

Countrywide Productions – Wild Explorer Nature Series for primary schools

How do birds feed ?

Introduction

There are over 10,000 species of birds worldwide, filling all habitats from the snowy polar caps to the hottest desert environments. All birds have 2 features that make them stand apart from all other living things; feathers and beaks. Feathers are essential for flight (although about 60 species cannot fly!) and are, basically, the same across the bird world; being able to fly has enabled birds to colonise every part of the planet. The other main key to the success of birds is the wide range of foodstuffs that they eat – their beaks come in all shapes and sizes and the many types reflect the huge array of food types eaten. Beaks are used to fill the roles of objects such as spears, filters, straws, tweezers, buckets, knives, and many more, to deal with every type of food from microscopic organisms to picking and tearing apart things larger than the birds themselves!

What is a beak?

The beak, or bill, is a bird's most important feeding adaptation. Whilst relatively few species are true omnivores (able to eat a wide range of foodstuffs, e.g. fruit, seeds, insects or whatever they can find), most have a beak that is specially geared towards collecting a certain type of food. Birds do not have jaws and teeth (too heavy for flight!) and their beaks are tough but lightweight 'tools' for gathering food; they are made of keratin – the same substance as our finger- and toenails.

Types of food and beak

Birds eat a wide **variety of parts of plants** from all life stages, both on land and in aquatic environments. **Seeds** are a favourite food and the beaks of seedeaters tend to be stout and powerful for crushing the seeds to gain access to the nutritious contents. Of course, seeds also come in all shapes and sizes; a heavier and tougher seed coating needs a stronger and weightier beak to break it open. Finches and buntings are seed specialists. **Leaves**, especially young leaves that are less tough than mature ones, are eaten by some birds and are plucked from the plant with less specialised beaks. Many types of geese feed on young grass/crop shoots, clipping them close to the ground with their serrated beaks acting as scissors. **Fruits and berries** are sought after by many birds in the autumn and winter (and throughout the year in the tropics); although just the fleshy covering of the seed, the sugary pulp is the foodstuff rather than the seed itself, which passes through the bird's gut undigested. Beaks for fruit-eating vary greatly in size and shape, right up to the huge, colourful bills of toucans that enable them to reach fruits at the tip of a branch. **Nectar** is a sugary solution produced by flowers and is taken by many types of bird e.g. hummingbirds, sunbirds, throughout the tropical and sub-tropical regions. Their beaks are often long and thin, giving access to deep and delicate flowers; their tongues are often long and thin too, acting as a straw to draw up liquids.



A pair of Blue Tits can raise up to 10 chicks and need to collect 100 caterpillars each day for each chick

As well as being a source of seeds and fruits, **trees** provide many different plant 'micro-habitats' where birds feed on **insects** and other **small invertebrates**; these are the most important foods for young birds and parent birds spend the whole day collecting food for the nest in the breeding season. Apart from birds that 'glean' small organisms from leaves with fine tweezer-like beaks, some birds have powerful beaks for drilling into wood in search of **insect larvae** e.g. woodpeckers, and others collect **invertebrates** from branches and bark with smaller, finer beaks e.g. nuthatches, treecreepers.

Insects and small invertebrates are also collected from the ground by many birds, and from below the ground by some. **Earthworms, snails** and other invertebrates are captured by birds with slightly longer and stronger beaks than the insect-eaters.

Birds of prey, owls and vultures are **carnivores**, feeding almost exclusively on **meat** and either catching their own prey, or finding '**carrion**' – scavenging the **carcasses** of already dead animals (some species of crow also feed this way but are more omnivorous). Their beaks are adapted to tear flesh apart and are powerful with a sharp, hooked tip. Before they can use their beaks, birds of prey and owls must catch and subdue their prey using powerful claws, or talons.

Some birds of prey specialise on catching **fish** with their feet from the surface of the water; many more birds that live by the water catch **fish, frogs and other vertebrates** with long, sharp bills used as 'spears'. Kingfishers, and birds such as terns, drop from a height onto fish just below the surface, whilst others (e.g. herons and egrets) 'stab' at their prey when wading in shallow water. Some ducks have bills with serrated edges that help them to keep hold of slippery prey.

Many waterside and seashore birds feed on **small invertebrates**, especially **molluscs**, by probing among pebbles, or deep into the soft muddy sediments. Their beaks are often long and pointed (and sometimes flexible) and can be incredibly sensitive, allowing them to find **burrowing organisms** through slight movements.

Oddities

Using beaks, talons and tongues birds have exploited virtually every available food source, both on land and at sea; as with every aspect of the natural world there are many oddities in the way that food is gathered – both in behaviour and beak adaptation.



Flamingos (and a few other types of bird) feed on **microscopic plants and bacteria** through using their beaks as 'strainers'; the flamingo has a beak with a series of horny plates that act as filters, capturing tiny organisms, some only a fraction of a millimetre in size.

Although quite rare, some birds have developed the use of 'tools' in concert with their beaks and feet that allows them to access 'difficult to reach' food.

Song thrushes specialise on **snails** and must deal with the shell first. They use a stone to hammer the snail and break the shell to get the juicy contents; the stone or rock (called an 'anvil') is regularly used and broken shells surround the area.

Certain types of vulture feed on **bone marrow**, a rich source of protein, from the skeletons of dead animals. Unable to crack open the bones themselves, the vultures drop the bones from a great height onto rocks below – feeding on the marrow from the shattered remains.

