

tpo_14_passage_2

To understand the ancient Mayan people who lived in the area that is today southern Mexico and Central America and the ecological difficulties they faced, one must first consider their environment, which we think of as "jungle" or "tropical rainforest." This view is inaccurate, and the reason proves to be important. Properly speaking, tropical rainforests grow in high-rainfall equatorial areas that remain wet or humid all year round. But the Maya homeland lies more than sixteen hundred kilometers from the equator, at latitudes 17 to 22 degrees north, in a habitat termed a "seasonal tropical forest." That is, while there does tend to be a rainy season from May to October, there is also a dry season from January through April. If one focuses on the wet months, one calls the Maya homeland a "seasonal tropical forest"; if one focuses on the dry months, one could instead describe it as a "seasonal desert." From north to south in the Yucatan Peninsula, where the Maya lived, rainfall ranges from 18 to 100 inches (457 to 2,540 millimeters) per year, and the soils become thicker, so that the southern peninsula was agriculturally more productive and supported denser populations. But rainfall in the Maya homeland is unpredictably variable between years; some recent years have had three or four times more rain than other years. As a result, modern farmers attempting to grow corn in the ancient Maya homelands have faced frequent crop failures, especially in the north. The ancient Maya were presumably more experienced and did better, but nevertheless they too must have faced risks of crop failures from droughts and hurricanes. Although southern Maya areas received more rainfall than northern areas, problems of water were paradoxically more severe in the wet south. While that made things hard for ancient Maya living in the south, it has also made things hard for modern archaeologists who have difficulty understanding why ancient droughts caused bigger problems in the wet south than in the dry north. The likely explanation is that an area of underground freshwater underlies the Yucatan Peninsula, but surface elevation increases from north to south, so that as one moves south the land surface lies increasingly higher above the water table. In the northern peninsula the elevation is sufficiently low that the ancient Maya were able to reach the water table at deep sinkholes called cenotes, or at deep caves. In low-elevation north coastal areas without sinkholes, the Maya would have been able to get down to the water table by digging wells up to 75 feet (22 meters) deep. But much of the south lies too high above the water table for cenotes or wells to reach down to it. Making matters worse, most of the Yucatan Peninsula consists of karst, a porous sponge-like limestone terrain where rain runs straight into the ground and where little or no surface water remains available. How did those dense southern Maya populations deal with the resulting water problem? It initially surprises us that many of their cities were not built next to the rivers but instead on high terrain in rolling uplands. The explanation is that the Maya excavated depressions, or modified natural depressions, and then plugged up leaks in the karst by plastering the bottoms of the depressions in order to create reservoirs, which collected rain from large plastered catchment basins and stored it for use in the dry season. For example, reservoirs at the Maya city of Tikal held enough water to meet the drinking water needs of about 10,000 people for a period of 18 months. At the city of Coba the Maya built dikes around a lake in order to raise its level and make their water supply more reliable. But the inhabitants of Tikal and other cities dependent on reservoirs for drinking water would still have been in deep trouble if 18 months passed without rain in a prolonged drought. A shorter drought in which they

exhausted their stored food supplies might already have gotten them in deep trouble, because growing crops required rain rather than reservoirs.

question 1

Why does the author call the Mayan homeland both a "seasonal tropical forest" and "seasonal desert" ?

A To illustrate how the climate of the Mayan homeland varied from region to region

B To explain how the climate of the Mayan homeland is similar to that of a jungle or tropical rainforest

C To emphasize the vast size of the area that comprised the Mayan homeland in ancient times

D To make the point that the Mayan homeland is climatically more complex than is generally assumed

question 2

Which of the following is NOT mentioned in paragraph 2 as a difference between the northern and southern Yucatan Peninsula?

A The annual rainfall was greater in the south.

B The population density was lower in the north.

C Agricultural productivity was greater in the south

D Rainfall was more unpredictable and variable in the south.

question 3

Which of the following statements about ancient and modern agriculture in the Yucatan Peninsula is supported by paragraph 2?

A Modern agricultural methods have solved many of the ancient problems of farming in the Yucatan Peninsula.

B Ancient Mayan farmers may have been somewhat more successful at farming in the Yucatan Peninsula than farmers are today.

