

# AUSTRALIA

LAND BEYOND TIME

## WHERE IN THE WORLD



# AUSTRALIA

LAND BEYOND TIME

Australia is a living museum of rare and unusual species. Many of these developed as a result of the continent's isolation from other land masses. Through the years, the animals of Australia have adapted to their environment in unusual ways.

## Objectives

- Identify and color-code three biomes, or habitats, in Australia.
- Match animals to their biomes – desert, grassland, or tropical.

Suggested time: 45 minutes

## Standards

**National Science Content Standards:** (C) Students understand structure and function in living systems, populations and ecosystems, diversity and adaptations of organisms.

**National Council for the Social Studies:** People, Places, and Environment.

## Materials

- Copy of activity sheets (map and animals) for students
- Colors for map work

## Procedures

1. Review the map with biomes (desert, grassland, and tropical) shown.
2. Color the biomes indicated by symbols on the map.  
**Desert:** orange; **Grassland:** yellow; **Tropical:** green.
3. Review the list of animals unique to each biome.
4. On the next activity sheet, indicate in which biome (tropical, grassland, or desert) each animal lives by writing the biome on the line beside the animal's name.

## Key (for students to use)

Desert – dingo, bandicoot, thorny devil (lizard)  
Grassland – kangaroo, emu, wombat, koala, echidna, kookaburra  
Tropical – platypus, honey possum, cassowary, pelican

## Assessment

1. Ask volunteers to name the animals in the tropical, grassland, and desert biomes.
2. Check student papers for biome notations.

## Extension

1. Research animals for reports to the class. Focus on adaptation to the environment.
2. Enlarge the map and animals for a bulletin board display.
3. People tell stories to explain animal characteristics and behavior. Have students create their own stories to explain the scenarios suggested by these titles: how the kangaroo learned to jump, how the chown fish escaped, how the koala learned to climb, why the kookaburra laughs, and so on.

## WHERE DO THEY LIVE?

### AUSTRALIAN BIOMES / HABITATS

## FUN FACTS

### KANGAROO

When explorers first saw the hopping animal, they asked the indigenous people what it was. The Aborigines replied "kangaroo," meaning, "I don't understand." Kangaroo males are called bucks, females are called does, and babies are called joeys. They are marsupials, and the females carry their underdeveloped young in a pouch for five months. Kangaroos lick their forearms so that excess body heat can evaporate. Their life span in the wild is six years.

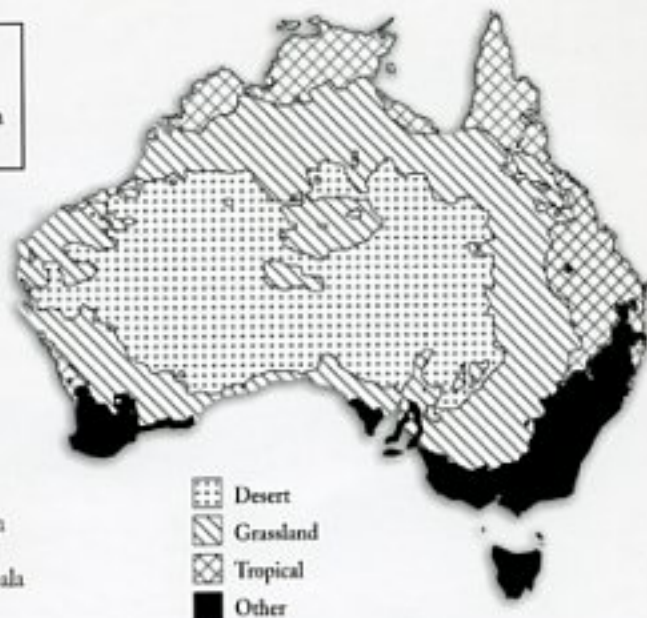
### KOALA

Koalas are marsupials, with the females carrying their immature young in a pouch. Newborns weigh just 1/50 ounce and are the size of a peanut. During a 24-hour period, koalas will spend 14.5 hours sleeping, 5 resting, and 4.5 foraging. They are nocturnal, and late in the evening they move from tree to tree feeding. Because koalas eat mainly the leaves, shoots, stems, and bark of certain eucalyptus trees that are nutrient poor, they are low in energy. They do not drink water but get all liquid from leaves.

