

Amazing Adaptations

Activities for children aged 7–11 years

WWT has a well-established and well-loved education programme that we run across the UK at our ten wetland sites. We've designed these short activities based on one of our school activities. We've made it to connect you and your family to the natural world and help you to work with your children to feel great about nature and understand some of the things that WWT love and care about.

Why wetlands?

WWT works across the UK to save, conserve and build wetlands for wildlife and people. Wetlands are one of the most important habitats on earth – storing huge amounts of CO₂, providing a natural way of stopping flooding and serving as a home for huge numbers of different creatures.

This activity will help you and your children to get to know a range of wetland birds and what it is about them that allows them to live in a wetland.

These activities link to the National Curricula for science in England, Northern Ireland, Scotland and Wales.

Stuff you need:

- **Set of amazing adaptations cards (see final pages of this document)**

Note: Where you see a **Q** this indicates a question to ask your child

Indoor activities

(1 hour: can be broken down into four 15 minute activities)

Over time, all animals have changed in special ways so that they can live in their habitat (home). Find out how wetland birds have become adapted to their habitats and how this helps them to thrive.

- Spread out the amazing adaptations cards so that you can see them all easily.

Q What do you think we mean by an adaptation?

Key word: ADAPTATION

Something about an animal's body which changes to help it to survive.

Feet

(15 minutes)

- We're first going to think about the birds' feet.
- Look carefully at the cards. For any birds where you can't see their feet clearly in the main image remember there is a close-up of their feet on the reverse.

Q Can you think of any ways wetland birds may have developed feet suited to where they live and what they do?

- Ask your child to group the different birds according to the shape of their feet (there's no right answer at this stage).

The birds' feet on the cards can be sorted into four main groups:

Webbed feet

Long toes

Short toes

Talons

- See if your child can sort the birds into these four main groups. Once they have sorted them into their groups, look at each in turn.

Webbed feet	Long toes	Short toes	Talons
<ul style="list-style-type: none">- Mute swan- Bewick's swan- Canada goose- Greylag goose- Mallard- Shoveler- Goosander- Coot (lobed)	<ul style="list-style-type: none">- Grey heron- Little egret- Moorhen- Avocet- Black-tailed godwit- Curlew- Spoonbill- Dipper	<ul style="list-style-type: none">- Reed warbler- Kingfisher	<ul style="list-style-type: none">- Osprey- Marsh harrier

Q How do you think each type of foot helps these birds to live in a wetland?

You can talk through each group using the information below and on the next page:

Webbed feet:

- These help the bird swim through the water.
- They are also useful when walking as they stop the bird from sinking in mud.
- These birds spend a lot of their time on the water.

Long toes:

- These help to spread the load so that the bird doesn't sink in mud.
- They also help the bird to balance.
- These birds spend a lot of their time standing.

Short toes:

- These can easily be curled around things to enable the bird to perch.
- They are also light and flexible, enabling the bird to fly well.
- These birds spend a lot of their time perching and flying.

Talons:

- These enable birds of prey to catch and kill their prey.

- Have another look at the coot's feet. They're not truly webbed. In fact we say they are 'lobed'. This gives them the best of both worlds, meaning they are both strong swimmers and can walk effectively on land. What a fantastic adaptation!
- Carry out some research. Are there any other birds that have 'lobed' feet?

Legs

(15 minutes)

- We're now going to think about the birds' legs.
- As before, ask your child to group the birds according to the types of legs they have. Are they long or short? Are they narrow or wide? Again, there is no right answer the first time they sort them.

This time, the legs can be categorised into four main groups:

Short,
powerful legs

Short, medium
width legs

Short,
narrow legs

Long,
narrow legs

- See if your child can sort the birds into these four main groups.

Short, powerful legs...	Short, medium width legs	Short, narrow legs	Long, narrow legs
...for swimming: - Mute swan - Bewick's swan - Canada goose - Greylag goose - Mallard - Shoveler - Goosander	- Coot - Moorhen	- Reed warbler - Dipper - Kingfisher	- Grey heron - Little egret - Avocet - Black-tailed godwit - Curlew - Spoonbill
...for catching prey: - Osprey - Marsh harrier			

- Once they have sorted them into their groups look at each in turn.

