

IV. LISTENING HOMEWORK

/7.03/. Listen & fill in the gaps.

Questions 1–5

Complete the sentences.

Write **NO MORE THAN TWO WORDS** for each answer.

- 1 Choose binoculars that are comfortable to carry and have excellent
- 2 Follow the birds the way a would follow them.
- 3 if you can, so the birds don't see you.
- 4 Listen to the noises the bird makes, and observe what it looks like (its, shape, markings and other characteristics).
- 5 Observe movement and flight patterns, and habitat.

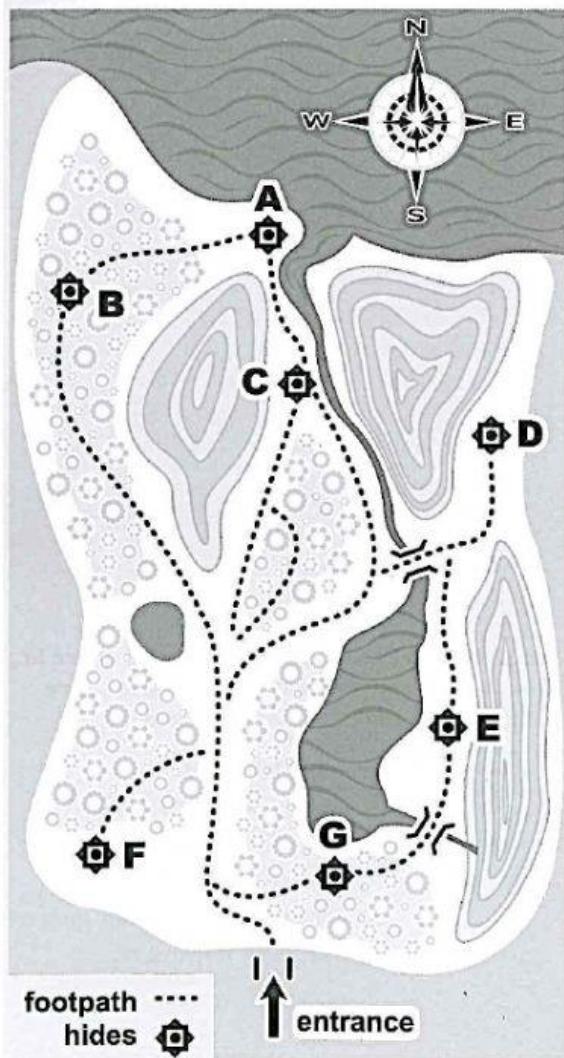
/7.04/. Listen & fill in the gaps.

Questions 6–8

Label the plan below.

Write the correct letter, A–G, next to questions 6–8.

- 6 Goose hide
- 7 Eagle hide
- 8 Cuckoo hide



Questions 9–10

Answer the questions.

Write **ONE WORD ONLY** for each answer.

- 9 What, according to the tutor, helps to make bird-watching especially enjoyable?
- 10 Apart from binoculars, what should the student take with him?

V. READING HOMEWORK

Questions 1–7

The Reading passage has seven sections, A–G.

Choose the correct heading for each section from the list of headings below.

List of headings

- i When human intervention is not a factor
- ii Testing the theory
- iii The dominance of carnivorous keystone species
- iv It's the small things that matter
- v Putting knowledge to practical use
- vi An argument that has divided the scientific community
- vii A wide variety of shapes and sizes
- viii Why bees are disappearing
- ix A man-made structure reflects nature
- x Re-examining an old case

1 Section A	5 Section E
2 Section B	6 Section F
3 Section C	7 Section G
4 Section D	

Keystone Species

Some species are crucial when it comes to maintaining a well-balanced ecosystem.

A. In the world of wildlife conservation, it is usually animals like whales and tigers which get the most public attention. Consequently, projects to protect these so-called 'flagship species' receive the greatest amount of funding, and this helps to ensure, or at least improve the chances of, their long-term survival. However, it could be argued that perhaps we should be focusing more attention elsewhere. This is because many of the minute plants, insects and microorganisms that we tend to ignore actually play a far more important role in biodiversity protection. Consider, for example, the Western honeybee *Apis mellifera*. Regarded as one of the world's most efficient pollinators, the honeybee plays a direct or indirect part in the production of many food products in our markets and stores. However, in recent years, a problem known as 'colony collapse disorder' has manifested itself, and now honeybee colonies are rapidly disappearing. Nobody knows the cause of this

phenomenon, but the implications are worryingly clear: unless a solution to colony collapse disorder is found soon, food production will be seriously, perhaps disastrously, affected.

