TURTLES IN SCHOOLS

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1 Million Turtles
COMMUNITY CONSERVATION PROGRAM

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Produced by the
1 Million Turtles Community
Conservation Program
and funded by
The Foundation for National
Parks and Wildlife.

In the pages that follow, you will find a comprehensive set of lesson plans. Our initiative is not just about imparting knowledge but fostering a deep connection between students and their natural environment and instilling a sense of responsibility and awareness of freshwater turtles and their conservation.

As we embark on this educational venture, we extend our gratitude to educators, students, and all those who champion the cause of conservation. The Turtles in Schools Program is not just a curriculum; it is a movement to inspire the next generation of environmental custodians.

Thank you,

1 Million Turtles Community Conservation Program

Shellebrate World Turtle Day

23rd May

Classroom Activities

ACTIVITY

What I Know (K), What I Want to Know (W), What I Learnt (L)

Materials:

- Large chart paper divided into 3 sections labeled "K" (Know), "W" (Want to Know), and "L" (Learnt).
- Markers or pens

Instructions:

(1A) Brainstorm what you Know (K) about wetlands and freshwater turtles. Write them in the “What I Know” column.

(1B) Write questions of “What I Want to Know” in the Want to Know (W) column.

What I Know (K)	Want to Know (W)	What I Learnt (L)

LESSON

TERM TWO

THREATS TO FRESHWATER TURTLES

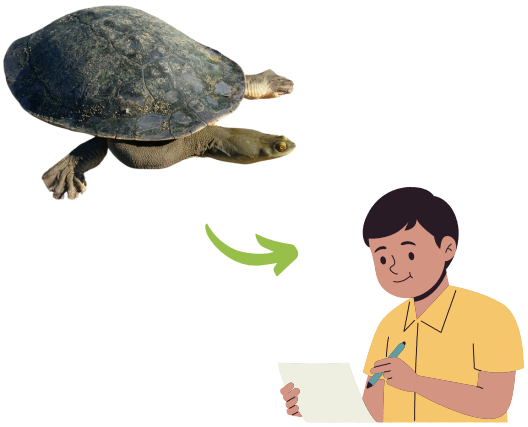
- Learning Intentions
- Background
- Activities
- Curriculum Mapping

Photo credit: Dr Donald McKnight

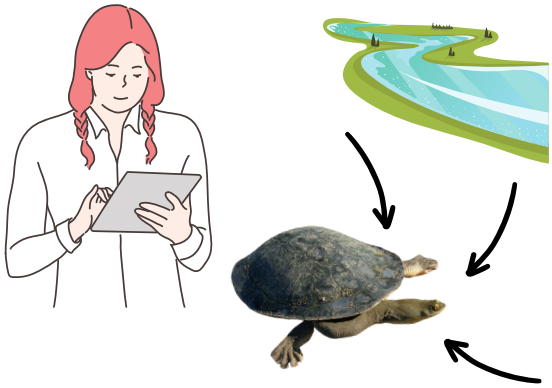
Learning Intentions

(1) Identify the threats to freshwater turtle species;

(2) Describe how the threats impact turtle populations.



Describe



Identify

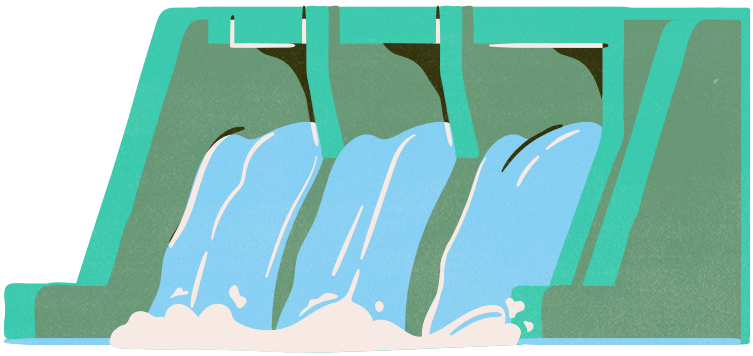
Photo credit (turtle): Dr Donald McKnight

Background Information
Freshwater turtle declines

There are 25 species of freshwater turtle in Australia. Of these, almost half are listed as vulnerable, endangered or critically endangered. Freshwater turtles face a range of threats that contribute to declining populations. Common threats include:

Habitat loss and degradation:

1. Urbanisation: Rapid urban development often results in the loss and fragmentation of freshwater turtle habitats. Wetlands, rivers, and creeks are converted into urban areas, leading to the destruction of nesting sites, feeding areas, and essential habitat features.
2. Agricultural Expansion: Agriculture, particularly intensive farming practices such as irrigation, land clearing, and drainage, can lead to an increase in sedimentation, reduce the availability of suitable habitat for turtles and alter water temperatures through a loss of shade.
3. Pollution: Pollution from industrial runoff, sedimentation, and chemical contaminants can degrade water quality and influence the availability of food.
4. Habitat Fragmentation: Habitat fragmentation resulting from human activities, such as dam construction and river regulation can isolate turtle populations and reduce genetic diversity. Fragmented habitats can impede turtle movement, migration, and dispersal, leading to population declines and increased vulnerability to other threats such as predation and disease.