### PLATYPUS

The platypus is a web-footed mammal known as a monotreme. Monotremes lay eggs that hatch (like reptiles), then suckle their young (like mammals). A platypus swims with its front paws and uses its flat tail to dive and rise. The snout looks like a duckbill, but is softer and contains a special organ that detects the minute electromagnetic fields of its prey. The mother cuddles eggs for ten days, then the baby is fed in the nest for three months.

## BIOMES OF AUSTRALIA



# AUSTRALIA

LAND BEYOND TIME

## LARGE-FORMAT FILM

Australia harbors unique inhabitants and dramatic scenery from its endless coastline to its vast sandy desert. Kangaroos bound across the plains, thorny devils scamper comically through the spinifex, and koala families take siestas, lounging atop their eucalyptus perches.

*Australia: Land Beyond Time* explores the diversity and uniqueness of Australia's life – life that evolved during the continent's isolation from all other major landmasses. The film surveys some of the most surreal and fascinating landscapes on Earth – from ancient, eroded seabeds and vibrant, red sand dunes to the vast, jeweled coral reef. It is about the ingenuity of life adapting to an arid environment and the strategies that many species have developed to survive the Earth's most challenging extremes. *Australia* brings to the giant screen animals that hop instead of run, creatures that have fur yet lay eggs, and "bears" that aren't bears at all.



### From Antarctica to Australia, Producer/Writer/Director David Flatman



David Flatman is one of the few producers of large-format films in Australia. He was coproducer of *Antarctica*, one of the world's most successful large-format films. With his wife Sue, David is listed among Australia's top ten documentary filmmakers. His experience in producing fine documentary films about Australia will translate well to the giant screen.

### Viewing the film as a teaching tool

The terrain and wildlife of the Australian continent will fascinate your students. This film will cause them to wonder about varied landforms and animals that have evolved over time. Numerous topics and questions will come to mind after viewing the film. Some lessons are included to assist you in using the film to teach standards from social studies and science.



### Educational Standards

#### National Council for the Social Studies

Several themes from the framework of the social studies standards closely correlate with *Australia: Land Beyond Time*.

- (1) **Culture.** The study of culture prepares students to answer questions such as: What are common characteristics of different cultures?
- (2) **Time, Continuity, and Change.** Knowing how to read and reconstruct the past allows one to develop a historical perspective and to answer questions such as: How has the world changed and how might it change in the future?
- (3) **People, Places, and Environment.** The study of people, places, and human-environment interactions assists students as they create their views of the world beyond their personal locations. Students answer such questions as: Where are things located? How do landforms change?

#### National Science Content Standards

Several categories from content standards for science closely correlate with *Australia: Land Beyond Time*.

- (A) Students develop abilities necessary to do scientific inquiry.
- (C) Students understand structure and function in living systems, reproduction and heredity, regulation and behavior, populations and ecosystems, as well as diversity and adaptations of organisms.
- (D) Students understand structure of the Earth system and the Earth's history.
- (F) Students understand science and technology in society.

# AUSTRALIA

LAND BEYOND TIME

## FUN FACTS

### COLLOQUIALISMS (Slang)

Aussie - Australian	Fair dinkum - true, authentic
Barbie - barbecue	G'Day - hello, greeting
Biscuits - cookies	Grog - alcohol
Bloke - man	Half Your Luck - congratulations
Blue - argument	Lift - elevator
Bonza - terrific, good	Nipper - young child
Bozo - idiot	Oz - nickname for Australia
Bush - outside the city	Roo - kangaroo
Cackleberries - eggs	Sheila - girl, young woman
Cheerio - good-bye	Ta - thank you
Cobber - pal, close friend	Tucker - food

### BOOMERANG

The boomerang is a traditional indigenous throwing stick made from wood. Some were used as weapons; others were thrown for fun and games.

You can make one type of boomerang out of a foam food tray.

- (1) Cut two strips lengthwise from the food tray, each 1.5 inches/4 centimeters wide.
- (2) Use the strips to make an X (with the curved end of one strip up and the curved end of the other down). Staple in the center.
- (3) Take your boomerang outdoors and practice until you can get it to fly and return.

