

Charles Darwin Trail

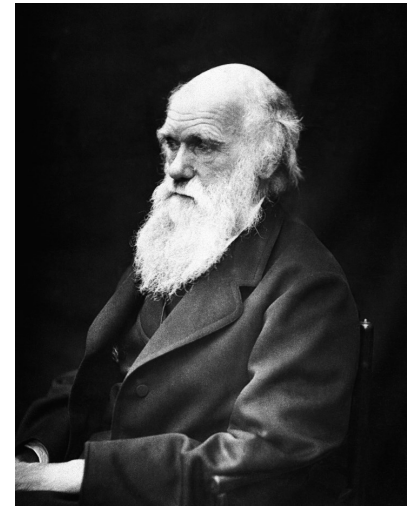
Student Activity Sheet

Be your own explorer!

When Charles Darwin arrived at the Galapagos Islands in 1835, he noticed that the shells of the giant tortoises and the beaks of the mockingbirds differed from island to island.

Did you know?

Charles Darwin (12 February 1809 – 19 April 1882) was an English naturalist who published the famous book, "On the Origin of Species". This book outlined that all species of life have evolved over time from common ancestors through the process of natural selection.



On this trail you will be asked to study features of birds, tortoises and turtles.

Charles Darwin produced very detailed drawings of his studies during his voyage, which has become of great importance for later studies.

As part of this trail you will also need to produce scientific drawings. Make your drawings as neat and accurate as possible. Remember to label relevant points of interest and include an approximate scale where possible.

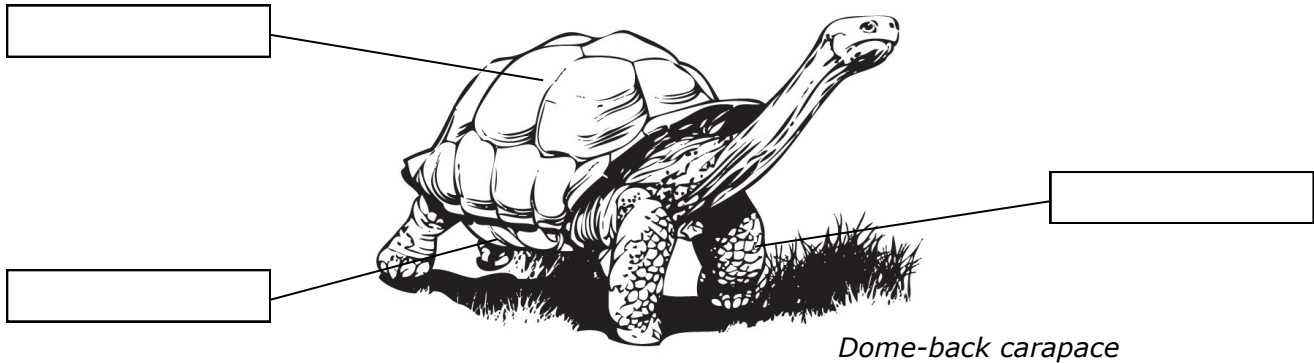


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Shells and feet

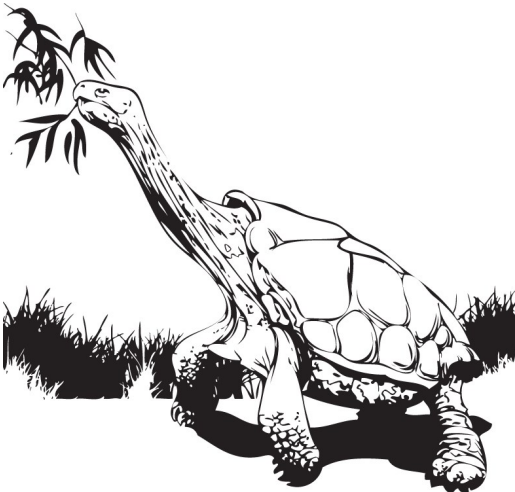
The main focus of this part of the trail is the shape of the shells of tortoises and turtles and whether their feet are webbed or not. Please compare all your observations of shells and feet as you go along the trail.

- 1) Label the tortoise below using the following terms: scaly skin, carapace (top part of shell) and plastron (lower part of shell).



Visit the Galapagos Tortoise exhibit.

Galapagos Tortoises are commonly split into two groups depending on the shape of their carapace. The tortoises you see in Perth Zoo have a dome-back carapace. This species comes from islands with low vegetation. Other Galapagos Tortoise from different islands have a saddle-back carapace which has a curved shell front.



