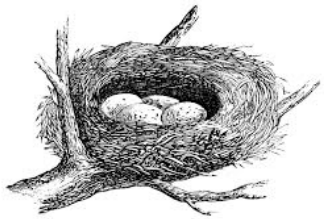
Birds and Flight 1

About birds
All birds have wings, although not all birds can fly. Kiwis, penguins, emus and ostriches are birds which have wings but do not fly.

A bird's blood is warm. Even penguins have warm blood.

All birds lay eggs. Some birds make their nests in trees. Some birds make their nests on the ground. Some birds make their nests in holes in banks.

Eggs can be white, coloured or speckled. All birds keep their eggs warm.



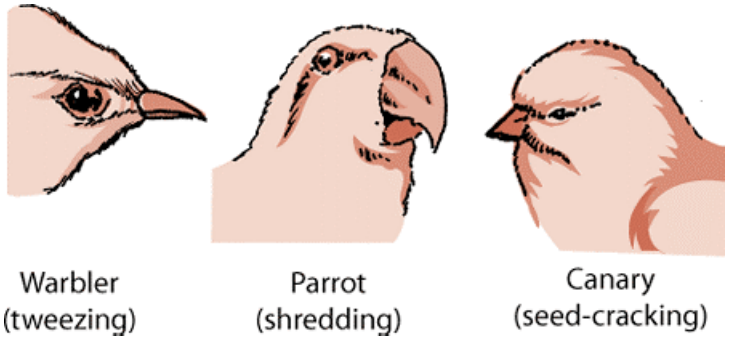
Some birds eat insects. Some birds eat seeds. Some birds eat worms, some birds eat fish. Some birds eat small animals.

1. Draw a picture of a bird that cannot fly.
2. Name a bird that builds a nest in a tree.
3. Name a bird that makes a nest on the ground.
4. Why do birds keep their eggs warm?
5. Name a bird that eats fish or small animals.

Birds and Flight 2

Food and beaks

Birds have no teeth but have beaks. There are many different kinds of beaks.



All birds have backbones.

Birds are not mammals. They do not feed their young on milk but find food to feed their babies.

1. Name a bird that eats seeds.
2. Name a bird that eats insects.
3. Name a bird that eats worms.
4. What do mother birds feed their babies?
5. Draw some birds showing different kinds of beaks.

Birds and flight 3

About the Kakapo

Read the following and write three facts about the Kakapo

The kakapo is a parrot of New Zealand. It almost became extinct. Although the kakapo has wings it does not fly. It climbs trees using its claws and beak. It hunts by night and sleeps during the day. The kakapo is a friendly bird, quite happy to be up close to humans. To attract the females, the males make a booming sound at night which sounds like distant thunder. He does this by inflating air into special sacs in his body, a bit like blowing up a balloon, and then releasing the air.

Why did the kakapo almost become extinct?

When Maori people arrived in New Zealand about 1000 years ago, the kakapo was an easily hunted because it was asleep during the day. When Europeans came to New Zealand about 200 years ago they brought with them animals like cats, foxes and weasels, so by the late 19th century kakapos were almost extinct. In 1970 it was thought that the kakapo was extinct, but in 1977 a colony of about 200 kakapos was found on Stewart Island, an island just off the southern most point of New Zealand. The kakapos were moved to another island that had no cats and dogs. That is how the kakapo has survived.

Birds and Flight 4

The Kakapo: a parrot from New Zealand that does not fly.

What can we learn from the kakapo? Write three points.

- When parrots were released from Noah's ark, they could ALL fly.
- The flying parrots reached New Zealand from the ark, but one day in New Zealand, a flightless parrot hatched from an egg of a flying parrot. This was not meant to be. It was an example of something that went wrong. The Bible tells us that because of Adam and Eve's sin back in the Garden of Eden, things in the creation started going wrong. (Romans 8:19-22)
- The flightless parrot had flightless babies, and they grew up and produced flightless babies. These flightless birds were able to survive in New Zealand because there were no animals there that would eat them. They had not made the sea crossing.
- When humans came, and brought with them predators like cats and weasels, the kakapo almost became extinct.
- When something goes wrong in the process of animals producing their young, we call it a mutation.
- Mutations are when living things go from being perfect to less perfect.
- God's original creation was perfect, but things have gone wrong over the years, and now the creation is not so perfect.
- People who believe in evolution would say that things go from nothing into something fantastic, like slime that turns into a more complex animal, and that animals turns into an ape that turns into a human.