Some species of crows, amongst the cleverest of birds, create 'spikes' from twigs and branches to probe into dead wood and impale larvae that they cannot reach with their beak alone.



The African Shoebill Stork has a huge bill. It eats fish, frogs, lizards, snakes, and occasionally young crocodiles!

Video notes

The video contains footage and images of a range of British birds and covers a wide range of feeding behaviours and beak adaptations.

00.36 Various woodland/garden birds 'picking' at food – most (**Coal Tit, Great Tit, Robin**) have fine 'tweezer-like' beaks adapted to an insect diet and feed by 'gleaning' insects from leaves and other surfaces. The **Nuthatch** (00.42-00.47) has a longer, stouter beak and usually feeds by working its way down a tree, probing under bark and in cracks and crevices for invertebrates.

01.22 **Great-spotted Woodpecker** – returning to nest with grubs. Bill is thicker and powerful, used for hammering into wood to expose insect larvae.

01.23 Thrushes (**Mistle Thrush** and **Blackbird**) – stouter beaks for larger invertebrate prey, including earthworms.

01.38 **Great Tit & Robin** collecting mealworms, **Blackbird** feeding young with ground-dwelling invertebrates.

01.46 **Turtle Doves** – specialise in feeding on wildflower seeds.

(01.55 **Green Woodpecker** drinking – many birds must drink by throwing their head backwards, although pigeons and doves can drink continuously).

02.09 **Woodpigeon** – collecting seeds on arable land

02.11 Finches – a group of seedeaters with beaks of varying thickness that reflects the hardness of the seeds that they need to crack. The **Greenfinch** has a heavier beak than the **Chaffinch**, suggesting that it feeds on larger/stronger seeds.

02.17 **Pheasant** – omnivores with a very wide diet including plant material (leaves, berries, seeds), invertebrates and even small vertebrates.

02.24 New food for birds – in recent decades the practice of putting food out for garden birds has meant a whole new diet to exploit; many insect and seed eaters will take fat, as well as plentiful seed mixes. **Starling, House Sparrow, Blue Tit and Goldfinch** (goldfinches have finer bills than greenfinches and chaffinches, indicating a different seed preference) **Feeding garden birds in the breeding season must be done with care – avoid peanuts, fat and bread as these can harm baby birds.**

02.58 Insect eaters with small, fine beaks – **Nightingale, Blackcap, Wren** (NB. In the autumn, blackcaps feed on berries to build up reserves before migrating), **Yellowhammer** (a member of the bunting family, a seedeater), **Blue Tit**.

03.18 Carnivores with hooked/heavy beaks – **Barn Owl, Raven** (largest of the crows and more of a scavenger – here feeding on an egg!), **Harris Hawk** (NB. an American species).

04.00 Waterside and aquatic birds – **Coot** feeding just below the surface for shoots and seeds or invertebrates.

04.04 **Reed Warbler** – bringing insect food to young **Cuckoo**.

04.06 **Kingfisher** – ‘dagger-like’ bill for spearing small fish.

04.10 **Common Sandpiper** – feeding at the edge of the water, looking for small crustaceans, insects and other invertebrates. Can probe soft mud with long bill.

04.16 – Female **Mallard** – one of the ‘dabbling’ ducks, a group that feed mainly just below the water surface, sometimes upending, whilst looking for invertebrates, seeds and roots.

04.25 **Little Egret** – ‘stab’ for food in shallow water, feeding mainly on small fish, frogs and large invertebrates.

04.37 **Mute Swan** + cygnets – mainly eat aquatic plants but can ‘graze’ on grass and will eat small molluscs, worms and even frogs. The long neck enables them to reach well below the surface.

05.03 **Avocet** – a dainty wading bird with a characteristic upturned bill. Feeds on small invertebrates on the surface, or by ‘swishing’ bill from side to side to disturb animals from the loose sand and locate by touch.

05.05 **Grey Heron** – another ‘stabber’ with a long, pointed bill, feeds on fish and small vertebrates at the water’s edge.

05.07 **Black-headed Gull** – now an opportunistic feeder heavily influenced by the presence of humans. Will feed on any food scraps discarded by man, as well as marine life, and is regularly seen on farmed land feeding on invertebrates.

05.11 **Greylag Goose** – a grazer on grassland and arable crops. Serrated beak helps clip plants at the base and can cause damage to agricultural land.

05.17 **Lapwing** – feeds mainly in damp fields where it eats earthworms and other invertebrates.

05.22 **Moorhen** – an omnivore, usually found near water, that feeds on plant material, invertebrates and will take eggs of other ground-nesting birds.

05.25 **Black-tailed Godwits** – long-billed wading bird that feeds on mudflats, picking small invertebrates from the surface and probing the mud and fine sediment for burrowing organisms.

Useful links

For more information and ideas, go to: -

<https://www.rspb.org.uk/birds-and-wildlife/natures-home-magazine/birds-and-wildlife-articles/how-do-birds-survive/food-glorious-food/>

<https://www.stem.org.uk/resources/elibrary/resource/33665/education-pack-seeds-and-fruits-adaptation-suitable-home-learning#&gid=undefined&pid=2>

<https://www.stem.org.uk/resources/elibrary/resource/32696/battle-beaks#&gid=undefined&pid=2>

<https://www.tes.com/teaching-resource/bird-beaks-6267561>

<https://www.rspb.org.uk/birds-and-wildlife/advice/how-you-can-help-birds/feeding-birds/when-to-feed-garden-birds/>