Fly

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Birds have fascinated us humans since the dawn of time.

Over the generations we have celebrated birds in many different ways: we have written songs about them, drawn and painted them, created mythology around them, domesticated them and even named buildings, streets and towns after them.

But despite this fascination, we humans have also been quite destructive towards birds. We have hunted them, polluted our rivers and seas and destroyed huge swathes of their habitat.

I hope that this book will help readers connect with the wonderful world of birds and realise how diverse a group of animals they are. Birds don't have to possess gaudy plumages to be interesting: the plain-coloured ones make up for their dowdiness with their incredible stories and intriguing behavioural traits. It is these stories that I want to share.

We know quite a lot about the life of birds now. But there are still big gaps in our knowledge. I am hoping that after reading this book you will want to go out and study the birds that you see to find out more about their lives. It's a common misconception that you have to venture into the middle of the countryside to do this. It can start from your back garden; your local park; your home city.

In 1943, David Lack decided to study the European robins in his neighbourhood in Oxford, England. He wasn't a scientist but his discoveries about the robin now shape what we know and take for granted today. We can all make such discoveries about even the most common of birds that surround us. We can all enjoy birds.

Get outside and look up!

– D.S.





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the HERO OF FABULOUS FEATHERS

the GREAT ARGUS

Birds are the only animals on the planet that have feathers. Feathers keep them warm, waterproofed and protect their skin. They are also essential for flying, perfect for fabulous displaying and are even used to line nests.

GREAT ARGUS
ARGUSIANUS ARGUS

Feathers come in all different shapes and sizes, and every shade of colour that you can imagine. The spectacular-looking great argus is a member of the pheasant family. The male will stalk around a female splaying his amazing plumes at her to try to win her affection.

PREENING

A bird will preen several times a day to keep its feathers in tip-top condition. The bird can remove dust, dirt and parasites from its plumage by spreading a special oil with its beak from a preen gland at the base of its tail. By doing this essential work the bird can keep healthy, attractive and better waterproofed.

The great argus is one of the world's **largest pheasants.** The male is much bigger than the female.

Male

A male's tail can be nearly 1.5 metres long. His very long secondary wing feathers are adorned with large **eyespots.**

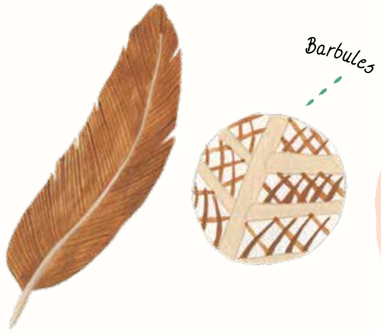
HOW TO SPOT

This impressive pheasant is found in the jungles of Borneo and Sumatra in South East Asia.

The male displays in forest clearings, announcing himself with loud cries. He then dances before the female, spreading his enormous feathers so that his hundreds of eyespots are staring right at her!

ALL ABOUT FEATHERS

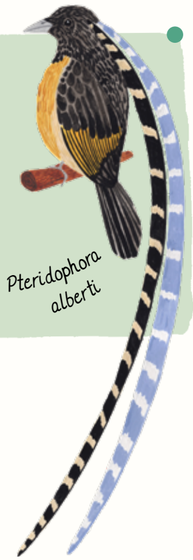
Feathers grow from a bird's skin and are lightweight structures that are connected together by small hooked branches called barbules.



A bird has thousands of feathers covering its body. This is known as its plumage.

Some birds, like vultures, have featherless heads to keep them clean when feeding on a carcass.

KING-OF-SAXONY BIRD-OF-PARADISE
Birds-of-paradise are famous for their feathers. This species has unusual **brow plumes**.





