

# 7Ba ANIMAL SEXUAL REPRODUCTION

## HOW DO DIFFERENT ANIMALS REPRODUCE SEXUALLY?

**Endangered** animals are those that are in danger of becoming extinct because there are very few left. Many zoos try to stop endangered animals becoming extinct by breeding the animals. It is hoped that the **offspring** can be released back into the wild.

Animals living in zoos do not always mate successfully and sometimes their offspring die for unknown reasons. So it is important that scientists study **sexual reproduction** in different animals to work out how to help them breed.

1 What are human 'offspring' called?



A | In 1945, there were only 31 Przewalski's horses left and only in zoos. Thanks to a breeding programme, there are now hundreds of Przewalski's horses living wild in their natural habitat in Mongolia.

### FACT

Scientists from all over the world work together at the International Union for the Conservation of Nature and Natural Resources (IUCN) to publish a list of endangered organisms. It is called the 'Red List'. In 2013, there were 10 820 animals on this list.

### Gametes

Sexual reproduction requires two individuals to produce new organisms of the same type. Usually, two types of **specialised** cells are used. These are called **sex cells** or **gametes**. Males make gametes called **sperm cells** and females make **egg cells**.

In a process called **fertilisation**, a sperm cell enters an egg cell and the two **nuclei** of the cells **fuse** (become one). A single **fertilised egg cell** is formed, which can grow into a new organism.

B | a human egg cell (left) and a human sperm cell photographed using a light microscope (magnification  $\times 600$ )



2 What type of reproduction needs males and females?

3 a) Which are bigger in real life, sperm cells or egg cells?

b) Calculate the actual sizes of sperm cells and egg cells.

4 a) In animals, what is the male gamete?

b) What happens to this cell during fertilisation?

For fertilisation to happen, the sperm cells must reach the egg cells. **External fertilisation** is when this happens outside the bodies of the animals (e.g. in fish). This usually occurs in water. Other animals use **internal fertilisation**, in which the male **parent** places sperm cells inside the female.

In external fertilisation, some egg cells do not get fertilised because the sperm cells are washed away. Many animals that use external fertilisation do not look after their fertilised egg cells, so a lot of cells are eaten by other animals. Animals that use external fertilisation must produce huge numbers of egg cells to ensure that some of them get fertilised and survive.

Birds and mammals use internal fertilisation. They produce fewer egg cells because sperm cells are more likely to reach the egg cells. These animals also usually look after their fertilised egg cells and offspring. Birds lay their fertilised eggs in nests and protect them. In mammals, the offspring grow inside the mother. Birds and mammals look after their new offspring until they are able to survive on their own.



**C** | These snapper fish use external fertilisation. The male and female fish swim together and release their gametes.

- 5** a) Name an animal that uses external fertilisation.  
b) Give two reasons why the females of the animal you chose produce many egg cells.



**D** | Black rhinoceroses, which are hunted for their horns, use internal fertilisation. The offspring develop inside the mother (internally).

**E** | Birds, like this stone curlew, use internal fertilisation but their offspring develop outside the mother (externally). Numbers of stone curlews in the UK have fallen by over 80 per cent since 1940.



- 6** a) Name an animal that uses internal fertilisation.  
b) Give two reasons why the females of the animal you chose produce only a few egg cells.
- 7** Why is external fertilisation unusual for animals that live away from water?
- 8** A female mouthbrooder fish sucks her fertilised eggs into her mouth, where they hatch. Would you expect mouthbrooder females to produce more or fewer egg cells than other fish of the same size? Explain your reasoning.

## FACT

Most animals that use internal fertilisation need to get very close to each other. Not so for the paper nautilus. This sea creature (related to squid) detaches its penis, which then swims off by itself to attach to a female.

## I can ...

- describe how egg cells are fertilised in animal sexual reproduction
- compare fertilisation and offspring care in fish, birds and mammals.