But we can see from the kakapo that our creation is not getting better. God made it perfect in the beginning.

Birds and flight 5

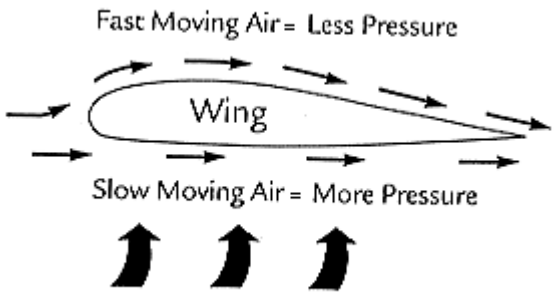
How do birds fly?
How do aeroplanes fly?

Birds and aeroplanes fly using the same principle.
An aeroplane's wing is designed so that the air moving under the wing travels a shorter distance than the air moving over the wing. This creates a high pressure under the wing and a low pressure above the wing, which forces the plane up.

The wings of birds and planes have what is called an aerofoil shape. This aerofoil shape helps us overcome weight which is the effect of gravity pulling down on the mass of the aircraft.

The aerofoil shape gives us something called **lift**. This is the upward force required to overcome gravity, being produced by a wing as it moves through the air. This action allows the object to lift up and push forward.

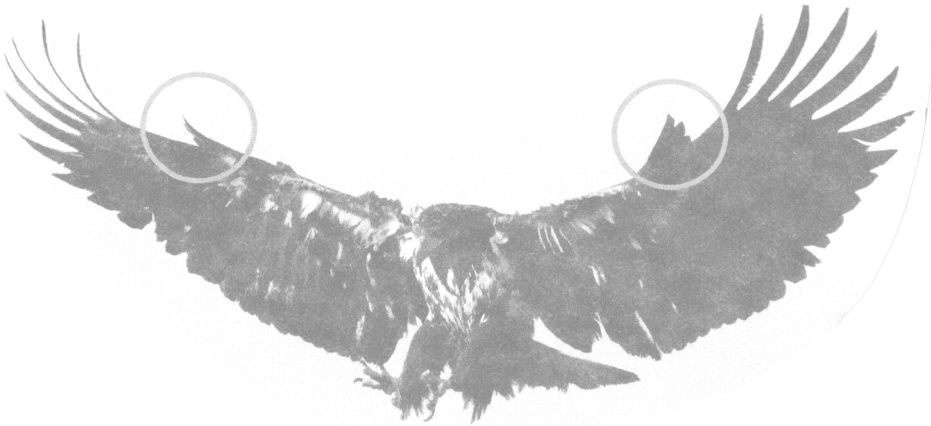
Try this experiment:
Blow over a narrow strip of paper held to your lips. The moving air above the paper has lower pressure than the air beneath it, which is not moving. This causes the paper to lift up. It is called the principle of LIFT.



Birds and flight 6

What do jumbo jets and eagles have in common?
When a jumbo jet approaches an airport to land, the pilot deploys flaps on the leading edges of the wings. This allows the plane to fly at a low speed without stalling. Leading edge flaps were unknown in birds until now. A study of the steppe eagle, at the Oxford University of England, shows that this bird has special leading edge feathers that it uses during take off and landing. These special feathers have been captured on video footage. The eagle deploys a wing flap on the front edge of the wing, just as a jumbo jet does. This flap helps the eagle to lift off when flying at low speeds and high angles of attack. It stabilizes the wing during unsteady flying movements.

Such wonderful design features did not come about by chance, but were designed by the Great Designer.



What does the eagle use its leading edge feathers for?