BIRD SONGS AND CALLS

Birds use song both in courtship and to define areas of territory. Both of these are communicative purposes: the bird is passing specific messages to other members of its species. Birds communicate for other reasons as well: a blackbird, for instance, will make a sharp "pink-pink" sound when there is a cat nearby, which warns other birds in the neighborhood of the danger.

William Thorpe (1961) studied the behavior of gannets in a colony containing many thousands of birds. Thorpe found that when a bird was returning to its nest, it would drift on an updraft of air from the bottom of the cliff upwards, calling as it went. When the bird on the nest heard its mate calling, it would call in reply, showing that each bird's call could act as an identification signal. Thorpe also discovered that a bird might have as many as fifteen or sixteen different kinds of calls, each serving a different function.

J. R. Krebs (1976) realized that birds often sing more intensively in the early morning—the "dawn chorus." By investigating what the birds actually did during each day, and how much time they spent on each activity, Krebs found that the dawn chorus serves a largely territorial function. The early morning is not a particularly good time for gathering food, because it is dark, so visibility is lower, and it is also cold, so many insects are still inactive. On the other hand, at this time many birds move around looking for living space, so establishing and defending a territory is necessary. Birdsong is not just territorial, of course. A bird's song can serve a dual purpose: it can be used to defend a territory and, by indicating to a prospective mate that the singer has a territory to defend, can also attract a female bird.

P. J. B. Slater (1981) suggested that bird calls and birdsong are partly learned from other birds. He found that chaffinches which had been hand-reared and had not heard other wild birds made an entirely different kind of "chink" call from that of wild birds. In another case, Slater observed a laboratory chaffinch in a duet with a wild sparrow outside the window of the laboratory. The chaffinch imitated the sparrow's "cheep" whenever the sparrow produced it. Slater concluded that learning through copying is an important part of the way in which birds acquire their songs. Slater also found that individual chaffinches can have up to five different types of song. Some of these are personal, sung by that bird alone. Others are shared by several birds. In some cases too, Slater observed chaffinches singing songs which were almost identical to those sung by others, but with just a note or two different—possibly because the bird had made an error in copying the song from another.

Slater studied a population of 40 chaffinches on the Orkney Islands and found that among them they had seventeen different song types. So it was not a matter of each bird having its own individual songs—there was a considerable amount of sharing. Slater found that this sharing related to geographical distribution, but that the boundaries were not distinct enough for it to be accurately described as a dialect, or regional variety of a song. Instead, there was considerable overlap between the songs sung in one area and those sung in an adjoining one, but gradually the overlap would become less, until birds a long distance away from one another would be singing entirely different songs.

In 1970, Peter Marler proposed that birdsong and human speech were directly comparable in certain key respects, and that the study of birdsong might provide psychologists with some useful indicators as to the nature and development of speech in human beings. One of the parallels which Marler identified was the way that both humans and birds show

GO ON TO THE NEXT PAGE

a strong genetic predisposition to pick up and imitate certain sounds rather than others. Marler showed that young birds will learn the songs of their own species if they are played to them when young, but they will ignore songs of birds from other species. Similarly, young human beings are surrounded by all kinds of sounds and noises, but it is the human voice to which they listen most closely and human speech which they imitate.

Directions: Now answer the questions.

PARAGRAPH 2

William Thorpe (1961) studied the behavior of gannets in a colony containing many thousands of birds. Thorpe found that when a bird was returning to its nest, it would drift on an updraft of air from the bottom of the cliff upwards, calling as it went. When the bird on the nest heard its mate calling, it would call in reply, showing that each bird's call could act as an identification signal. Thorpe also **discovered** that a bird might have as many as fifteen or sixteen different kinds of calls, each serving a different function.

11. The word "**discovered**" in the passage is closest in meaning to
    - Ⓐ reported
    - Ⓑ found
    - Ⓒ estimated
    - Ⓓ showed

PARAGRAPH 3

J. R. Krebs (1976) **realized** that birds often sing more intensively in the early morning—the "dawn chorus." By investigating what the birds actually did during each day, and how much time they spent on each activity, Krebs found that the dawn chorus serves a largely territorial function. The early morning is not a particularly good time for gathering food, because it is dark, so visibility is lower, and it is also cold, so many insects are still inactive. On the other hand, at this time many birds move around looking for living space, so establishing and defending a territory is necessary. Birdsong is not just territorial, of course. A bird's song can serve a dual purpose: it can be used to defend a territory and, by indicating to a prospective mate that the singer has a territory to defend, can also attract a female bird.

12. The word "**realized**" in the passage is closest in meaning to
    - Ⓐ indicated
    - Ⓑ established
    - Ⓒ understood
    - Ⓓ argued

13. Which of the following can be inferred from paragraph 3 about birds and food gathering?
    - Ⓐ Birds become very territorial while they are gathering food.
    - Ⓑ Birds are more likely to sing when gathering food is easy than when it is difficult.
    - Ⓒ Most birds gather enough food for the day before they begin singing.
    - Ⓓ Birds are less likely to sing intensively when they are looking for food.

14. According to paragraph 3, why are birds concerned with defending territory during the early morning?
   (A) This is the time of day when male birds without mates try to take away living space and mates of other males.
   (B) This is the time of day birds and other animals hunt for insects.
   (C) This is the time of day birds have to defend their homes from predators who attack in darkness.
   (D) This is the time of day when other birds are looking for new places to live.