Q How do you think this adaptation helps these birds to live successfully in a wetland?

Short, powerful legs:

- Some birds use these for swimming whilst others use them for catching and killing their prey.

Short, medium width legs:

- These are good for walking.

Short, narrow legs:

- These are good for flying and perching.

Long legs:

- These keep the bird's body above the water.
- They're great for wading through water.

- Look again at the birds with short powerful legs. Here, this adaptation has arisen for two different reasons. The ducks, geese and swans have developed short powerful legs for swimming, whereas the birds of prey have developed short powerful legs to help kill their prey. This shows that the same adaptation may arise for different reasons.

Q For each group, can you think of other birds that have the same types of legs for the same reasons?

Neck

(15 minutes)

- We're now going to think about the birds' necks.
- Ask your child to make a group of birds with particularly long necks.

Q Why do you think these birds have long necks?

- A long neck enables these birds to reach down and get food from below the surface. This might be to reach plants below the surface, as is the case with swans, or to reach fish and other animals, as is the case with herons. Other birds such as spoonbills and avocets have a long neck so that they can sweep their head from side to side searching for food. In this case their bills usually have specialised shapes.

- Ask your child to identify all of the birds with long necks. For each one, ask whether they think that bird uses its long neck to reach below the surface or to sweep its head from side to side.

Long neck to reach animals or plants below the surface	Long neck to sweep head from side to side
<ul style="list-style-type: none"> - Mute swan - Bewick's swan - Canada goose - Greylag goose - Grey heron - Little egret - Black-tailed godwit - Curlew 	<ul style="list-style-type: none"> - Spoonbill - Avocet

- Many of the other birds on the list also get food from below the surface but they don't have long necks. How do you think they might get their food?
- Most of these birds either dive below the water for their food or they upend (imagine the classic sight of a duck with its bum in the air!)

Upends	Dives below the surface
<ul style="list-style-type: none"> - Mallard 	<ul style="list-style-type: none"> - Coot - Goosander - Moorhen - Dipper (actually walks under water) - Kingfisher

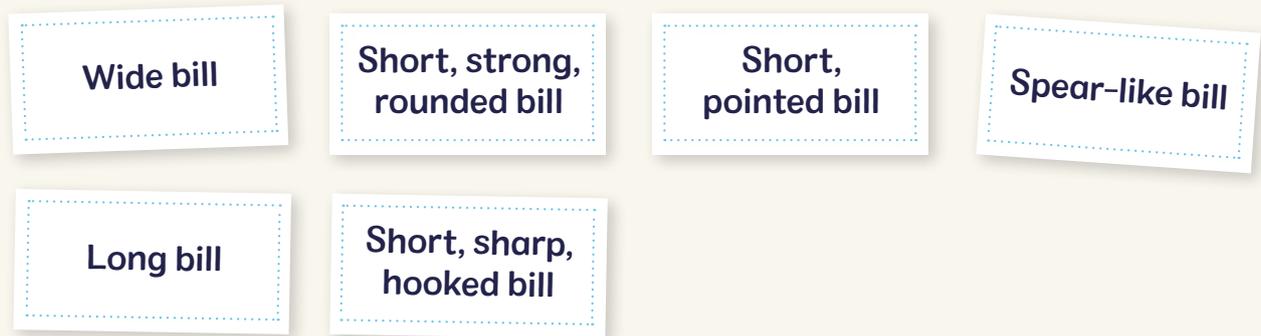
Note: Some of the birds with long necks also upend to reach further below the surface.

Beak / bill

(15 minutes)

- Finally we will think about the birds' beaks or bills (either term can actually be used).
- This is where we get the greatest variety, with each bird having evolved a bill for its particular diet. In fact the differences between birds' bills even helped Charles Darwin to develop his theory of evolution. If you have time, you might want to research 'Darwin's finches' to find out more.
- Have a look at the birds' bills and try to sort them into different bill shapes. Think about how each might be related to those birds' diets.

Although there can be huge variety, even within groups, the main bill shapes shown on the cards are:



- Sort the birds according to the above criteria.