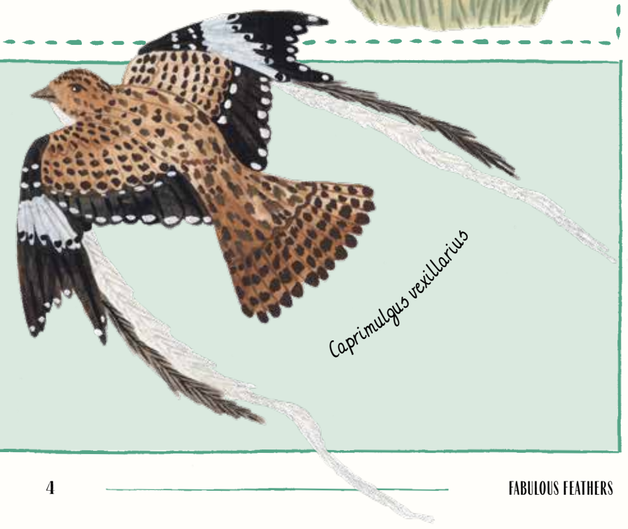
TUFTED DUCK
This very common **diving duck** sports its tuft in towns and cities in Europe.

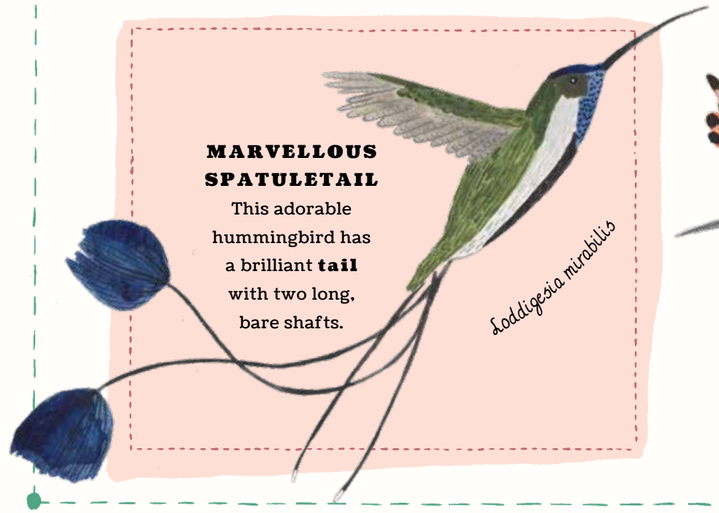


RUFF
Breeding males show off their **feathery ruff** for a few weeks a yearin communal displaysites called leks.

ADAPTATION

LENGTHENED FEATHERS
The male pennant-winged nightjar is very distinctive thanks to its **pennant feathers**, which grow to be twice as long as its body in the breeding season. It shows them off as it flies overhead to impress females during courtship displays, then loses them after mating.





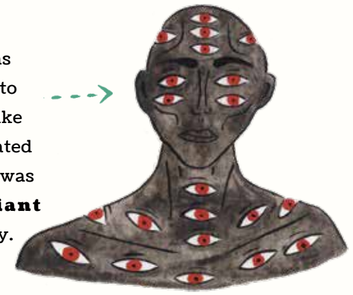
MARVELLOUS SPATULETAIL
This adorable hummingbird has a brilliant **tail** with two long, bare shafts.



EURASIAN HOOPOE
This strange bird has one of the craziest **crests** in the whole bird world.

FEATHERS AROUND THE WORLD

The great argus was given its name due to the numerous eye-like patterns on its elongated wing feathers. Argus was a **hundred-eyed giant** in Greek mythology.



Eagle feathers are traditionally presented to the bravest, strongest and holiest members of **Indigenous American communities**.



In ancient Egypt, the goddess **Ma'at** would weigh a dead person's heart against an ostrich feather on the scales of justice. If the heart was heavy with sin, then the person would not be admitted into paradise.



the HERO OF FANTASTIC FEET

the HARPY EAGLE

Birds have incredibly varied feet.

Some, like a swift's, are weak and can only be used for clinging, while others are strong, for digging or walking. Mightiest of all are the harpy eagle's feet.

HARPY EAGLE
HARPIA HARPYJA

A bird's claws are made from keratin, like our toenails. Some birds have four toes, perfect for gripping branches, while others, like the American three-toed woodpecker, have just three . . . And the ostrich is the only bird with just two toes! Most impressive of all are the huge feet belonging to the harpy eagle.