Background Information
Freshwater turtle declines

Predation by introduced predators: Introduced predators, such as European red foxes and feral pigs, pose a significant threat to freshwater turtles and their eggs.

Predation Pressure:

1. Eggs: Foxes and feral pigs are opportunistic predators known to prey upon freshwater turtle eggs. Turtle nests, particularly those located on sandy riverbanks or beaches, are vulnerable to predation by these invasive species. Foxes and feral pigs can easily locate and excavate turtle nests. In some areas, nest predation rates by foxes can be greater than 93%, per year.
2. Nesting Females: Female turtles that leave the water to lay their eggs are also vulnerable to predation by foxes and feral pigs. These predators may intercept nesting females as they move between the water and nesting sites, posing a threat to both the adult turtles and their eggs.

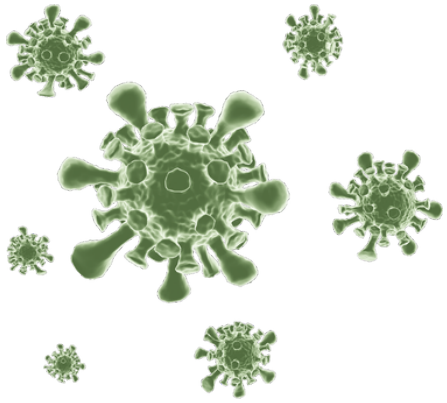
Impact on Turtle Populations:
Reduced Reproductive Success: Predation by invasive species can significantly reduce the reproductive success of freshwater turtles by reducing nest survival rates and hatchling recruitment. High levels of nest predation can lead to population declines and hamper the recovery of threatened turtle species.

Freshwater turtle declines

Disease: Freshwater turtles are susceptible to various diseases and infections. The introduction of novel pathogens can have devastating impacts on turtle populations.

Types of Diseases:

- Bacterial
- Fungal
- Viral



Impact on Turtle Populations:

- Mortality and Morbidity: Disease outbreaks can result in significant mortality and morbidity among freshwater turtle populations, particularly in cases of highly virulent or widespread diseases.
- Population Declines: Disease outbreaks can lead to population declines and local extinctions of freshwater turtle populations, particularly in fragmented or isolated habitats with limited genetic diversity and resilience.

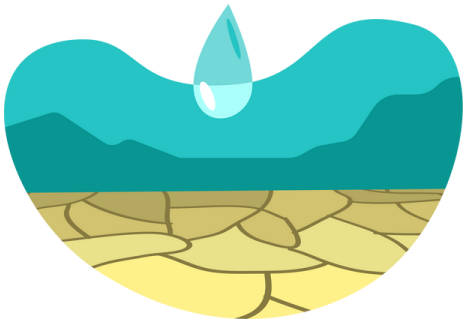
Management and Conservation:

- Health Monitoring: Regular health monitoring and surveillance of freshwater turtle populations can help detect disease outbreaks early, allowing for timely intervention and management. Monitoring efforts may include field surveys, health assessments, and disease screening of wild and captive populations.
- Quarantine and Biosecurity: Implementing quarantine protocols and biosecurity measures in captive breeding facilities, wildlife rehabilitation centres, and conservation reserves can help prevent the introduction and spread of diseases among freshwater turtle populations.

Freshwater turtle declines

Climate change: Climate change poses a significant and complex threat to freshwater turtles in Australia.

- Droughts: may lead to decreased water levels, drying of wetlands, and loss of habitat for freshwater turtles. Reduced water availability can restrict turtles' access to essential resources, such as food.
- Flood events can inundate nesting sites along river banks and wetlands, destroying turtle nests.
- Increased frequency and severity of bushfires: bushfires can increase the amount of sedimentation entering waterbodies and impact water quality. Freshwater turtle species that undergo overland movements may be particularly susceptible.



