

# CLASSIFICATION AND ADAPTATIONS

## TEACHER RESOURCE

Stage 4: Science

Outcomes: SC4-14LW



Classification is a practice that allows humans to have a better understanding of the world around them. While biologists mainly associate this with putting living things into groups based on their features, it is used in many other branches of science and other aspects of our life. Learning to group things into categories is an important skill as it allows us to gain a better understanding of the world around us.

Studying classification at Taronga will allow students to draw connections between structures and functions of different animals that determine how scientists have classified them throughout history. Through keen observation, students can discover some amazing adaptations that give wildlife the edge for survival and reproduction in their natural environment.

# CLASSIFICATION

Pre- or Post-Zoo Visit

## BODY COVERING

An animal's body covering is a multifaceted adaptation that assist with the survival in their environment, reproduction and much more. As an observable feature, it can be a useful tool to assist us with classifying. Animals use their body covering for insulation, camouflage, protection, communication, identification, waterproofing, flight, as a sensory tool and much more.

## BIRDS OF A FEATHER

All birds are covered in feathers, an important structural feature for insulation and, depending on the species, can also assist with camouflage, protection, communication, identification, waterproofing and flight.

### DID YOU KNOW?

Lesser Sooty Owl feathers display countershading to camouflage them from below and above.



## AMPHIBIANS

Amphibians have a thin layer of soft, moist skin that not only absorbs water but can take in oxygen.

## MAMMALS

Fur or hair is a characteristic of mammals, even though it may not be as recognisable in some. In mammals, this type of body covering is useful for insulation by conserving heat, or it can be used to protect its body against heat. For example, a camel is a diurnal desert animal that benefits from the use of fur to keep sunlight off their skin.

### DID YOU KNOW?

Marine mammals, such as dolphins and whales, do not have much fur so they use blubber to keep them warm in the cooler conditions.

## REPTILES

A reptile's skin is distinguishable as they are covered with scutes or scales. This is made up of keratin, the same as our hair and fingernails! Different to fish, these scales are part of the skin, not on top, and help to minimise water loss. Reptiles regularly shed the outer layer of their skin.



## FISH

Most fish also have a body covering of scales that sit on top of their skin. They have a slimy covering of mucus to assist them with swimming.

# CLASSIFICATION

Pre- or Post-Zoo Visit

## BREEDING, BREATHING AND MORE.

### REPRODUCTION

Animals play an important part of the continuation of their species by reproducing. Conditions need to be right and different animals have been observed to display interesting breeding behaviours. For example, multiple male echidnas form a train behind a female to show their interest!



### MONOTREMES, MARSUPIALS & PLACENTAL MAMMALS

A complex class of animals, **Mammals** can be classified by reproduction. Each share features only found in mammals; a mammary gland to produce milk, a single bone on each side of the lower jaw and at least some fur on their body, however they have a different means of producing offspring.

**Placental mammals**, for example give birth to well-developed offspring whereas **marsupials** give birth to underdeveloped offspring which are then carried in a pouch. **Monotremes**, such as echidnas, lay soft shelled eggs that are carried in a pseudo pouch.

### EGG LAYERS

All **birds** lay hard-shelled eggs.

**Reptile** reproduction can depend on temperature, needs, etc, this means that they may give birth to live young or lay eggs. For example, Blue-tongued Lizards and boas give birth to live young, pythons and Bearded Dragons lay eggs.

**Monotremes** platypus and echidnas are the only egg-laying mammals.

### GILLS OR NO GILLS?

**Fish** can come in a variety of body forms and sizes from less than a centimetre in length to a whale shark. Despite this range, they all breathe using gills.

**Amphibians** breathe oxygen and their skin plays an important role in this. They can not only absorb water through their skin, but they can also take in oxygen. In the early stages of their life, they breathe using gills e.g. a tadpole.

**Mammals, reptiles and birds** breathe oxygen with the use of their lungs.



### LET'S TALK BLOOD

Vertebrae animals can be classified by whether they are warm or cold blooded, or endothermic (warm) or ectothermic (cold).

Endothermic – **mammals & birds**.

Warm blooded animals use their fur or feathers to keep insulated.

Ectothermic – **reptiles, amphibians, & fish**.

Cold blooded animals move into the sun or into the shade as needed. During cooler parts of the year, they become less active.

### LINKS:

[Australian Museum](#)

# ANIMAL SCAVENGER HUNT

Student Zoo Worksheet



Find these animals at Taronga Zoo and fill in the blanks.

- If you don't see these exact species, find similar animals from the same class.
- The first blank space requires the name of the animal's class e.g., mammal, reptile, amphibian, fish, or bird.

## Red-bellied Black Snake

I am a \_\_\_\_\_ . I am endothermic / ectothermic (circle).

My body covering is \_\_\_\_\_ .

A snakes' reproductive method is typically \_\_\_\_\_ .

\_\_\_\_\_ .

Can you find a species of snake that gives birth to live young (ovoviviparous)? \_\_\_\_\_



## Corroboree Frog

I am an \_\_\_\_\_ . I am endothermic / ectothermic (circle).

My body covering is \_\_\_\_\_ .

Describe a frogs' reproductive method and life stages \_\_\_\_\_

\_\_\_\_\_ .  
\_\_\_\_\_ .

## Nicobar Pigeon

I am a \_\_\_\_\_ . My body covering is \_\_\_\_\_

and I use this adaptation to \_\_\_\_\_

\_\_\_\_\_ .

My reproductive method is \_\_\_\_\_ .



## Quokka

I am a mammal. I am endothermic / ectothermic (circle).

A quokka's reproductive method is \_\_\_\_\_

\_\_\_\_\_ .

This method of reproducing means they are called a \_\_\_\_\_ .

The other 2 subclasses are \_\_\_\_\_ and \_\_\_\_\_ .

# EXCEPTIONS TO THE RULE

## What are some similarities and differences between these animals?

Sometimes animals don't stick to their lane and there can be exceptions within a class. An example of this is on the previous page where some reptiles are ovoviparous and give birth to live young.

Write some information about these three animals. Be sure to add as much detail as you can about their class, adaptations and habitat.

## EMU

### Common Emu

---

---

---

---

---



## PENGUIN

### Little Penguin

---

---

---

---

---



## BAT

### Ghost Bat

---

---

---

---

---