### SPECIAL HOLIDAYS

**Australia Day, January 26** - Australia Day commemorates the arrival of Captain Arthur Phillip and the First Fleet at Sydney Cove on January 26, 1788. This landing started the first permanent European settlement on the island continent.

**Easter** - In Australia there is an Easter Bilby who carries out many of the duties of the Easter Bunny in the United States.

**ANZAC Day, April 25** - ANZAC is an acronym for Australia/New Zealand Army Corps. ANZAC Day is observed in Australia and New Zealand. Originally it honored those who fought in Gallipoli during World War I. Today it honors all soldiers who have died in war ([www.web-holidays.com/ANZAC](http://www.web-holidays.com/ANZAC)).

**Queen's Birthday, June 12** - Having been a colony in the British Empire, Australia celebrates the birthday of the Queen of England.

**Arbor Day, June 20** - A day for planting trees in winter. Note that winter in Australia begins in June.

**Boxing Day, December 26** - In England, many years ago, servants were required to work on Christmas. They were allowed to take leave on December 26 and visit their families. The employers gave each servant a box containing gifts. Boxing Day is an echo of that tradition.

### TUCKER (Food)

**VEGEMITE:** The national food!

American children grow up on peanut-butter-and-jelly sandwiches. Australian children eat Vegemite sandwiches. You can buy Vegemite at the supermarket. Make a Vegemite sandwich by spreading Vegemite very thinly on a slice of bread, then try it. Find musical accompaniment and additional recipes on the website [www.vegemite.com.au/](http://www.vegemite.com.au/).

### GRILLED MEATS

One of the most popular ways of preparing meat is grilling on the barbie. Some bars and motels have pits for cooking and sell cuts of meat for customers to grill their own.

### BUSHTUCKER

**Quandongs** are a native fruit like a peach, but not very sweet (like rhubarb). Halved and seeded, they look like bright crimson-red apricots. They are best stewed in sugar, water, and orange juice and served with ice cream or pureed as a base for other desserts like pies or tarts.

**Wattle Seeds.** There are between 850 and 1000 species of wattle in Australia. The seeds of these bushes and small trees can be roasted, steamed, or pulped. They have the consistency of poppy seeds and are pleasantly crunchy.

**Witchetty Grubs** are tasty grubs found in the stems, trunks, and roots of certain wattles. They are good sources of calcium and iron. Depending upon the wattle, the grubs have different flavors. They are served barbecued as satay.

**Goanna** is a native lizard and now an endangered species. High in protein, goannas vary in size.

**Kakadu Plums** are a round fruit of a plum-like color. They can be used in the same way as quandongs.

### MACADAMIA NUT CRISPS

Macadamia nuts are a part of Australian bush tucker.

- 250 grams butter
- 1/3 cup sugar
- 1-1/3 cups all-purpose flour
- 1 teaspoon vanilla
- 1-1/2 cups dried coconut
- 65 grams ground macadamia nuts

Cream butter and sugar until light and fluffy. Add nut mixture and flour, then mix well. Add vanilla. Spoon heaped tablespoons onto a greased tray, flatten with a fork, and sprinkle lightly with coconut. Bake at 180° C (350° F) for 15 minutes, or until light gold in color. Remove from oven and cool. Makes about 20-24 cookies.

### FILMS (About/by Australians)

*Crocodile Dundee*, 1985  
*Strictly Ballroom*, 1993  
*Muriel's Wedding*, 1994  
*Shine*, 1996

### FAMOUS AUSSIES

Russell Crowe  
Portia De Rossi  
Cathy Freeman  
Nicole Kidman  
Heath Ledger  
Ian Thorpe

