsibilities and relationships with Country and with one another.



3. Is there a plant or animal that you feel a special connection with? Why? How do you care for this species?



4. How does this artwork make you feel?

5. *Bäru at Baraltja* is about the beginning of the wet season. Which is your favourite season? Draw it. Use your imagination to create your own patterns, shapes and symbols which represent this season.

Teacher notes

Often the marks and patterns in Aboriginal and Torres Strait Islander art belong to the artist, their community and their culture. Using them without permission is called cultural appropriation.

Cultural appropriation is the adoption and use of elements of another's culture inappropriately or without acknowledgement. This is disrespectful and can reinforce stereotypes.

Encourage your students to use their imaginations and create their own symbols, shapes and patterns.

6. If you could meet the artist of *Bäru at Baraltja*, what would you ask them?

Living with crocs

Section information

Australians and crocodiles have lived side by side for thousands of years. Our relationship with crocodiles has varied over time. This relationship encompasses tourism, totems, hunting, conservation, farming, research and much more. This section of the exhibition unpacks the complex and evolving relationship between Australians and crocs.

Fun fact

In Australia, humans are the only predators of adult crocs.

What is your relationship to crocodiles?
Have you seen a crocodile in the wild?
How did this make you feel?

If you have not seen a crocodile in the wild, how do you think this would make you feel?

Photo credit: Queensland Museum, Gary Cranitch

15 minutes

Popular crocs & No Way Yirrikipayi!

Creating literature

Foundation: AC9EFLE05

Retell and adapt familiar literary texts through play, performance, images or writing.

Year 1: AC9E1LE05

Orally retell or adapt a familiar story using plot and characters, language features including vocabulary, and structure of a familiar text, through role-play, writing, drawing or digital tools.

Year 2: AC9E2LE05

Create and edit literary texts by adapting structures and language features of familiar literary texts through drawing, writing, performance and digital tools.

Year 3: AC9E3LE05

Create and edit imaginative texts, using or adapting language features, characters, settings, plot structures and ideas encountered in literary texts.

Year 4: AC9E4LE05

Create and edit literary texts by developing storylines, characters and settings.

Year 5: AC9E5LE05

Create and edit literary texts, experimenting with figurative language, storylines, characters and settings from texts students have experienced.

Year 6: AC9E6LE05

Create and edit literary texts that adapt plot structure, characters, settings and/or ideas from texts students have experienced, and experiment with literary devices.

Section information

From exotic reptiles to deadly hunters or cuddly toys, crocodiles are represented in a variety of ways in popular culture. This section of the exhibition includes depictions of crocodiles in films, literature, art, fashion and toys.

Teacher notes

Encourage your students to explore this section of the exhibition to gather ideas for creating their crocodile character. Then, students can find a comfortable place to sit and write their story.

Activity 6

Use the exhibition as your inspiration and write a story about a crocodile.

Before you begin, answer these questions to help create a snappy crocodile character.

What is the crocodile's name?

Is it a freshwater or saltwater crocodile?

Select three words to describe the crocodile in your story? Eg daring, athletic and handsome. Or, shy, small and friendly.

What does the crocodile in your story like to do each day? eg swim, roll in the mud, hunt, flex its jaw, bake in the sun

Now that you have created an interesting crocodile character, you are ready to write your story.

Draw your story.

Use some of the crocodile vocabulary below in your story.

- **Webbed feet**: the tissue or skin between the toes of an organism. In crocodiles, webbed feet help them to move through water and change direction quickly.
  eg The crocodile powerfully pivoted direction using its webbed feet.
- **Osteoderm**: bone in the skin. In crocodiles, these bony plates sit inside a croc's scales and give them their bumpy-looking skin.
  eg The freshie had too many osteoderms to count.
- **Gaping**: when crocodiles lie on land with their mouths open.
  eg The saltie lay on the sand serenely gaping and soaking up the sunshine.

Teacher notes

Share your students' stories with us.
Email discovery-centre@qm.qld.gov.au

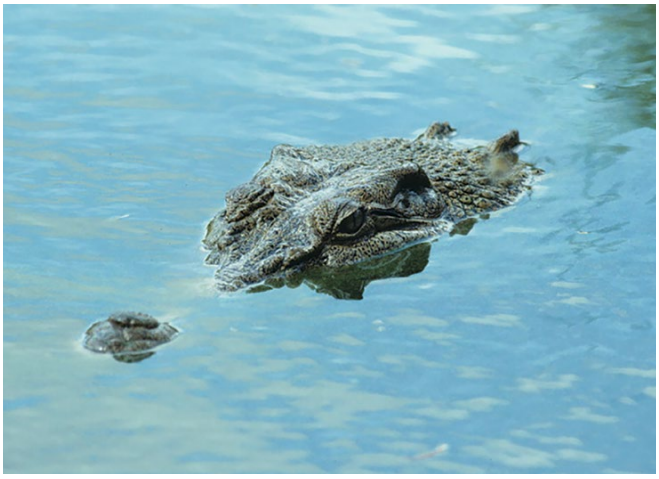


Photo credit: Queensland Museum, Gary Cranitch

Dive out

Crocodiles are incredible creatures.
We must respect and protect them.

As you exit the exhibition, what three words come to mind when you think about crocodiles?

1. _____
2. _____
3. _____

Thank you for visiting

Croc! Lost Giants to Living Legends

For more information, please email education@qm.qld.gov.au

MU SEA UM | AUSTRALIAN NATIONAL MARITIME MUSEUM

Australian Government

QUEENSLAND MUSEUM

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MUSEUM AND ART GALLERY NORTHERN TERRITORY

NORTHERN TERRITORY GOVERNMENT

This exhibition is a collaboration between the Australian National Maritime Museum, Queensland Museum and Museum and Art Gallery of the Northern Territory.