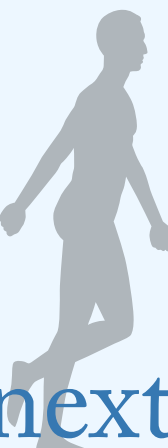


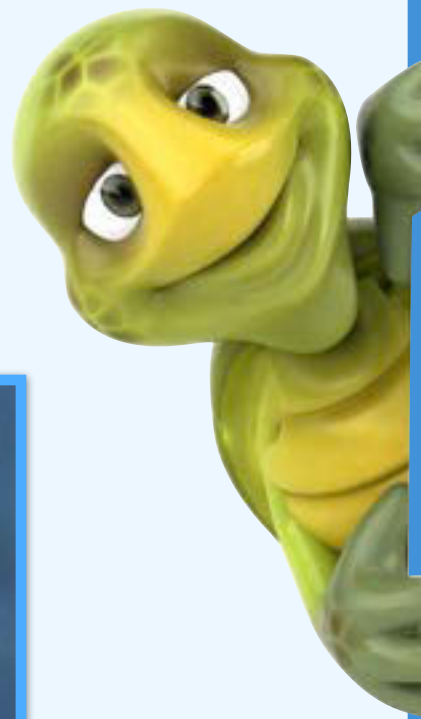
Evolution and Inheritance

Learning Objective:

To identify how animals and plants are adapted to suit their environment in different ways.



Can you describe this duck's environment?
What characteristics help it to survive?



Think, pair, share your ideas.



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Did you think of these?



Environment

wetlands, ponds, lakes

wet, cold, muddy

lots of long grasses

lots of insects and other
small animals

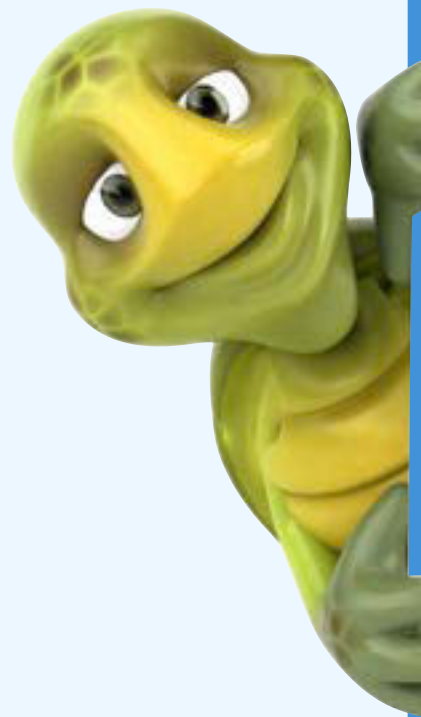
Characteristics

feathers help it float, fly
and stay dry

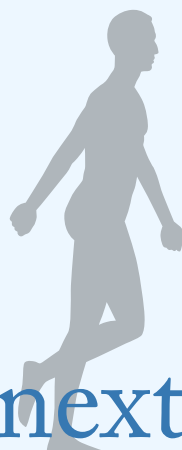
long beak for grabbing
food on land and in water

webbed feet for
swimming

Can you describe this environment? What characteristics help the water lily to survive?



Think, pair, share your ideas.



Did you think of these?



Environment

ponds, lakes, slow moving
streams and rivers
wet and cold
soft, muddy banks and
pond/river beds

Characteristics

lots of roots spread
through soft soil
long stems reach up to
surface
flowers and leaves float
on water

The characteristics which helped those two species to survive in their environments were inherited. Do you remember what *inherited* means?



Write a class definition of **inheritance**.



Inheritance is the name for the passing of *traits*, or *characteristics* from parents to offspring.

Did
your class definition say
something like this?



Not all inherited characteristics are **advantageous**. Sometimes, offspring will inherit characteristics from their parents which make it harder for them to survive.