# AUSTRALIA

LAND BEYOND TIME

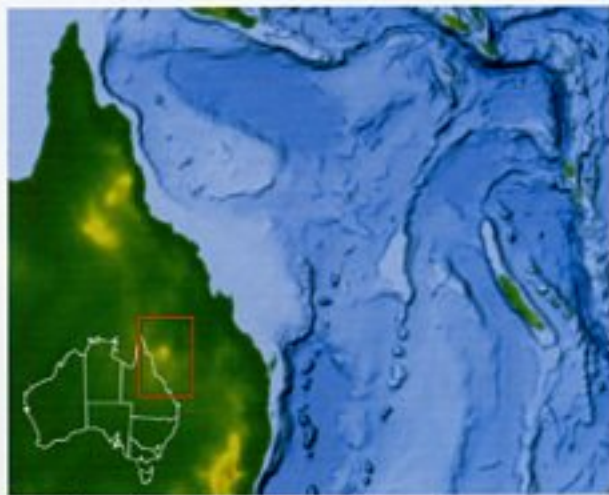
## WHAT'S UNDERWATER?

### CORAL: The FOUNDATION of the GREAT BARRIER REEF

- The Great Barrier Reef off the eastern coast of Australia is made up of coral reefs, shoals, cays, and islands.
- There are over 350 species of corals found on the reef. They help support the animals that live in the ecosystem.
- The Great Barrier Reef is the largest natural living structure on Earth and can be seen from the Moon!
- It stretches 1,260 miles (2,025 kilometers) and follows the contours of the continental shelf.

Corals are radially symmetrical invertebrate animals. The outer skeleton (calcium carbonate) protects the polyp. Some corals eat zooplankton or small fishes. They are nocturnal feeders and extend their tentacles to capture food with the aid of nematocysts (stinging cells). Many corals derive their nutrition from zooxanthellae (algae) living within the polyp. When a coral polyp dies, its skeleton remains as part of the reef.

Crown-of-thorn seastars, parrotfish, and humans threaten coral.



3. Glue each coral onto a cardboard box to form a reef.

### Objective

- Construct a model of a coral polyp and reef in order to understand a reef system.

Suggested time: 45 minutes

### Standards

**National Science Content Standards:** (C) Students understand structure and function in living systems, regulation and behavior, populations and ecosystems.

**National Council for the Social Studies:** Culture; Time, Continuity, and Change; People, Places, and Environment.

### Materials

- 3-ounce paper cup (outer skeleton)
- Drinking straw (polyp)
- Small coffee filter (cut as tentacles)
- Green, brown, or orange markers (to color algae)
- Scissors, glue

### Procedures

1. Introduce coral reefs and their characteristics with special emphasis on the coral polyp.
2. Give each student materials to create a coral polyp using the following directions:
  - Decorate the filter with color markers (algae).
  - Fold the filter into 1/8 sections; trim about 1 inch off, then cut the filter into 1/2-inch-wide strips (tentacles).
  - Cut the straw in half.
  - Insert filter into end of straw (polyp); push other end of straw through bottom of cup (skeleton of corallite).

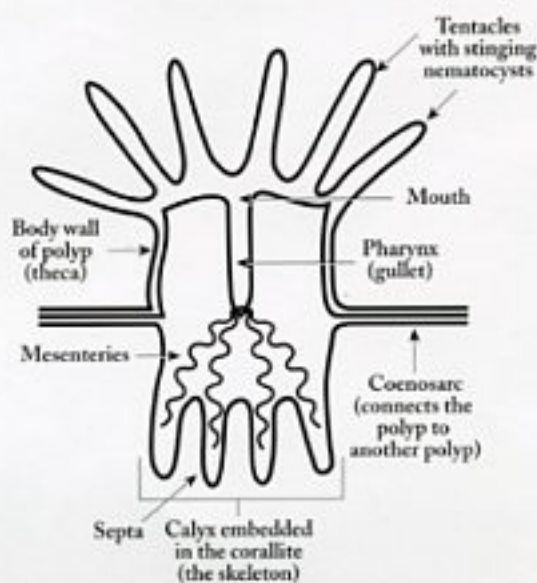
### Assessment

Describe the parts of the coral (skeleton, body, algae, and tentacles) and how they contribute to its well-being.

### Extension

1. Coral reefs are generally found between 30° north and 30° south. Why do you think that is?
2. Debates continue between environmentalists who want to protect the reefs and developers who want to build near the reefs. Read commentaries by both sides, then prepare an argument supporting one side of the debate.