Saddle-back carapace

- 2) Observe the tortoises and explain how a dome-back carapace could help the tortoises while foraging for food in the area from where it originates.
- 3) What advantage could a saddle-back carapace give the tortoises (see the picture to the left)?

Did you know?

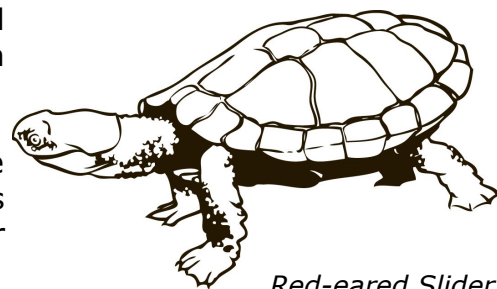
A tortoise's shell is made of bone and is covered by structures called scutes. Scutes, just like scales of snakes and our hair and finger nails, are made from keratin.



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- 4) Find these Zoo animals: Galapagos Tortoise, Radiated Tortoise, and Red-eared Slider and draw their feet in the table below.

As you go along, complete the Venn diagram on the next page to examine the differences and similarities between these three animals and then answer questions 5–7.



Red-eared Slider

Foot of Galapagos Tortoise	Foot of Radiated Tortoise	Foot of Red-eared Slider

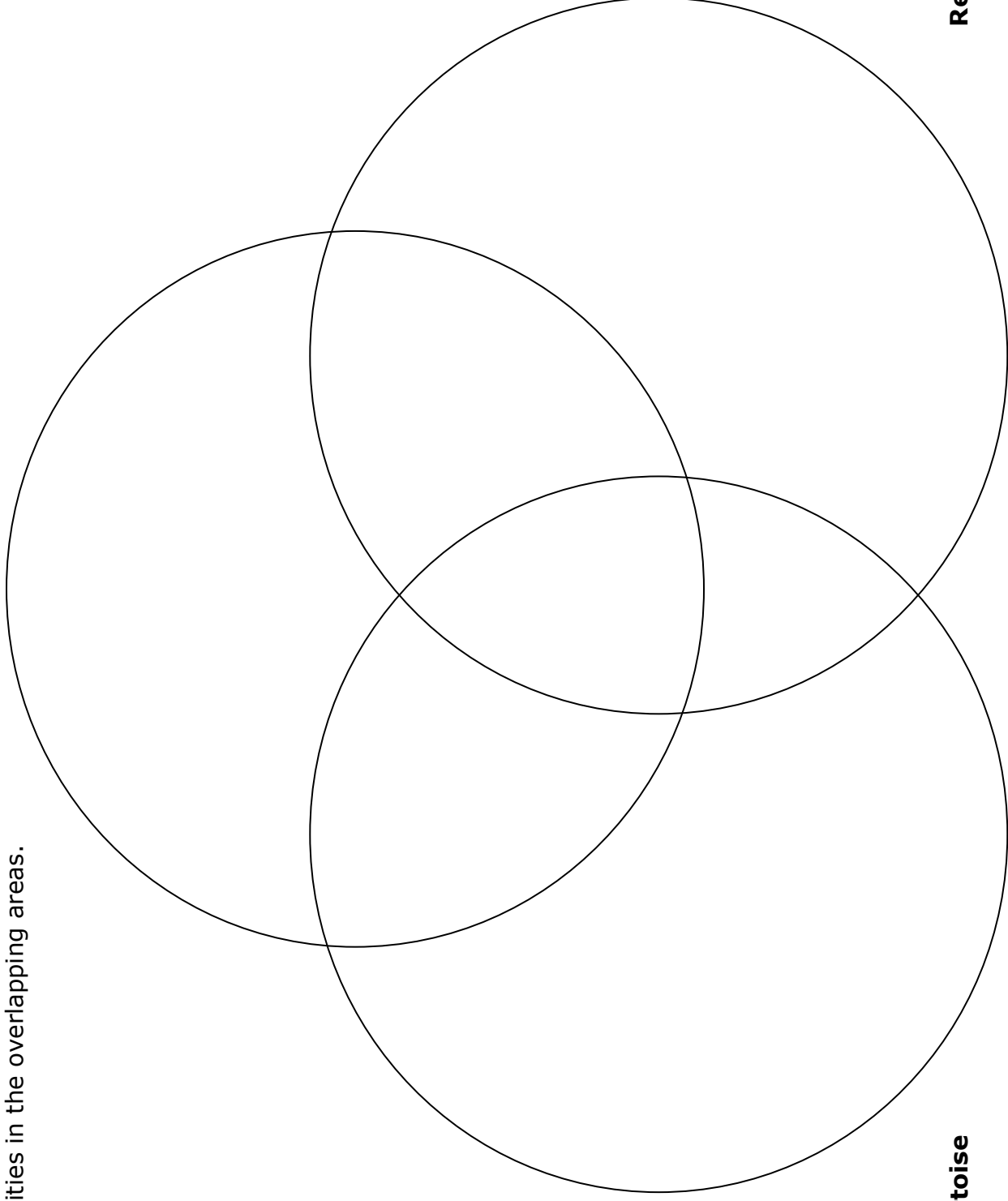
- 5) What are the common features of the three different animals?
- 6) Why is it helpful for the turtles to have webbed feet?
- 7) What term can be used to describe the shape of a turtle's shell that allows it to swim easily through the water?