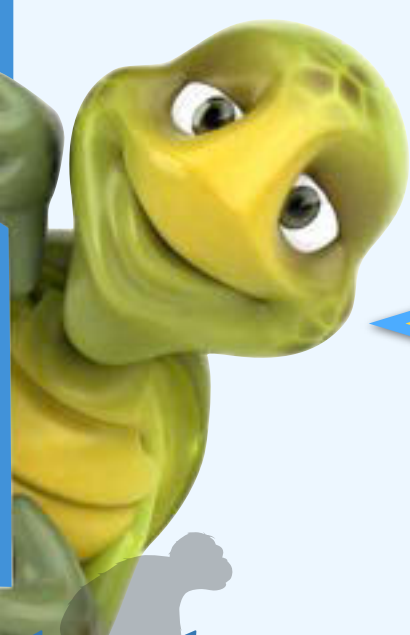
big, webbed feet

long neck

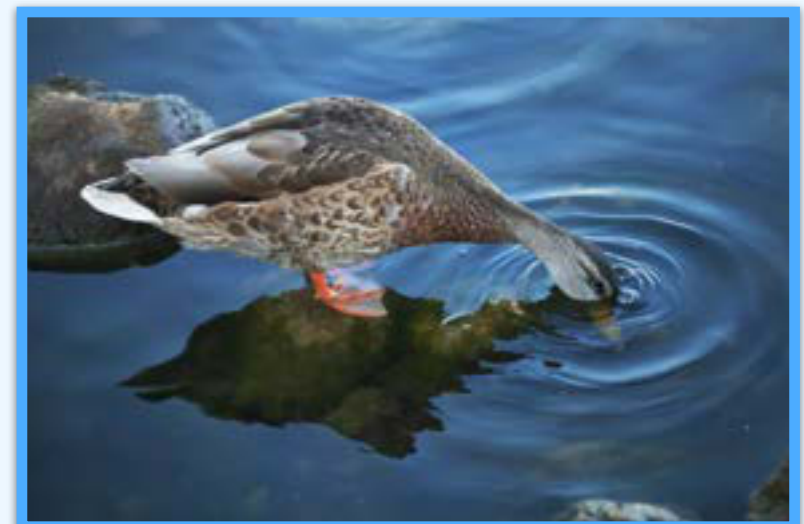
short neck

short beak

short, strong legs




Which of these characteristics would be advantageous for a duck?



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 next

Did you choose these? They are all advantageous characteristics for a duck to inherit from its parents.

big, webbed feet

long neck

short, strong legs



Would
the same
characteristics be
advantageous for
this bird?



Discuss your ideas.



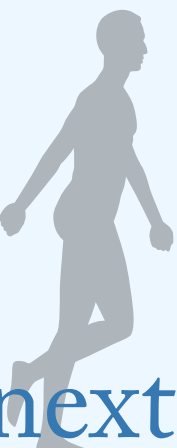


The spotted redshank is a wading bird. Its long legs help it wade through shallow water. It catches small invertebrates living in the mud under the water with its long beak.

Big, webbed feet are good for swimming, however, they would be disadvantageous for wading birds that walk through shallow water.

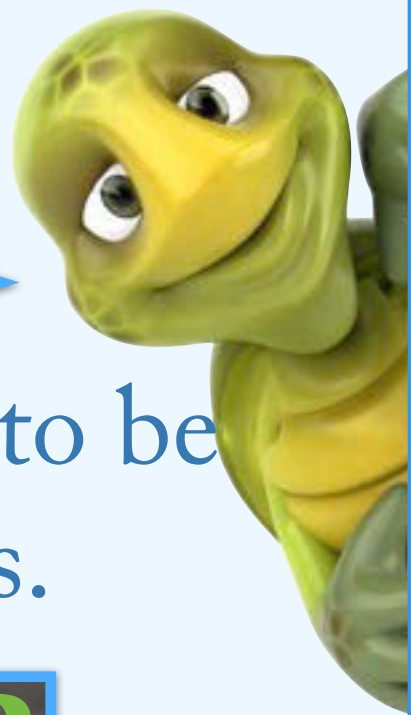


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Let's look at how this works in nature; in this example, two unrelated spotted redshanks are born with different characteristics.



Disadvantageous characteristics are less likely to be inherited than **advantageous** characteristics.



Redshank A was born with a slightly longer than average beak. Why might this be **advantageous**?

Redshank B was born with a slightly shorter than average beak. Why might this be **disadvantageous**?

Over time, redshanks and other wading birds eat lots of the invertebrates in the mud under the shallow water.



Redshank A's slightly longer beak allows it to go into slightly deeper water than most other birds to find food.

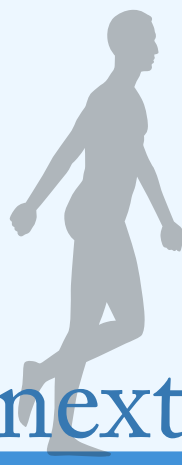


Redshank B's slightly shorter beak means that it can only hunt for food in shallower water, where food is scarcer due to more birds being able to feed there.



Redshank A can find plenty of food thanks to its slightly longer beak. It is fit and healthy enough to mate with another redshank and produce offspring.

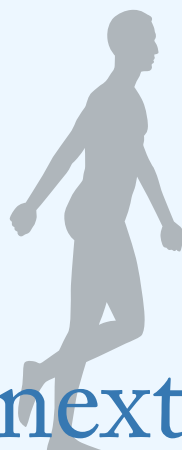
Redshank B cannot find as much food, and does not grow to be as healthy. Its offspring are smaller and less healthy too. Some of them may not survive.





Redshank A's offspring inherit the characteristic of a slightly longer than average beak. They too are able to feed in slightly deeper water, and therefore have a good chance of surviving, breeding successfully and producing offspring with slightly longer than average beaks.

Eventually, over many, many generations, this advantageous characteristic may spread across the entire species of spotted redshanks. All redshanks may evolve to be better adapted in this way.



Today we will be finding out more about the advantageous characteristics of animals living in unusual environments.



Plenary



This is the entrance to an underwater sea cave. Can you think of some words to describe what it might be like inside the cave? What sort of characteristics would be advantageous for an organism living in this environment?

