



Where have all the animals gone?

Impacts on biodiversity

Overview

Students research impacts on native animal habitats and the consequences for animal populations.

Through **engagement** and **exploration** of the Megafauna exhibition, students are introduced to concepts of conditions and adaptations for animal survival. The effects of changing environmental conditions are then explored as a causal effect of animal extinction. Alternative explanations for past animal extinctions are postulated.

A detailed analysis and **explanation** is performed on a currently threatened local species as a model for further investigation of other species by students.

Elaboration of this approach is developed through a detailed case study by students on a chosen local animal species. This study can be performed through literature searches or in conjunction with a field study of the local school grounds or a backyard.

Evaluation can be achieved through publication of findings to a wider target audience. This may be in the form of:

- A museum exhibition
- A multimedia presentation or
- Web pages



Resources

1. Endangered species exhibitions
2. Megafauna exhibition (Cobb&Co)
3. Wildlife in the backyard (pdf)
4. Web resources (Wild life web quest)
5. QM Loans Kits:
 - Life in a rotting log
 - Specimens
 - Sun Salt Sand Survival
 - What's on the menu?
6. Creating a museum display: Human impacts on animal populations
7. Wildlife of Greater Brisbane + other QM texts
8. iCentre staff:
 - Ph: 3840 7555
 - Web: <http://www.qm.qld.gov.au/inquiry/>



Curriculum links

Nature of the Science key learning area

Science as a 'way of knowing' is used by people to explore and explain their experiences of phenomena of the universe. It is a process for constructing new knowledge.

Scientific knowledge is viewed as a set of explanations, made by communities of scientists which attempts to account for phenomena and experiences. These explanations are tentative and continue to be modified.

'Working scientifically' is the term used in the Science syllabus to describe the practices and dispositions of science. These include a complex assortment of activities, mental processes, routines and protocols that are the essence of the scientific enterprise. In this syllabus, 'working scientifically' encompasses three aspects: investigating, understanding and communicating (page 33). 'Working scientifically' contributes to students' sense of awe and wonder about the beauty and power of the universe.



Key concepts

Science and Society

- Historical and cultural factors influence the nature and direction of science which, in turn, affects the development of society.*
- Science as a 'way of knowing' is shaped by the ways humans construct their understandings.*
- Decisions about the ways that science is applied have short- and long-term implications for the environment, communities and individuals.*

Earth and beyond

- The Earth, solar system and universe and dynamic systems.*
- Events on Earth, in the solar system and in the universe occur on difference scales of time and space.*
- Living things use the resources of the Earth, solar system and universe to meet their needs.*

Energy and Change

- The forces acting on objects influence their motion, shape, behaviour and energy.*

- In interactions and changes, energy is transferred and transformed but is not created or destroyed.*
- There are different ways of obtaining and utilising energy and there have different consequences.*

Life and Living

- The characteristics of an organism and their functioning are interrelated.*
- Evolutionary processes have given rise to a diversity of living things which can be grouped according to their characteristics.*
- Environments are dynamic and have living and non-living components which interact.*

Natural and Processed Materials

- The properties and structure of materials are interrelated.*
- Patterns of interactions between materials can be identified and used to predict further interactions.*
- The uses of materials are determined by their properties, some of which can be changed.*



Engage

- Where have all the animals gone?
- What are your questions?

Explore

1. Overview of Megafauna story.
 - a. Dinosaurs
 - Timeline
 - Theories of fate?
 - b. Megafauna
 - Biodiversity and links to current species
 - Effects of climate change
 - Aspects of human impacts

Explain

2. Endangered species
 - a. Endangered?
 - b. Conditions for survival (Story of one species)
 - c. Adaptations for survival
 - d. Threats
 - I. Changes to conditions for survival
 - II. Consequences of threats

Student task:

Choose your own species (including Megafauna) to consider:

- a. Endangered?
- b. Conditions for survival (Story of one species)
- c. Adaptations for survival
- d. Threats
 - i. Changes to conditions for survival
 - ii. Consequences of threats





Elaboration

Overview

Students can either engage in case studies that take a theoretical look at impacts on native populations or perform a local study of their school grounds or backyard.

Case studies

Students research impacts on native animal habitats and the consequences for animal populations. Two approaches may be taken to this study:

1. Students will undertake a case study of a **particular species** that is either extinct, extinct in the wild, endangered, or threatened. The case study will consider the implications of human activities that contribute to the reduction of biodiversity in particular local ecosystems. The results of the case studies will be published in a medium appropriate to educate a wider target audience.

Research questions:

- a. What are the major threats to local fauna populations?
- b. Have human activities reduced habitats in local ecosystems?
- c. Have native animal populations declined in local ecosystems?

Hypotheses:

- a. Human activities are responsible for degrading and reducing local animal habitats.
- b. Local fauna populations have declined due to reduction in habitats.

Method:

- a. Conditions for survival
- b. Adaptations for survival
- c. Threats
 - i. Changes to conditions for survival
 - ii. Consequences of threats

Conclusions:

To what extent does the research evidence support the hypotheses?

2. Students will undertake a **comparative study** of the extinction of the Megafauna on the Darling Downs with the current threats to some of the current local fauna.

Research questions:

- a. Is species extinction a natural event?
- b. What was the primary cause of the extinction of Megafauna?
- c. What are the major threats to local fauna populations?

Hypotheses:

- a. Extinction of Megafauna was due to climate change.
- b. Extinction of Megafauna was due to human impacts.
- c. Climate change is threatening current local fauna.
- d. Human activities are responsible for threatening local fauna populations.

Method:

- a. Conditions for survival
- b. Adaptations for survival
- c. Threats
 - i. Changes to conditions for survival
 - ii. Consequences of threats

Conclusions:

To what extent does the research evidence support the hypotheses?



Local study

What is the bio-health of your backyard?

Research

Wild things in the backyard

Resources

Check the [Museum Magnet Schools](#) website for the latest documents that support studies in sustainable environments:

Topics and activities include:

- Wild backyards: a study of the biodiversity of your own backyard. This includes collecting data and creating a digital story about what you found.
- How do creatures survive their environment?
- Survival: a specimen analysis that focuses on how creatures survive.



Evaluation

- Publish your findings to your target audience and welcome feedback.
- Reflect on what you have learned.
- How will you change your behaviour or attitude towards animals as a result of this study?
- How can you make a difference to the survival of animal populations?