B. The honeybee example illustrates how everything in the natural world is connected, and how the disappearance of one species can have a profound effect on the ecosystem around it. To understand how this happens, imagine an arched doorway or window in an ancient stone building. Many buildings containing arches are still standing today, hundreds, or even thousands, of years after they were built, in spite of the ravages of time and natural disasters such as earthquakes and floods. If you examine one of the arches carefully, you will see the reason why. On each side of the arch, there is a vertical series of bricks which gradually curve inwards, and these are supported at the center by a keystone. It is this keystone that gives the arch, and the structure around it, its strength and stability. Once the keystone is put in position, the arch can stand indefinitely. Remove it, however, and the whole thing collapses.

C. In the same way that an archway relies on its keystone to stay standing, so the ecosystem in a particular area relies on certain species in order to continue functioning. Named 'keystone species' by zoologist Robert Paine, who undertook the first major study of the effect of species loss on local environments, they have a major influence on the ecosystem around them. And there are a surprisingly large variety of them. Some are carnivores and some are herbivores. Some are marine and some are terrestrial. Some, like the huge, majestic African elephants, dominate their landscape, while others, like tiny microorganisms, are invisible to the human eye.

D. At first glance, it is hard to imagine how the disappearance of one of these species could have such an effect on its environment. However, as Paine discovered when he carried out a series of experiments in the 1960s, the impact can be extreme. The subject of his first study was the starfish *Pisaster ochraceous*. When Paine removed a large number of these fish from part of Mukkaw Bay in the USA, he observed sudden

changes in species diversity. The mussel and sea urchin population increased, since these creatures form an important part of Pisaster's diet. However, other species saw a dramatic decline. Paine counted fifteen species at the beginning of his experiment, but only eight remained at the end. Furthermore, reefs in the area were also destroyed, as increasing numbers of sea urchins fed on their coral. In another area of the bay, where the starfish community was left undisturbed, no changes were observed. Paine also observed that once Pisaster was returned to the area he had removed it from, the ecosystem began a gradual return to its pre-experiment state. His experiment prompted ecologists and conservation biologists around the world to identify other keystone species using similar experiments to find them. Over the next thirty years, the list of keystone species increased rapidly.

E. Unfortunately, significant changes in other interconnected populations are taking place without removal experiments being carried out, with some keystone species being driven close to extinction. For the last ten years, professor David Gomm of the Marine Conservation Association has led a study of sea otters in the North Pacific. This keystone predator feeds on sea urchins, which in turn feed on the vast kelp forests in the region. 'At the beginning of our study, sea otters were very common in the area, and so the kelp forests were thick and healthy,' says professor Gomm. 'However, for a number of reasons, killer whales have begun to include otters in their diet, and this has caused sea otter populations to fall rapidly. Consequently, sea urchin populations have exploded, and this has led to an almost total destruction of the kelp forests.' He believes that if sea otters become extinct, other species will follow. 'The ecosystem would be changed forever,' he warns.

F. Professor Gomm's prediction may sound overly dramatic to environmental skeptics, but there is an indication that it might already have happened. The species in question is, or rather was, the dodo, a large, flightless bird that once lived on the island of Mauritius. In the late sixteenth century, the bird's population began to fall sharply as European settlers arriving on the island cut down the

forest where they lived and introduced dogs, cats and rats, which raided their nests for their eggs. By the end of the seventeenth century, the dodo was extinct. Today, it is often regarded as little more than a rather slow-witted bird that was unable to adapt. However, there are some who believe it may have been a keystone species. For evidence of this, they point to a tree called the tambalacoque. Once common across Mauritius, there are now only a few dozen left at most. It is thought that the dodo ate the fruit of the tambalacoque and activated the seed through unique digestive processes. With the demise of the dodo, tambalacoque numbers declined to just a few trees, reducing a valuable food source for other animals on the island.

G. Some scientists are doubtful about the connection between the dodo and the tambalacoque. After all, they argue, if the tree was dependent on the dodo, why are there still some growing on the island? However, they all agree that even if there is no direct connection, the study does help to make an important point: even though a species may seem unimportant in isolation, it may actually form an important part of a much larger system of organisms, and its disappearance could have far-reaching consequences. It is therefore essential that, for the sake of the environment, ecologists continue to identify and preserve keystone species.

Questions 8–11

Complete the sentences below. Choose **NO MORE THAN THREE WORDS** from the passage for each answer.

- 8 Scientists fear that, in the near future, the unexplained disappearance of honeybees will affect the ecosystem and have a major impact on
- 9 The arches on old buildings rely on keystones for their
- 10 A in the numbers of some species in Mukkaw Bay occurred following Robert Paine's removal experiment.
- 11 Kelp forests in the North Pacific have almost disappeared as an indirect result of falling.

Questions 12–13

Choose **TWO** letters, **A–E**.

Which **TWO** reasons does the passage give for dodos becoming extinct?

- A Humans altered their natural habitat.
- B Their eggs were eaten by European settlers.
- C Other animals preyed on unborn birds.
- D They were too slow to avoid hunters.
- E One of their main food supplies died out.