### CORAL POLYP



# AUSTRALIA

LAND BEYOND TIME

## WHERE IN THE WORLD? AUSTRALIA - NATION/CONTINENT

### Objectives

- Use maps to answer questions.
- Develop a chart to compare distances between cities in Australia and the United States.

Suggested time: 45 minutes

### Standards

National Science Content Standards: Science and Technology.

National Council for the Social Studies: People, Places, and Environment (where things are located).

### Materials

- Activity sheets with maps for students to share
- Ruler for measuring distance

### Procedures

1. Review maps of Australia and the United States.
2. Locate the following cities on the maps:

#### AUSTRALIA

Canberra (capital), Sydney, Brisbane, Darwin, Perth, Hobart

Area: 2,966,368 square miles/7,682,300 square kilometers

Population: 19 million

#### UNITED STATES

Washington, D.C. (capital), Boston, Houston, Los Angeles, Denver, Cincinnati

Area: 3,717,792 square miles/9,629,091 square kilometers

Population: 280 million

3. Measure between each city and the capital to complete a chart showing distances.
4. How do the two countries compare in size?
5. How do they compare in population?

### Assessment

1. Work together to create a large chart of the information to which everyone contributes.
2. Check papers for answers on the chart.

### Extension

1. Viewing the maps, can you see a pattern of where cities are located?
2. List all the places you would visit in Australia if you had ten days. What would you do in each?

### DISTANCES FROM

Canberra	to	(mi/km)
	Sydney	
	Brisbane	
	Darwin	
	Perth	
	Hobart	
Washington, D.C.	to	(mi/km)
	Boston	
	Cincinnati	
	Denver	
	Houston	
	Los Angeles	

### GEOGRAPHICAL FACTS

- The lowest point is Lake Eyre (53 feet/16 meters below sea level).
- The highest point is Mount Kosciuszko (7,310 feet/2,228 meters above sea level) in the Snowy Mountains.
- The longest river is the Murray-Darling River, which flows for 2,911 miles/4,685 kilometers into the Indian Ocean.
- Uluru (Ayers Rock) is the world's largest rock and measures 1,143 feet/348 meters high; 1.5 miles/2.5 kilometers long; 1 mile/1.6 kilometers wide.
- Fraser Island is 75 miles/120 kilometers long and is the world's largest sand island.
- Australia is in the Southern Hemisphere; therefore, seasons are reversed from those in the Northern Hemisphere.
- The night sky is magnificent for its display of the Milky Way Galaxy, which is centered in the Southern Hemisphere. Constellations that shine brightly include the Southern Cross (Crux), the Swordfish (Dorado), the Toucan (Tucana), and the Centaur (Centaurus).

# AUSTRALIA

LAND BEYOND TIME

## WHERE DO THEY LIVE? ANIMALS

On the line provided, write the biome (tropical, grassland, or desert) where each animal lives.



*Thorny devil (lizard)* \_\_\_\_\_



*Pelicans* \_\_\_\_\_



*Echidna* \_\_\_\_\_



*Platypus* \_\_\_\_\_



*Honey possum* \_\_\_\_\_



*Kangaroo* \_\_\_\_\_

# AUSTRALIA

LAND BEYOND TIME

## RESOURCES

### MUSEUMS IN AUSTRALIA

Australian Museum (Sydney) [www.austmus.gov.au](http://www.austmus.gov.au)

6 College Street, Sydney NSW 2010 Australia  
61 2 9320 6000

Features search and discovery, biodiversity, indigenous people, and stories of dreaming.

Museum Victoria (Melbourne) [www.museum.vic.gov.au](http://www.museum.vic.gov.au)

GPO Box 666E, Melbourne Vic. 3001 Australia  
61 3 8341 7777

Introduces cultures, nature, and science in a complex of museums under one administration.

National Museum of Australia (Canberra) [www.nma.gov.au](http://www.nma.gov.au)

GPO Box 1901, Canberra ACT 2601 Australia

Provides educational games and information, including Coasting on the Web and Kids, Cows n' Copters.

### BOOKS

Cousteau Society. *Cerata: The Sea's Great Builders.*

New York: Simon & Schuster, 1992.