Road mortality:
Australia's extensive road network intersects with many freshwater habitats, including rivers, streams and wetlands, creating barriers to turtle movement and dispersal. Roads with high traffic density, such as major highways, pose greater risks to turtles, as they intersect with critical habitat areas and migration routes. Roads adjacent to nesting locations pose a significant risk to nesting females, as they may be struck by vehicles while attempting to move between the aquatic environment and nesting sites. The Eastern long-neck turtle (*Chelodina longicollis*) is particularly impacted by road mortality as individuals often travel overland.

International Union for Conservation of Nature (IUCN) - Red List of Threatened Species

The IUCN Red List of Threatened Species™ is one of the most comprehensive and widely recognised tools for assessing the conservation status of species worldwide. The Red List provides information on the extinction risk of thousands of species. The primary purpose of the IUCN Red List is to evaluate the conservation status of species and provide information to guide conservation actions and policy decisions.

Species assessments for the IUCN Red List are conducted by a global network of experts, including biologists, ecologists, taxonomists, and conservationists. The assessment process involves evaluating the available scientific evidence on a species' population size, distribution, habitat requirements, threats, and trends over time.

Based on this information, species are categorised into one of several Red List categories. The Red List categories are defined by specific criteria that consider factors such as population decline, habitat loss, and fragmentation, as well as the severity and immediacy of threats.

The IUCN Red List Categories are:

- Extinct.
- Extinct in the Wild.
- Critically Endangered.
- Endangered.
- Vulnerable.
- Near Threatened.
- Least Concern.

IUCN Red List Conservation Status symbols

Image sourced from:
https://commons.wikimedia.org/wiki/File:Status_iucn3.1.svg

Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act, or Environment Protection and Biodiversity Conservation Act 1999, is a key piece of environmental legislation in Australia. Under this act, the Australian Government has the authority to identify and protect species and ecological communities that are threatened with extinction or are otherwise at risk. The EPBC Act maintains a list of threatened species and ecological communities known as the "EPBC Act List of Threatened Species." This list categorises species and ecological communities according to their conservation status, reflecting the level of threat they face and the urgency of conservation action required.

Conservation Implications:

Species listed under the EPBC Act receive legal protection and are subject to specific conservation measures and management actions aimed at preventing further decline and promoting recovery.

The EPBC Act List of Threatened Species serves as a valuable tool for informing conservation planning, policy development, and decision-making at the national level, helping to ensure the long-term survival of Australia's threatened species and ecological communities.

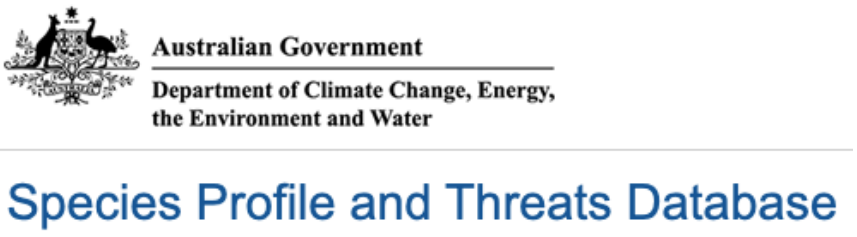
Environment Protection and Biodiversity Conservation Act 1999

Categories of Threatened Species under the EPBC Act 1999:

- Extinct (EX): Species that are believed to no longer exist.
- Extinct in the Wild (EW): Species that only exist in captivity with no remaining populations in the wild.
- Critically Endangered (CR): Species facing an extremely high risk of extinction in the wild.
- Endangered (EN): Species facing a very high risk of extinction in the wild.
- Vulnerable (VU): Species facing a high risk of extinction in the wild.
- Conservation Dependent (CD): Species that depend on conservation management for their survival.
- Near Threatened (NT): Species that are close to qualifying for one of the threatened categories.
- Data Deficient (DD): Species for which there is insufficient information to assess their conservation status.

Conservation Advice Documents:
Under the EPBC Act, conservation advice documents play a crucial role in guiding the conservation and management of threatened species and ecological communities. These documents provide detailed information and guidance on the conservation status, threats, and management requirements of listed species and ecological communities, helping to inform decision-making and conservation actions at the national level.

You can search current listings and conservation advice documents through **SPRAT (Species Profile and Threats Database).**



http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl

Classroom Activity

ACTIVITY 1

(1A) Select an Australian freshwater turtle species and identify and describe the main threat to the species, using available literature and search engines.

(1B) Outline the current conservation strategies for the species and present your findings to the class.

Research

Present

ACTIVITY 2

(2A) Categorise the turtle species from Activity 1 based on their conservation status under the EPBC Act 1999 and IUCN Red List.