PARAGRAPH 4

P. J. B. Slater (1981) suggested that bird calls and birdsong are partly learned from other birds. He found that chaffinches which had been hand-reared and had not heard other wild birds made an entirely different kind of "chink" call from that of wild birds. In another case, Slater observed a laboratory "**chaffinch in a duet with a wild sparrow outside the window of the laboratory**. The chaffinch imitated the sparrow's "cheep" whenever the sparrow produced it. Slater concluded that learning through copying is an important part of the way in which birds acquire their songs. Slater also found that individual chaffinches can have up to five different types of song. Some of these are personal, sung by that bird alone. Others are shared by several birds. **In some cases too, Slater observed chaffinches singing songs which were almost identical to those sung by others, but with just a note or two different—possibly because the bird had made an error in copying the song from another.**

15. Why does the author discuss the behavior of a "**chaffinch in a duet with a wild sparrow outside the window of the laboratory**"?
   (A) To explain why Slater's hand-reared birds made an entirely different call than that made by wild birds
   (B) To indicate how Slater arrived at the view that imitation plays an important role in how birds learn songs
   (C) To explain why Slater thought that it would be advantageous for birds to sing multiple types of songs
   (D) To provide evidence that there are many different ways in which birds acquire new songs and calls

16. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.
   (A) Slater observed that all but one or two chaffinches were able to sing nearly identical copies of the songs of other birds.
   (B) Slater observed that chaffinches sang the songs of other birds, with just a wrong note or two that may have been due to copying errors.
   (C) Slater observed that chaffinches learned the songs of other birds, while sometimes adding a wrong note or two they may have learned from a different group of birds.
   (D) Slater observed that chaffinches used one or two notes from their own songs when singing the songs of other birds.

GO ON TO THE NEXT PAGE

PARAGRAPH 5

Slater studied a population of 40 chaffinches on the Orkney Islands and found that among them they had seventeen different song types. So it was not a matter of each bird having its own individual songs—there was a considerable amount of sharing. Slater found that this sharing related to geographical distribution, but that the boundaries were not distinct enough for it to be accurately described as a dialect, or regional variety of a song. Instead, there was considerable overlap between the songs sung in one area and those sung in an adjoining one, but gradually the overlap would become less, until birds a long distance away from one another would be singing entirely different songs.

17. According to paragraph 5, the chaffinches of the Orkney Islands were not considered to sing different regional variations of songs because
   (A) each bird had its own individual songs that were not shared by any other birds
   (B) the birds' different songs were not based on geographical location
   (C) even the birds that lived some distance apart shared many of the same songs
   (D) there were no clear divisions to mark the places where differences in songs occurred

PARAGRAPH 6

In 1970, Peter Marler proposed that birdsong and human speech were directly comparable in certain key respects, and that the study of birdsong might provide psychologists with some useful indicators as to the nature and development of speech in human beings. One of the parallels which Marler identified was the way that both humans and birds show a strong genetic predisposition to pick up and imitate certain sounds rather than others. Marler showed that young birds will learn the songs of their own species if they are played to them when young, but they will ignore songs of birds from other species. Similarly, young human beings are surrounded by all kinds of sounds and noises, but it is the human voice to which they listen most closely and human speech which they imitate.

18. In paragraph 6, why does the author discuss Marler's finding that young birds ignore the songs of other species and young humans listen most closely to human speech?
   (A) To show that listening skills are relatively poorly developed in young birds and young humans
   (B) To argue that the genetic predisposition to pick up and imitate sounds is more sophisticated in humans than in birds
   (C) To explain why Marler thought that birdsong might be helpful in understanding the development of human speech
   (D) To show that surrounding noises and sounds increase the difficulty that birds have learning songs and that humans have learning language

PARAGRAPHS 2 AND 3

William Thorpe (1961) studied the behavior of gannets in a colony containing many thousands of birds. **(A)** Thorpe found that when a bird was returning to its nest, it would drift on an updraft of air from the bottom of the cliff upwards, calling as it went. **(B)** When the bird on the nest heard its mate calling, it would call in reply, showing that each bird's call could act as an identification signal. **(C)** Thorpe also calculated that a bird might have as many as fifteen or sixteen different kinds of calls, each serving a different function. **(D)**

J. R. Krebs (1976) investigated how birds seem to sing more intensively in the early morning—the "dawn chorus." By investigating what the birds actually did during each day, and how much time they spent on each activity, Krebs found that the dawn chorus serves a largely territorial function. The early morning is not a particularly good time for gathering food, because it is dark, so visibility is lower, and it is also cold, so many insects are still inactive. On the other hand, at this time many birds move around looking for living space, so establishing and defending a territory is necessary. Birdsong is not just territorial, of course. A bird's song can serve a dual purpose: it can be used to defend a territory and, by indicating to a prospective mate that the singer has a territory to defend, can also attract a female bird.

19. **Directions:** Look at the part of the passage that is displayed above. The letters **(A)**, **(B)**, **(C)**, and **(D)** indicate where the following sentence could be added.

    These include flight calls used to coordinate the flock as well as distress calls and begging calls, which are used specifically by chicks to communicate with their parents.

    Where would the sentence best fit?

    Ⓐ Choice A
    Ⓑ Choice B
    Ⓒ Choice C
    Ⓓ Choice D

GO ON TO THE NEXT PAGE

20. **Directions:** An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

Birds sing to communicate with other birds.

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Answer Choices

A The number of different songs and calls a bird has varies by species, with blackbirds having some of the smallest collections of songs and calls and chaffinches having some of the largest.

B Birds that live in dense forests or other places where visibility is poor are especially dependent on songs and calls from other birds to locate sources of food and danger.

C Many birds sing to establish territory—and attract mates—during hours in which food gathering is difficult, while other birds, such as gannets, use calls to identify themselves.

D Bird songs and calls may be unique to one bird, shared among several birds, or even learned from other species.

E Although hand-reared chaffinches at first were slow to correctly copy the calls and songs of their own species in the wild, over time their copying skill improved.

F Because birds and humans have similar genetic ability to imitate certain sounds, birdsong can help explain the development of speech in humans.