

The Magic of Migration

► Winter in Britain can often seem quite cold. Sometimes temperatures drop below freezing, leading to icy or snowy weather. We humans are lucky, as we have ways of keeping out the cold: we can wrap up in warm clothes or turn on the heating in our houses or cars. Animals only have two options: to cope with the harsh winter or move to a warmer place. When it becomes colder, many animals that live in the far north near the Arctic, or the far south near the Antarctic, need to travel away from the Poles and nearer to the Equator.

When an animal moves to find somewhere warmer (or cooler), the process is called migration. This is a good option for animals that can fly: birds mainly, but also insects such as butterflies or locusts. In fact, 40% of the world-wide bird population migrates. Land-based mammals are less likely to migrate as it is difficult for them to travel far. Birds can travel long distances using relatively little energy and there is generally nothing to get in their way. Travel across land is much more demanding; a mammal needs to find food during the journey and meets many other challenges such as fighting off predators, avoiding traffic and crossing waterways.

There are some amazing migration statistics. Geese are a well-known migratory bird and hold the record for being the highest migratory flyers. On their journey south in the winter, bar-headed geese need to pass over the Himalayas – this is the mountain range that includes Mount Everest, the highest mountain in the world. These geese can reach heights of over 5 miles above sea level. The record for the longest migration belongs to a much smaller bird: the Arctic tern. This bird thrives in cold climates, but when the Arctic is in deep winter it flies all the way south to the Antarctic Circle, where it is slightly warmer at that time. Then when winter approaches in the Antarctic, this astonishing bird flies all the way back to the Arctic. It meanders on the way, turning a 12,000-mile trip into a massive 25,000-mile journey! Insects can also travel long distances, despite their size. Studies have shown that a monarch butterfly can journey approximately 3,000 miles to get from Ontario, in Canada, to Texas, in the USA.

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You may wonder how we know about these distances travelled. The simplest answer is through observation. For example, Bewick's swans aren't seen in Britain in the summer, but they are seen in Siberia at that time; therefore they must fly between the two places. By spotting where flocks of swans land on the way, we can be fairly certain about the route they take. To gain better information, individual birds are caught and tagged. A tag is a numbered bracelet that is secured to the bird's leg. This means that, provided the same bird can be caught again, it is possible to record its location at different times of the year. A more sophisticated method, where it is not necessary to re-capture the bird, is to use an electronic tag. This transmits a unique repeating signal that can be tracked by radio or satellite. Thus, a bird's journey can be accurately plotted on a map.

In Britain, we are able to witness two migratory patterns. In the winter, birds from the Arctic Circle travel here because it is warmer – well-known examples are the swans and geese that arrive from Siberia. They over-winter on large lakes and estuaries, usually near our coasts. At the same time, other birds, often smaller species such as the swallow and the house martin, fly south. Our winter is too cold for them, so they head for Africa. When it becomes too hot for them in Africa, swallows and house martins return once more to Britain and their arrival is celebrated as one of the signs that our summer season is approaching.

One of the great mysteries of migration is that we still don't know for sure how migrating birds know in which direction they need to fly. We know from tagging swans that the same birds have over-wintered in the same lakes in England, every year, for over 20 years. How do they find their way? Different theories have been put forward: perhaps they use the position of the sun and the stars; perhaps part of their brain acts like a compass and uses the magnetic pull of the North and South Poles. It is also possible that birds simply remember the route, recognising and following rivers, roads or mountain passes. But however migratory birds navigate, this annual movement is definitely one of the wildlife wonders of the world. Next time you see swallows swooping above your house, chasing tiny insects, remember that these birds will soon be off on holiday. When the weather turns cold, they will say goodbye and head south, destined for sunny Africa.