Bird Beaks and Darwin's Finches

Fascinating Facts!

Watch this video clip of Vultures- https://vimeo.com/231936786.

The Lammergeier or bearded vulture is the only living bird whose diet is almost exclusively bone. Their powerful digestive system dissolves the bone pieces that they swallow or bite through to get to the nutritious bone marrow. The bearded vulture has learnt to smash larger bones by flying to a great height and smashing the bones on rocks. They can fly with bones that weigh as much as they do. This skill takes up to seven years for the bearded vulture to learn!

Other birds get their food in interesting ways too. Secretary birds use their long legs to stamp on snakes, which make up a large portion of their diet. Hummingbirds and woodpeckers meanwhile, feast on tree sap, this BBC video shows them in action. http://www.bbc.co.uk/earth/story/20150211-hummingbirds-sap-survival-trick

Something to get you thinking…

All birds have a beak or bill that they use to eat, preen and build nests. However, beaks come in many different shapes and sizes.

What's the same and what's different about these bird's beaks?

The three birds in the images are a puffin, a lapwing and a macaw.

Some puffins shed part of their colourful beaks in winter, leaving a smaller, less colourful one behind that will grow through the rest of the year. Puffins dive down to great depths to catch fish, their staple diet. Their beaks have backward pointing spines so they can store rows of fish in their mouths without swallowing them. They also use their beaks as picks and shovels to build burrows when they return to land to breed in spring.

The lapwing bird is found on farmland across the UK. Their long pointed beak acts like tweezers to precisely pick up small insects and worms.

The macaw is a type of parrot and has a very hard, strong beak which can crack open nuts. They like to chew on things like trees to keep their beaks healthy.

Most birds are insectivores, that is, they eat insects, but across the world birds can be found that eat meat, plants and fruit. A bird's beak is actually an extension of its skull, and you can find nostrils on the upper beak. The beak itself is made of a hard, keratin substance, similar to our fingernails.

A bird's beak gives us a good clue as to what it eats. They can be cone-shaped, thin and pointed, sharp and hooked, long and curved, fringed, crossed and spoon-shaped. All are **adapted** to the food they eat. An adaptation is a physical or behavioural trait that allows an organism (living thing) to survive and fill an ecological niche (specific habitat). Adaptations evolve by **natural selection**. Favourable traits help an organism survive and pass on their genes to subsequent generations.

What Darwin Saw…

On Darwin's voyage on HMS Beagle, he visited the Galápagos Islands, where he collected specimens of a finch-like bird (remember we heard about these in the story, 'What Mr Darwin Saw'.)

He later found that they were 12 different species with a variety of beak shapes and sizes. Different habitats on the Galápagos Islands and the availability of different types of food led each distinct finch-like species to **evolve** and **adapt** to its particular niche.

You can find out more about what he observed on the 'Evolution- Darwin's Finches' PDF document on our class webpage.

Now for the fun!

Try a science investigation at home to put Darwin's observations to the test!

Download the 'Darwin's Finches Method board' and the 'Darwin's Finches Recording Sheets' to help you conduct a fun fair test.

What do your results tell us about natural selection and evolution?

You should now be able to match the finches to the locations on the map according to their beak types (see images on our class web page).

You could also play the game at https://bbsrc.ukri.org/bbsrc/cache/file/80FAFC6C-2BB5-4726-BAACCDCB3AF79260.swf to conclude your investigation.

Investigation Run-down

Use a range of tools, such as tweezers, tongs, chopsticks, spoons, skewers, pliers or even bulldog hair clips, to pick up different types of food. The food should include a range of shapes, sizes, textures and consistencies – these could include poppy seeds, linseeds, oats, pumpkin seeds, unshelled walnuts, almonds, peanuts, dried spaghetti pieces, sultanas and dates. Then test each tool by picking up and moving as much of one of the food types as possible in 30 seconds – be sure to only use one hand! Record your results and then repeat the test with a second type of food, and then a third, fourth and fifth. At the end of the investigation, assess the data and decide which tools were most suitable for picking up each type of food.