Wide bill	Short, strong, rounded bill	Short, pointed bill	Spear-like bill
<ul style="list-style-type: none"> - Mute swan - Bewick's swan - Mallard - Shoveler 	<ul style="list-style-type: none"> - Canada goose - Greylag goose 	<ul style="list-style-type: none"> - Coot - Moorhen - Reed warbler - Dipper 	<ul style="list-style-type: none"> - Goosander - Grey heron - Little egret - Kingfisher

Long bill	Short, sharp, hooked bill
<ul style="list-style-type: none"> - Avocet - Spoonbill - Black-tailed godwit - Curlew 	<ul style="list-style-type: none"> - Osprey - Marsh harrier

Q Can you think of any other examples of birds that might fit into each of these groups?

- Look closely at the goosander bill. The goosander actually has a serrated bill which helps it to hold onto fish. Isn't nature amazing?
- Once they have sorted them into their groups look at each in turn.

Q How do you think this adaptation helps these birds to live successfully in a wetland?

Wide bills:

- Wide bills are great for skimming the water and filtering food out of the water a bit like a sieve.

Short, rounded bills:

- Short, rounded bills are great for grazing on grass and other plants.

Short, pointed bills:

- Short, pointed bills are great for catching insects and eating seeds.

Spear-like bills:

- Spear-like bills are great for catching fish.

Long bills:

- Some birds use their long bills for probing for creatures in mud. Others sweep them through the water feeling for hidden prey.

Short, sharp, hooked bills:

- Hooked bills are great for tearing meat.

Reinforcement activity

- Ask your child to think about where they would like to live if they didn't live in a house. Ask them to draw themselves, showing the adaptations they would like to have to allow them to live there.

Take it outside:

(15 minutes+)

- Go outside. Find a quiet place where you can sit still.

Q Which birds can you see?

Q What adaptations do you think they have developed that enable them to live in a particular habitat or obtain and eat a certain type of food?

Q What do you think is the most impressive adaptation you have seen during your time outside?

Q Can you think of any other amazing adaptations animals have developed (not just birds)? Which are your favourites?

- Did you know that all animals have evolved from a common ancestor? This means that you are related to every single living thing you can see around you.

Q How does this make you feel? Why?



@WWTWorldwide



Have fun and do share your work to our social media accounts – we'd absolutely love to see it!

Wetland bird adaptation cards

- To make the cards, cut the line across the width of your paper then fold each half in half again so you end up with the main picture on one side and the close-ups of the bill and legs / feet on the other. Stick the two sides together with glue.



