

#### Section 4

Scientists believe that a majority of the earth's bird population migrate in some fashion or

other. Some travel seasonally for (1)....., such as birds that move from their winter habitats in lowlands to mountain tops for the summers. Others, like the Arctic Tern, travel (2).....between the northern and southern poles. Bird migration has been studied over many centuries (3).....

But until relatively recently, where birds went to in the winter was considered something of a mystery. The lack of (4).....led to many theories that we now recognize as error-filled and even somewhat amusing. Take (5).....for example – two thousand years ago, it was commonly believed that when birds left an area, they (6).....in the seas and oceans. Another theory for the regular appearance and disappearance of birds was that they spent winter (7).....till the weather changed and food became abundant again. The theory that some birds hibernate persisted until experiments were done on caged birds in the 1940s which demonstrated that birds (8).....

One of the earliest naturalists and philosophers from ancient Greece was Aristotle who was the first writer to discuss (9).....of some bird species at certain times of year. He developed (10) ....., the seasonal change of one species into another, by observing redstarts and robins. He observed that in the autumn, small birds called 'redstarts' began to (11)....., which convinced Aristotle that they changed into robins for the winter, and back into redstarts in the summer. These assumptions are understandable given that this pair of species are (12)....., but are a classic example of an incorrect interpretation based on correct observations.

(13).....was put forward by an English amateur scientist, Charles Morton, in the seventeenth century. He wrote (14).....claiming that birds migrate to the moon and back

every year. He came to this conclusion as the only logical explanation for (15)..... of some species.

One of the key moments in the development of migration theory came in 1822 when a white stork was shot in Germany. This particular stork made history because of (16).....which incredibly had not killed it – everyone immediately realised this spear was definitely not European. It turned out to be a spear from (17)..... This was a truly defining moment in the history of ornithology because (18).....that storks spend their winters in sub-Saharan Africa. You can still see the ‘arrow stork’ in the Zoological Collection of the University of Rostock in Germany.

People gradually became aware that European birds (19).....and north in summer but didn’t know much about it until the practice of catching birds and (20).....became established. Before this, very little information was available about (21)..... of particular species and how they travelled there. People speculated that larger birds provided (22).....for smaller birds by carrying them on their backs. This idea came about because it seemed impossible that small birds (23) .....could fly over vast oceans. This idea was supported by observations of bird behaviour such as (24).....by smaller birds.

The development of bird ringing, by a Danish schoolteacher, Hans Christian Cornelius Mortensen, (25) ..... This is still common practice today and relies upon what is known as ‘recovery’ – this is when ringed birds are found dead in (26)....., and identified. Huge amounts of data were gathered in the early part of (27).....and for the first time in history people understood where birds actually went to in winter. In 1931, an atlas was published showing where (28).....migrated to. More recent theories about bird migration ...