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Radiated Tortoise

Hint: Place similarities in the overlapping areas.



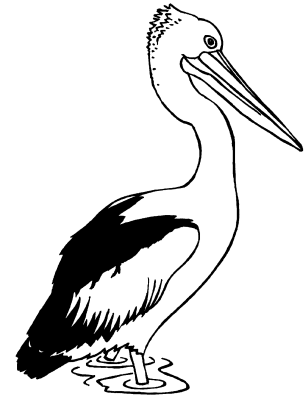
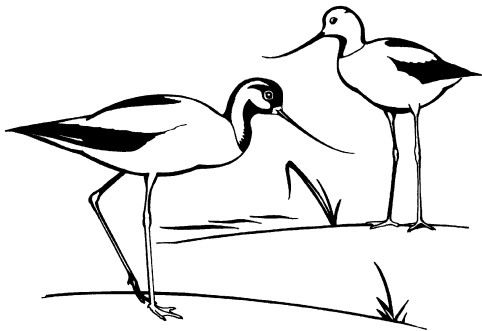
Galapagos Tortoise

Red-eared Slider

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Beaks and bills

Not all beaks and bills of birds look the same. In this part of the trail the main focus is how the beaks and bills of birds have adapted and specialised over time to make it easier for them to find food in different *niches*.



- 1) What do you think is meant by the term *niche*?

- 2) Different animals have different types of diets. Define these terms:
 - Carnivore
 - Herbivore
 - Omnivore
 - Insectivore

- 3 a) Which environmental features do you think have brought about variety in beak and bill shape?

- 3 b) Explain the role of these factors in the process of natural selection.

Did you know?

Natural selection is the term given to the process by which better adapted organisms survive to produce a greater number of viable offspring. This increases the numbers of this type of organism, making them more common.



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Find the Bird	Little Penguin	Royal Spoonbill	Emu	Australian Pelican	Elegant Parrot	Boobook Owl
Exhibit location	Penguin Plunge	Australian Wetlands	Australian Bushwalk	Main Lake	Birds of the South-west	Nocturnal House
What is the diet of this bird in the wild?						
Is the bird a carnivore (C), herbivore (H) or omnivore (O)?						
Draw the beak.						
How do you think this beak helps the bird feed in the wild?						

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Back at school

- 1) Find out exactly how far the Galapagos Islands are from the mainland of South America.

Many of the animals living on the Galapagos Islands resemble animals living on the mainland which indicates that this is where they came from.

- 2) Discuss whether you think the animals made a conscious decision to go to the Galapagos Islands from the mainland or could it have happened by chance? Write down your thoughts.

- 3) Discuss all the environmental factors that you think could influence animals adaptations.

Did you know?

In the past nearly 200,000 tortoises were taken from the Galapagos Islands by sailors and pirates for food. They stored the tortoises under the deck as living food. Tortoises can survive without food and water for several months! This is one of the major reasons why the Galapagos Tortoises are endangered today.



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Back at school (cont.)

You have now been on your own exploration of Perth Zoo studying animals from around the world, learned about evolution and discussed your thoughts back at school. Evolution is a very slow process when it happens on its own. However, humans have played a huge role in the evolution of many animals and plants putting "evolution in the fast lane".

- 1) Give at least two examples where humans have affected the course of evolution in animals.

- 2) Give two examples where humans have affected the course of evolution in plants.

- 3) Can you think of the reasons why humans alter evolution in animals and plants?

Charles Darwin is credited with the development of the theory of evolution by natural selection, but many other people contributed ideas upon Charles Darwin's theory.

- 4) Give at least two examples of other scientists who contributed ideas upon Charles Darwin's theory.