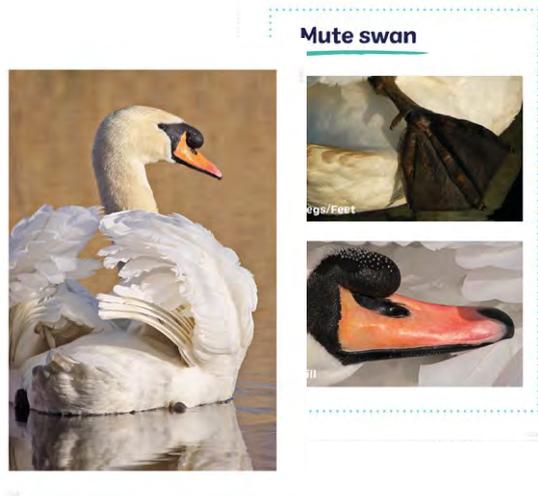
Cut



9



Fold



Fold



Cut

Mute swan

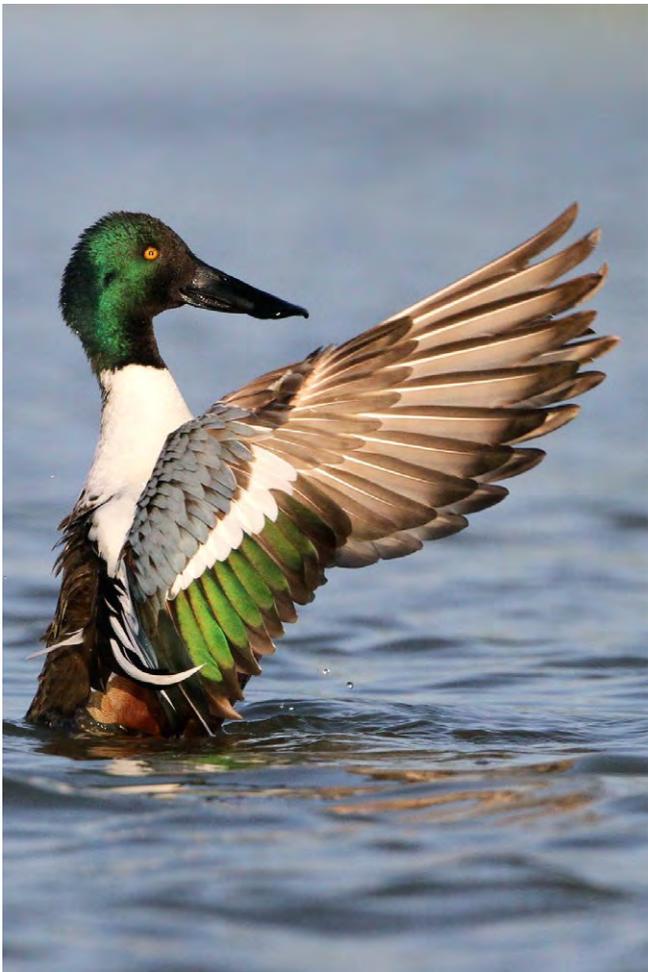


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Bill

Cut



© USFWS - Pacific Region @ flickr

Fold

Shoveler



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Bill

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Fold



Cut

Moorhen



© Tony Hisgett @ flickr

Legs/Feet



Bill

Cut



Fold

Reed warbler



© Imran Shah @ flickr

Legs/Feet



Bill

Fold



Cut

Bewick's swan



Legs/Feet



Bill

Cut

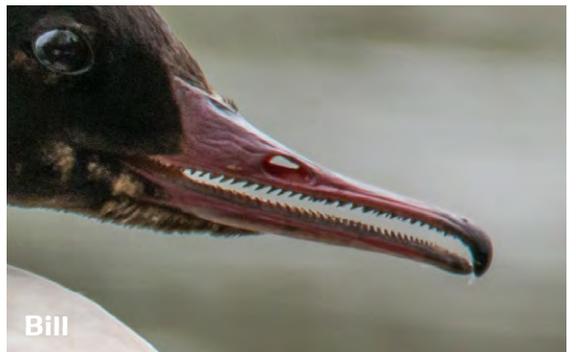


Fold

Goosander



Legs/Feet



Bill

Fold



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Cut

Avocet



© Nigel @ flickr

Legs/Feet



© Nigel @ flickr

Bill

Cut



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Fold

Dipper



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Legs/Feet



© Ian Preston @ flickr

Bill

Fold



Cut

Canada goose



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Legs/Feet



Bill

Cut



Fold

Grey heron



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Legs/Feet



© Melvin Yap @ flickr

Bill

Fold



Cut

Black-tailed godwit



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Legs/Feet



Bill

Cut



Fold

Kingfisher



Legs/Feet



Bill

Fold



Cut

Greylag goose



Legs/Feet



Bill

Cut



Fold

Little egret



Legs/Feet



Bill

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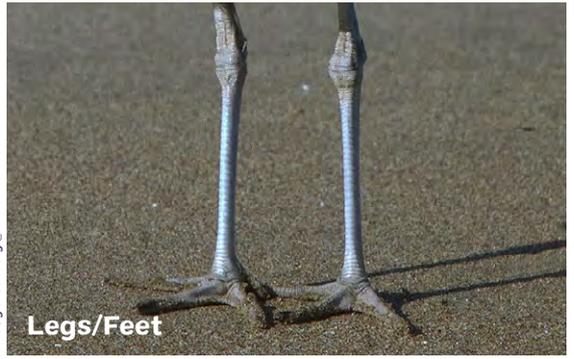
© SteveHerring @ flickr

