tpo_45_passage_1

During the peak of the last ice age, northeast Asia (Siberia) and Alaska were connected by a broad land mass called the Bering Land Bridge. This land bridge existed because so much of Earth's water was frozen in the great ice sheets that sea levels were over 100 meters lower than they are today. Between 25,000 and 10,000 years ago, Siberia, the Bering Land Bridge, and Alaska shared many environmental characteristics. These included a common mammalian fauna of large mammals, a common flora composed of broad grasslands as well as wind-swept dunes and tundra, and a common climate with cold, dry winters and somewhat warmer summers. The recognition that many aspects of the modern flora and fauna were present on both sides of the Bering Sea as remnants of the ice-age landscape led to this region being named Beringia. It is through Beringia that small groups of large mammal hunters, slowly expanding their hunting territories, eventually colonized North and South America. On this archaeologists generally agree, but that is where the agreement stops. One broad area of disagreement in explaining the peopling of the Americas is the domain of paleoecologists, but it is critical to understanding human history: what was Beringia like? The Beringian landscape was very different from what it is today. Broad, windswept valleys; glaciated mountains; sparse vegetation; and less moisture created a rather forbidding land mass. This land mass supported herds of now-extinct species of mammoth, bison, and horse and somewhat modern versions of caribou, musk ox, elk, and saiga antelope. These grazers supported in turn a number of impressive carnivores, including the giant short-faced bear, the saber-tooth cat, and a large species of lion. The presence of mammal species that require grassland vegetation has led Arctic biologist Dale Guthrie to argue that while cold and dry, there must have been broad areas of dense vegetation to support herds of mammoth, horse, and bison. Further, nearly all of the ice-age fauna had teeth that indicate an adaptation to grasses and sedges; they could not have been supported by a modern flora of mosses and lichens. Guthrie has also demonstrated that the landscape must have been subject to intense and continuous winds, especially in winter. He makes this argument based on the anatomy of horse and bison, which do not have the ability to search for food through deep snow cover. They need landscapes with strong winds that remove the winter snows, exposing the dry grasses beneath. Guthrie applied the term "mammoth steppe" to characterize this landscape. In contrast, Paul Colinvaux has offered a counterargument based on the analysis of pollen in lake sediments dating to the last ice age. He found that the amount of pollen recovered in these sediments is so low that the Beringian landscape during the peak of the last glaciation was more likely to have been what he termed a "polar desert," with little or only sparse vegetation.In no way was it possible that this region could have supported large herds of mammals and thus, human hunters. Guthrie has argued against this view by pointing out that radiocarbon analysis of mammoth, horse, and bison bones from Beringian deposits revealed that the bones date to the period of most intense glaciation. The argument seemed to be at a standstill until a number of recent studies resulted in a spectacular suite of new finds. The first was the discovery of a 1,000-square-kilometer preserved patch of Beringian vegetation dating to just over 17,000 years ago-the peak of the last ice age. The plants were preserved under a thick ash fall from a volcanic eruption. Investigations of the plants found grasses, sedges, mosses, and many other varieties in a nearly continuous cover, as was predicted by Guthrie. But this vegetation had a thin root mat with no soil formation, demonstrating that there

was little long-term stability in plant cover, a finding supporting some of the arguments of Colinvaux. A mixture of continuous but thin vegetation supporting herds of large mammals is one that seems plausible and realistic with the available data.

question 1

The word “remnants” in the passage is closest in meaning to

A remains

B evidence

C results

D reminders

question 2

The word “domain” in the passage is closest in meaning to

A field of expertise

B challenge

C interest

D responsibility

question 3

According to paragraph 3, all of the following are true of the Beringian landscape EXCEPT:

A There was little vegetation.

B The mammal species there all survived into modern versions.

C The climate was drier than it is today.

D There were mountains with glaciers.

question 4

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 According to biologist Dale Guthrie, mammal species require broad areas of vegetation to survive.

B Dale Guthrie is an Arctic biologist who argued that broad areas of dense vegetation were surely enough to attract mammals such as mammoth, horse, and bison to Beringia.

C Dale Guthrie argued that Beringia, though cold and dry, must have had enough dense vegetation to support the herds of mammoth, horse, and bison that lived there.

D As long as Beringia was cold and dry, argued Dale Guthrie, dense vegetation grew in order to support the herds of mammoth, horse, and bison—the mammal species present there.

question 5

According to paragraph 4, Guthrie believes that the teeth of ice-age fauna support which of the following conclusions?

A Large mammals would not have been able to survive in the Beringian landscape.

B Grasslands were part of the Beringian landscape.

C Strong winds exposed dry grasses under the snow.

D Horses and bison did not have the ability to search for food through deep snow cover.

question 6

According to paragraph 4, which of the following statements is true of the relationship between ice-age Beringian animals and their environment?

A When present in sufficient quantities, lichens and mosses provide enough nutrients to satisfy the needs of herds of large mammals.

B The anatomy of certain animals present in that environment provides

information about the intensity of winds there at that time.

C The structure of the teeth of most ice-age fauna indicates that they preyed on animals such as the mammoth, horse, and bison.