MONSTER FEET

This shy eagle is one of the biggest raptors in the world. The female harpy's feet are the size of a human hand, with huge, 13-centimetre-long talons that are often longer than those of a grizzly bear!

Harpies also have very sharp **eyesight** – eight times better than ours – which they use to locate their prey and then capture it with their formidable feet.

The **female** is much larger than the male and can weigh up to 9 kilograms.

Female

HOW TO SPOT

The harpy eagle lives in the rainforests of Central and South America.

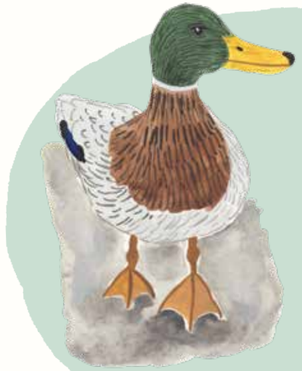
It tends to fly within the forest canopy or just above it, making it very hard to detect, but you might get a lucky glimpse of this magnificent eagle near its nesting site.

These birds do not spend much time flying in search of prey. Instead, they sit and **wait** for an unfortunate monkey to pass by before silently swooping on them.

A harpy's feet and **talons** are so strong that it can easily lift prey as heavy as itself.

ALL ABOUT FEET

Birds' feet are adapted to their environments: waterbirds often have webbed feet for swimming; perching birds have small, strong feet for gripping branches; while flightless birds have sturdy feet for walking.



Anas platyrhynchos

MALLARD
The most common duck in the world probably has the most famous **webbed feet**, which are great for moving in water but less so on solid ground.



Turdus migratorius

AMERICAN ROBIN
This North American bird is what's known as a **perching bird**, with toes pointing forwards and backwards for gripping.



Hydrophasianus chirurgus

PHEASANT-TAILED JACANA
This aquatic bird has really **long toes** which spread its weight and stop it from sinking!



Apus apus

COMMON SWIFT
This bird's scientific name means 'footless footless'. In actual fact, a swift has **clinging feet**, evolved to grip the sides of cliffs.



Sagittarius serpentarius

SECRETARYBIRD
The secretarybird spends most of its time on the ground and kills snakes by stomping on them. It has **hunting feet** with razor-sharp claws, designed to cling tightly to prey.



Struthio camelus

COMMON OSTRICH
The ostrich can reach speeds of 70 kilometres per hour when running and is the fastest bird on **two legs**.

FEET AROUND THE WORLD

The harpy eagle is named after **Harpies** in Greek mythology who were fearsome creatures with female human heads and birds' bodies.



A Roman story described a **crane** keeping vigil while holding a rock in its raised foot; if the crane were to fall asleep, it would drop its rock and wake up.



This symbol of vigilance is seen in many heraldic **crests**, including that of the Scottish clan Cranstoun.

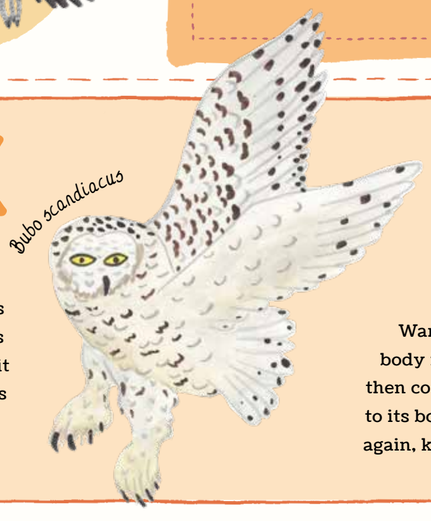


A **three-legged crow** is present in many East Asian myths, and is associated with the sun.



Swan and geese feet sometimes feature in European myths. Both Freyja, the Norse goddess, and Berchta, the fierce German goddess, have been depicted with only one human foot and one foot of a goose, while the lamia in Basque mythology had the **webbed feet** of a duck.

ADAPTATION



Bubo scandiacus

COLD FEET
Have you ever wondered if a bird gets cold feet in freezing weather? Well, its feet are cold, but the bird doesn't feel it because it has very little fluid, muscles or nerves in its legs and feet.