Flannery, T., P. Kendall, and K. Wynn-Moylan. *Australia's Vanishing Animals.*

Surry Hills, NSW: RD Press, 1990.

Grappa, Jonathan. *Destination: Australia.*

Washington, D.C.: National Geographic Society, 2000.

Hoser, R.T. *Endangered Animals of Australia.*

Sydney, NSW: Pierson & Co., 1991.

Jukofshky, D., and Chris Wile. *They're Our Rainforests Too.*

Washington, D.C.: National Wildlife Federation, April/May 1993.

Lean, Geoffrey, Don Hinrichsen, and Adam Markham (eds.).

*Atlas of the Environment.* New York: Prentice Hall Press, 1990.

Morcombe, M. *An Illustrated Encyclopedia of Australian Wildlife.*

Port Melbourne, Vic.: Treasure Press, 1989.

Morrison, Reg. *The Voyage of the Great Southern Ark.*

Chicago: URE Smith Press, 1991.

Muzik, Katy. *At Home in the Coral Reef.*

Watertown, Massachusetts: Charlesbridge Publishing, 1992.

National Wildlife Federation, Ranger Rick's Naturesscope. *Rainforests:*

*Tropical Treasures.* Washington, D.C.: National Wildlife Federation, 1989.

Selberg, Ingrid. *Secrets of the Deep.* New York: Dial Books, 1990.

Smith, David. *Saving a Continent: Towards a Sustainable Future.*

Sydney, NSW: University of New South Wales Press, 1994.

Smith, Rolf. *Australia: Journey Through a Timeless Land.*

Washington: National Geographic Society, 1999.

Strahan, R. (ed.). *The Australian Museum Complete Book of Australian*

*Mammals.* North Ryde, NSW: Cornstalk Publishing, 1991.

### WEBSITES

#### General

[www.hmns.org](http://www.hmns.org) Official website of the Houston Museum of Natural Science, distributor of *Australia: Land Beyond Time*. Click on film distribution for more information.

[www.austlii.gov.au](http://www.austlii.gov.au) View landforms, pictures, and maps of Australia.

[www.austliangeographic.com](http://www.austliangeographic.com) Online version of national magazine of science and nature.

[www.biodiversity.environment.gov.au](http://www.biodiversity.environment.gov.au) Highlights plants and animals, conservation, and protection.

[www.classroom.com](http://www.classroom.com) (AustraliaQuest) Offers subscription service with visitor option. Site includes AustraliaQuest undertaken in October 2000, which features set the course, Quest map, mystery photo, Quest critters, and daily movie.

[www.enchantedlearning.com/school/Australia](http://www.enchantedlearning.com/school/Australia) Online information, lessons, and activities.

[www.globalgourmet.com/destinations/australia](http://www.globalgourmet.com/destinations/australia) Defines foods (tucker) and provides recipes.

[www.ozramp.net.au/~scnani/animaustr.htm](http://www.ozramp.net.au/~scnani/animaustr.htm) Shows continental spread in animated graphics.

#### Animals

[www.aaa.com.au/A-Z](http://www.aaa.com.au/A-Z) An archive of Australian animals.

[www.musc.edu/cando/aust/mun/susecoal.html](http://www.musc.edu/cando/aust/mun/susecoal.html) Offers lessons on animals; good data with possible investigations.

#### Great Barrier Reef

[www.gbrmpa.gov.au](http://www.gbrmpa.gov.au) (GBR Marine Park and World Heritage Area)

Features information for education, including reef VIDEOLINQ, creature feature, the living classroom, and media releases.

[www.reef.crc.org.au](http://www.reef.crc.org.au) (Cooperative Research Center) Updates news and publications for reef managers, researchers, and industry.

### ACKNOWLEDGEMENTS

Authors: Patricia (Pam) Wheat, Director of Education, Houston Museum of Natural Science, and Martha Kolbe, Manager, X•Plorations, Houston Museum of Natural Science.

Advisors: Charis Smith, Amber Schumacher, Sally Horrigan, Beverly Aderholt, Melissa Langfield, and Greg Hunt.

Design by Gateway Design, Inc.

Copyright © 2001 Houston Museum of Natural Science.