D Horses and bison are large enough that their feet can easily penetrate deep snow and uncover areas where they can feed on plant material.

question 7

According to paragraph 5, how did Dale Guthrie use the information about radiocarbon analysis of bones from Beringian deposits?

A To suggest that Colinvaux should have used different methods to measure the amount of pollen in ice-age lake sediments

B To argue that the large Beringian mammals must have eaten plants that produce little, if any, pollen

C To show that the conclusions that Colinvaux drew from the analysis of pollen in ice-age lake sediments cannot be correct

D To explain why so-called polar deserts are incapable of supporting such large animals as mammoth, horse, and bison

question 8

Which of the following best describes the organization of paragraph 6?

A Two contrasting views are presented, and a study that could decide between them is proposed.

B An argument is offered, and reasons both for and against the argument are presented.

C A claim is made, and a study supporting the claim is described.

D New information is presented, and the information is used to show that two competing explanations can each be seen as correct in some way.

question 9

Look at the four squares [ ] that indicate where the following sentence could be added to the passage.

During the peak of the last ice age, northeast Asia (Siberia) and Alaska were connected by a broad land mass called the Bering Land Bridge. This land bridge existed because so much of Earth's water was frozen in the great ice sheets that sea levels were over 100 meters lower than they are today. Between 25,000 and 10,000 years ago, Siberia, the Bering Land Bridge, and Alaska shared many environmental characteristics. These included a common mammalian fauna of large mammals, a common flora composed of broad grasslands as well as wind-swept dunes and tundra, and a common climate with cold, dry winters and somewhat warmer summers. The recognition that many aspects of the modern flora and fauna were present on both sides of the Bering Sea as remnants of the ice-age landscape led to this region being named Beringia. It is through Beringia that small groups of large mammal hunters, slowly expanding their hunting territories, eventually colonized North and South America. On this archaeologists generally agree, but that is where the agreement stops. One broad area of disagreement in explaining the peopling of the Americas is the domain of paleoecologists, but it is critical to understanding human history: what was Beringia like? The Beringian landscape was very different from what it is today. [] Broad, windswept valleys; glaciated mountains; sparse vegetation; and less moisture created a rather forbidding land mass. [] This land mass supported herds of now-extinct species of mammoth, bison, and horse and somewhat modern versions of caribou, musk ox, elk, and saiga antelope. [] These grazers supported in turn a number of impressive carnivores, including the giant short-faced bear, the saber-tooth cat, and a large species of lion. [] The presence of mammal species that require grassland vegetation has led Arctic biologist Dale Guthrie to argue that while cold and dry, there must have been broad areas of dense vegetation to support herds of mammoth, horse, and bison. Further, nearly all of the ice-age fauna had teeth that indicate an adaptation to grasses and sedges; they could not have been supported by a modern flora of mosses and lichens. Guthrie has also demonstrated that the landscape must have been subject to intense and continuous winds, especially in winter. He makes this argument based on the anatomy of horse and bison, which do not have the ability to search for food through deep snow cover. They need landscapes with strong winds that remove the winter snows, exposing the dry grasses beneath. Guthrie applied the term "mammoth steppe" to characterize this landscape. In contrast, Paul Colinvaux has offered a counterargument based on the analysis of pollen in lake sediments dating to the last ice age. He found that the amount of pollen recovered in these sediments is so low that the Beringian landscape during the peak of the last glaciation was more likely to have been what he termed a "polar desert," with little or only sparse vegetation.In no way was it possible that this region could have supported large herds of mammals and thus, human hunters. Guthrie has argued against this view by pointing out that radiocarbon analysis of mammoth, horse, and bison bones from Beringian deposits revealed that the bones date to the period of most intense glaciation. The argument seemed to be at a standstill until a number of recent studies resulted in a spectacular suite of new finds. The first was the discovery of a 1,000-square-kilometer preserved patch of Beringian vegetation dating to just over 17,000 years ago-the peak of the last ice age. The plants were preserved under a thick ash fall from a volcanic eruption. Investigations of the plants found grasses, sedges, mosses, and many other varieties in a nearly continuous cover, as was predicted by Guthrie. But this vegetation had a thin root mat with no soil

formation, demonstrating that there was little long-term stability in plant cover, a finding supporting some of the arguments of Colinvaux. A mixture of continuous but thin vegetation supporting herds of large mammals is one that seems plausible and realistic with the available data.

question 10

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.

A. Strong evidence indicates that large mammals like mammoth and bison survived in the harsh ice-age Beringian landscape.

B. Beringian mammals crossed easily from northeastern Asia to Alaska across the Bering Land Bridge, though there are indications that they usually went back to Asia for the brief, but warm, summers.

C. Carnivores such as the saber-tooth cat were primarily responsible for the disappearance of the largest of the grazing animals, but the harsh winters caused some grazers to die of starvation.

D. Analyses of ice-age sediments uncovered very small amounts of pollen, suggesting that Beringia lacked the quantity of vegetation needed to support large herds of mammals.

E. The discovery that grasses, sedges, and mosses survived under the thick ash from a large volcanic eruption proved that the ice-age Beringian plant cover was extremely resistant to climatic extremes.

F. Recent discoveries suggest that shallow-rooted plants created a fairly continuous cover over ice-age Beringia, though the cover most likely was variable and uncertain in any one location.