Some birds, like the snowy owl, have **feathered feet**. This adaptation makes it easier for the owl to walk on snow.

Warm blood flows from the owl's body into the legs via an artery and then cools. But when the blood returns to its body through a vein, it warms up again, keeping the bird nice and toasty.

the HERO OF EYE-CATCHING COLOUR

the PARADISE TANAGER

Many kinds of animal - from mammals to reptiles and amphibians - have evolved to blend in subtly with their surroundings, but birds are among the most colourful animals on the planet! Brightest of all is the paradise tanager.

PARADISE TANAGER
Tangara chilensis

Birds are colourful for many reasons. Bright feathers can help birds of the same species to recognize each other. Their feathers tell predators that they are bad-tasting or poisonous. And sometimes birds use their bright plumes to attract possible mates.

COLOURFUL CAMOUFLAGE

Surprisingly, bright colours can sometimes camouflage a bird. Despite its brightness, a paradise tanager can be very difficult to spot when foraging for insects and fruit because of the bright, lush, tropical plant life found in its habitat.

Male

Often, males will sport **brighter** colours than females of the same species, to help them attract a mate.

In its native habitat, this bird is also called the **seven-coloured tanager**. Can you name all the colours that this delightful bird has?

Unusually, both the male and female paradise tanager appear to have **similar plumage** . . .

. . . but in **ultraviolet light**, male and female birds look quite different and can easily tell each other apart.

HOW TO SPOT

The paradise tanager is the jewel of the Amazonian Basin.

The best way to see this species is to visit the specially established feeding stations, where many birds that are normally quite shy – including the paradise tanager – come to feast on the fruit left out for them.

ALL ABOUT COLOUR

What makes a bird's plumage colourful? Well, its feathers contain two types of pigments. Firstly, melanins, which produce a range of black, grey, brown and orange colours, and secondly, carotenoids, which generate brighter colour tones.



Tragopan melanocephalus

WESTERN TRAGOPAN

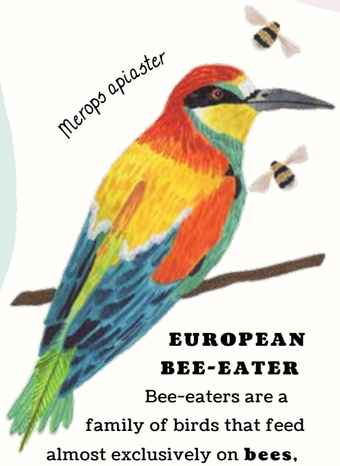
Some birds have colourful patches of **skin,** like this tragopan whose featherless face features vibrant colours.



Tachuris rubrigastra

MANY-COLOURED RUSH TYRANT

This tiny South American bird has brightly coloured feathers that are green, red, yellow, white and black . . . hence its **name**!



Merops apiaster

EUROPEAN BEE-EATER

Bee-eaters are a family of birds that feed almost exclusively on **bees**, hornets and wasps.



Passerina ciris

PAINTED BUNTING

Male painted buntings only acquire their bright feathers in their **second year of life**.



Agamia agami

AGAMI HERON

With its beautiful **slate-blue** feathers, this is perhaps the most beautiful heron in the world.



Aix galericulata

MANDARIN DUCK

Very few waterbirds are as colourful as this **exotic** tree-nesting water bird.

COLOURFUL BIRDS AROUND THE WORLD

The mythical **phoenix** is an immortal bird associated with Greek and Egyptian mythology. It gains colourful new life when it rises from the dead in a shower of red flames.





In Germany, the **Hercinia** (or arcinee) was said to live in the Hercynian Forest. Its plumage glowed like fire or sparks in the night and helped to light the way for travellers.

In a Flemish folk story, the **rainbow finch** won her colours after waiting patiently when the Great Bird invited all the birds to pick their colours from the rainbow. The finch was left with none, so the Great Bird called back all the others and took a bit of colour from each, making the finch the prettiest of all.