Fold



© Doug Greenberg @ flickr

Curlew



© Doug Greenberg @ flickr

Legs/Feet



© Doug Greenberg @ flickr

Bill

Cut

Cut

Fold



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Osprey

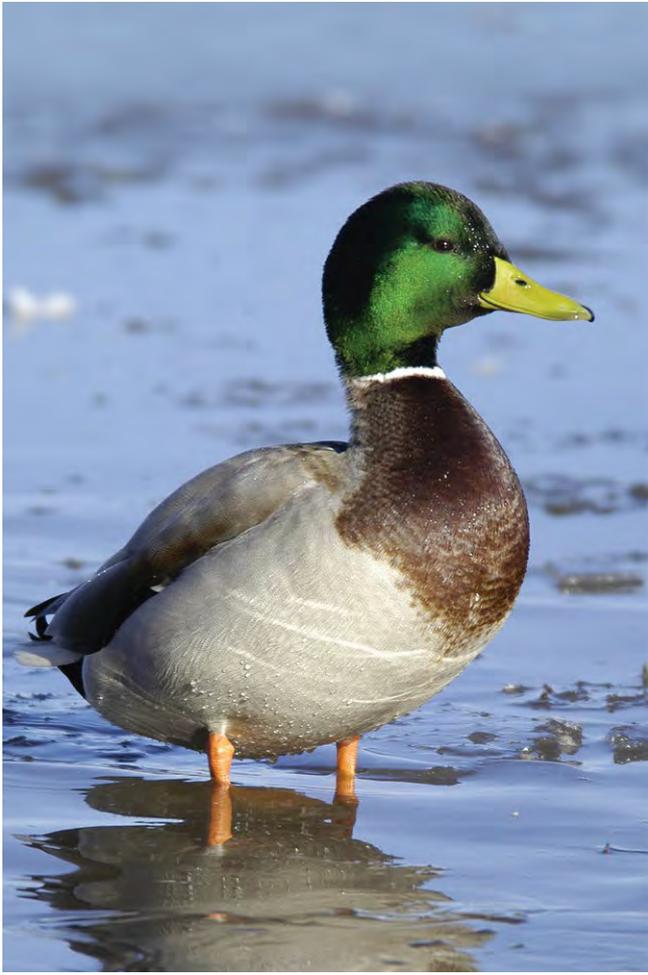


Legs/Feet



Bill

Fold



Cut

Mallard



Legs/Feet



Bill

Cut



Fold

Coot



Legs/Feet



Bill

Fold



Cut

Spoonbill



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Legs/Feet



Bill

Cut



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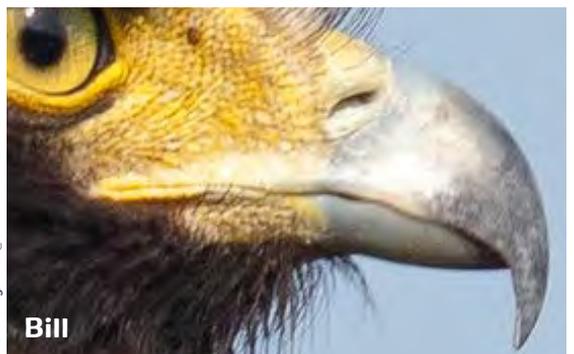
Fold

Marsh harrier



© Silver Leppers @ flickr

Legs/Feet



© Arvind Agrawal @ flickr

Bill

Feet

Webbed feet

Cut

Feet

Long toes

Cut

Cut

Feet

Short toes

Cut

Feet

Talons

Cut

Legs

**Short,
powerful legs**

Cut

Legs

**Short, medium
width legs**

Cut

Legs

**Short,
narrow legs**

Cut

Legs

**Long,
narrow legs**

Cut

Neck

Long neck

Beak / bill

Wide bill

Beak / bill

Webbed feet

Cut

Beak / bill

**Short, strong,
rounded bill**

Cut

Cut

Beak / bill

**Short,
pointed bill**

Cut

Beak / bill

Spear-like bill

Cut

Beak / bill

Long bill

Cut

Beak / bill

**Short, sharp,
hooked bill**

Cut

Cut

Cut