(2B) For each turtle species, identify the main threat to the species.

Australian Freshwater Turtles

Fill in the information below about your assigned turtle species.

Common name

Scientific name:

Species distribution:

Conservation status (IUCN Red List and EPBC Act):

Main threat to the species:

Current conservation strategies:

Australian Freshwater Turtles

Allocate the turtle species from the previous activity to one of the six conservation statuses below. Identify one threat for each species listed.

	IUCN Red List	EPBC Act 1999
CR Critically Endangered		
EN Endangered		
VU Vulnerable		
NT Near Threatened		
LC Least Concern		
DD Data Deficient		

Classroom Activities

ACTIVITY

What I Know (K), What I Want to Know (W), What I Learnt (L)

Materials:

- Large chart paper divided into 3 sections labeled "K" (Know), "W" (Want to Know), and "L" (Learnt).
- Markers or pens

Instructions:

(1A) Revisit your Know, Want to Know and Learnt chart and complete the Learnt (L) column.

What I Know (K)	Want to Know (W)	What I Learnt (L)
		

Word Search

G N X R E V X G M W D L G N Y S K G Y D M I D I Y
J F H A U O N T C G K I R A I N P Q W H N T Z Q C
Q E P B R D F E R E Y F Y P P W E T L A N D R Z Z
H M R I O W X P S A Q O K Y X E V L H T I V I W O
E Q N O P U F O D T N F O T I J Q B E C G D P U L
R P P T E C R K F B C S M A B S Z I P H E I A F S
B L T I A N E B F Q O H E E Q A D K N L E S R Z C
I A U C N Y S S A C K W A C R Z S L A I V T I F A
V S R Y F K H M U N N O B M T V O K Y N V R A D V
O T T J O C W F N Q I E C E B A T L I G F I N N E
R R L O X L A T A H W S S Q U E N V Q N B B D W N
E O E B E I T A P Q Y C A T P I R S Y T G U Y E G
T N Y I S M E U B A U L B T P J N C Z R H T J B E
O C R O R A R M Q U E A X Z I R I I U I S I U B R
S D H T P T C E I W N C T N B O E X L P J O I E D
U E P I Q E A L U T W D T I L T N D B E X N H D G
G L C C I C R Q H Q I C A O C C O S A A A M C F N
Y F A B I H N J E W C G O N T A R U K T X P Y E J
W L R U E A I J I K I Y A E C H D Y M I I X X E L
N O A Y I N V P R D O T U T B E E P K W K O L T T
A R P Q F G O S P I S I F Z I I W R X C K G N P E
K A A N W E R R Y C B B S U G O J A M Z H N T O B
M T C W G A E E T P U L X W I P N W A I Q G E A H
I Z E O L J I Q P O L L U T I O N K O L C Q J K T
V H D L H B T H R E A T T M S R K U E N F I L B E

European foxes
Ectothermic
Climate change
Freshwater
Nest predation
Distribution
Urbanisation
Flora
Nest chamber
Mitigation
Webbed feet
Pollution
Hatchling
Abundance
Riparian
Scavenger
Carapace
Transect
Fauna
Carnivore
Wetland
Plastron
Herbivore
Aquatic
Basking
Biotic
Threat
Abiotic
Turtle

Australian Curriculum addressed in this Lesson

Science

Strand: Science Understanding (Year 5)
Sub-strand: Biological Sciences
AC9S5U01: examine how particular structural features and behaviours of living things enable their survival in specific habitats.

Strand: Science Understanding (Year 6)
Sub-strand: Biological Sciences
AC9S6U01: investigate the physical conditions of a habitat and analyse how the growth and survival of living things is affected by changing physical conditions.

English

Strand: Literacy (Year 5)
Sub-strand: Analysing, interpreting and evaluating
AC9E5LY04: navigate and read texts for specific purposes, monitoring meaning using strategies such as skimming, scanning and confirming.

AC9E5LY05: use comprehension strategies such as visualising, predicting, connecting, summarising, monitoring and questioning to build literal and inferred meaning to evaluate information and ideas.

Australian Curriculum addressed in this Lesson

English (continued)

Strand: Literacy (Year 6)
Sub-strand: Analysing, interpreting and evaluating
AC9E6LY04: select, navigate and read texts for a range of purposes, monitoring meaning and evaluating the use of structural features; for example table of contents, glossary, chapters, headings and subheadings.

AC9E6LY05: use comprehension strategies such as visualising, predicting, connecting, summarising, monitoring and questioning to build literal and inferred meaning and to connect and compare content from a variety of sources.