ADAPTATION

ULTRAVIOLET VISION

Some birds, like the malachite kingfisher, have eyes that are able to detect near-ultraviolet light from the sun, allowing them to see other birds' plumages in an even more dazzling way. The **structure** of their eyes has an adaptation that humans do not have that allows them to detect the light.



Corythornis cristatus

the HERO OF WONDERFUL WINGS

the WANDERING ALBATROSS

Many animals can fly, from insects to bats, but birds have truly mastered the art of flight, none more so than the wandering albatross, which glides on air currents for 1,000 kilometres.

WANDERING ALBATROSS
DIOMEDEA EXULANS

Every bird has a pair of wings - even those that can't fly! But how do birds actually fly? Birds like albatrosses have lightweight, aerodynamic bodies, hollow bones and sleek feathers, and use their wings to create lift and their tails as rudders, making them masters of the skies.

POWERED FLIGHT

Wandering albatrosses power their flight by using their incredibly strong chest muscles, known as pectoral muscles. For humans to fly, we would need a wingspan of up to 7 metres and huge pectoral muscles projecting more than a metre out from our ribcages!

At 3.5 metres, this species boasts the **longest wingspan** of any living bird in the world.



This species has been known to circumnavigate the Antarctic Ocean **three times** a year, covering more than 120,000 kilometres.

These birds only come to land once every **two years** to breed on islands in the Antarctic Ocean.

This bird is so **efficient** at flying that it can remain in the air without flapping for several hours at a time, using less energy in the air than it does sitting on a nest.

HOW TO SPOT

The best way to see these giant birds is to visit their breeding grounds.

They lay just one egg in sheltered areas around sub-Antarctic islands. Otherwise, you have to try to spot one from a ship as it flies in search of food. You could be in luck, though, as they like following vessles in the hope of receiving scraps from the sailors.

ALL ABOUT WINGS

Birds have evolved a variety of different wing shapes to help them to fly. Generally speaking, birds with long and narrow wings like the albatross are experts at gliding.



Columba palumbus

COMMON WOOD PIGEON

Some birds use their wings to communicate with their flock members. When startled, pigeons noisily explode from trees, loudly **clapping** their wings to alert others.

Machaeropterus deliciosus



CLUB-WINGED MANAKIN

This is the only bird known to **sing** with its wings! When displaying, males first flatten their wings then snap them upright, which produces a buzz as hollowed feathers on their wings rub together.

Opisthocomus hoazin

HOATZIN

As a young chick, this odd-looking bird has a claw on the bend of each wing that helps it to clamber up waterside vegetation.



BLACK-BREASTED KITE

This kite has broad-fingered wings, typical of birds of prey, that help it to **ride** hot air thermals and to swiftly power after its prey.



Hamirostra melanosternon



Loddigesia mirabilis

MARVELLOUS SPATULETAIL

This minute hummingbird can flap its wings up to 70 times a second, and, like the rest of its family, it can even fly **backwards**.



Egretta ardesiaca

BLACK HERON

This bird opens its wings like an **umbrella** when hunting small fish, luring them in by creating a patch of shade beneath it.

ADAPTATION

DISPLAY FEATHERS

Some birds, including the Guianan cock-of-the-rock, use their wings as part of their **courtship displays**. To attract a female, the male performs an elaborate ritual, fanning his wings to show off his stunning feathers.



Rupicola rupicola

WINGS AROUND THE WORLD



The wandering albatross's scientific name, *Diomedea exulans*, refers to **Diomedes**, a hero in Greek mythology whose companions were turned into shearwaters (relatives of albatrosses).

According to a **Persian fable**, King Kai Kawus tried to invade heaven on a throne with four hungry eagles chained to its legs. Each leg had a pole with meat on top. The eagles used their powerful wings to fly towards the meat, carrying the throne upwards.





In an **Indian folk tale**, elephants originally had four big wings and would cause distruction by landing on people's houses and crushing them . . .

. . . The gods decided to stop the mayhem and cut the wings off, giving two each to the **peacocks** and two to the banana plant, which is why its leaves are so large!