C Farming today is easier than in the past because environmental changes in the

Yucatan Peninsula have increased available rainfall

D The Yucatan soils in which ancient farmers worked were richer, more productive, and thicker than they are today.

question 4

The phrase "The likely explanation" in the passage refers to the explanation for why

A the southern Maya areas received more rainfall than the northern areas

B modern archaeologists have difficulty understanding ancient droughts

C water problems were most severe in the wet south

D land surface in the south is so high above the water table

question 5

Which of the following statements about the availability of water in the Mayan homeland is supported by paragraph 3?

A The construction of wells was an uncommon practice in both the north and the south because it was too difficult to dig through the karst.

B In most areas in the north and the south, rainwater was absorbed directly into the porous karst.

C The water table was an important resource for agriculture in both the north and the south of the Yucatan Peninsula.

D The lack of surface water in both the north and the south was probably due to the fact that most of it was quickly used up for agricultural purposes.

question 6

According to paragraph 3, why was the southern Mayan homeland hard to farm?

A The presence of numerous sinkholes and wells interfered with farming.

- B Southern soil lacked the depth crops needed for growth.
- C Underground water was too far below the surface to reach.
- D The presence of karst caused frequent flooding.

question 7

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 Southern Maya populations obtained the water they needed for the dry season by collecting and storing rainwater in sealed depressions.
- B The Maya are credited with creating methods for modifying natural rainwater and storing it.
- C Leaks in the karst caused difficulties in the creation of reservoirs, which were needed to store water for the dry season.
- D Southern Mayans were more successful at collecting rain than storing it during dry seasons.

question 8

What can be inferred from paragraph 4 about how residents of Tikal met their needs for water and food during most periods of drought?

- A They depended upon water and food that had been stored for use during the dry season.
- B They obtained drinking water and water for crop irrigation from Coba dikes.
- C They located their population centers near a lake where water was available for drinking and watering crops.
- D They moved locations every 18 months to find new croplands and water sources.

question 9

Look at the four squares [] that indicate where the following sentence could be added to the passage. Where would the sentence best fit?

To understand the ancient Maya people who lived in the area that is today southern Mexico and Central America and the ecological difficulties they faced, one must first consider their environment, which we think of as "jungle" or "tropical rainforest." [] This view is inaccurate, and the reason proves to be important. [] Properly speaking, tropical rainforests grow in high-rainfall equatorial areas that remain wet or humid all year round. But the Maya homeland lies more than sixteen hundred kilometers from the equator, at latitudes 17 to 22 degrees north, in a habitat termed a "seasonal tropical forest." [] That is, while there does tend to be a rainy season from May to October, there is also a dry season from January through April. If one focuses on the wet months, one calls the Maya homeland a "seasonal tropical forest"; if one focuses on the dry months, one could instead describe it as a "seasonal desert." [] From north to south in the Yucatan Peninsula, where the Maya lived, rainfall ranges from 18 to 100 inches (457 to 2,540 millimeters) per year, and the soils become thicker, so that the southern peninsula was agriculturally more productive and supported denser populations. But rainfall in the Maya homeland is unpredictably variable between years; some recent years have had three or four times more rain than other years. As a result, modern farmers attempting to grow corn in the ancient Maya homelands have faced frequent crop failures, especially in the north. The ancient Maya were presumably more experienced and did better, but nevertheless they too must have faced risks of crop failures from droughts and hurricanes. Although southern Maya areas received more rainfall than northern areas, problems of water were paradoxically more severe in the wet south. While that made things hard for ancient Maya living in the south, it has also made things hard for modern archaeologists who have difficulty understanding why ancient droughts caused bigger problems in the wet south than in the dry north. The likely explanation is that an area of underground freshwater underlies the Yucatan Peninsula, but surface elevation increases from north to south, so that as one moves south the land surface lies increasingly higher above the water table. In the northern peninsula the elevation is sufficiently low that the ancient Maya were able to reach the water table at deep sinkholes called cenotes, or at deep caves. In low-elevation north coastal areas without sinkholes, the Maya would have been able to get down to the water table by digging wells up to 75 feet (22 meters) deep. But much of the south lies too high above the water table for cenotes or wells to reach down to it. Making matters worse, most of the Yucatan Peninsula consists of karst, a porous sponge-like limestone terrain where rain runs straight into the ground and where little or no surface water remains available. How did those dense southern Maya populations deal with the resulting water problem? It initially surprises us that many of their cities were not built next to the rivers but instead on high terrain in rolling uplands. The explanation is that the Maya excavated depressions, or modified natural depressions, and then plugged up leaks in the karst by plastering the bottoms of the depressions in order to create reservoirs, which collected rain from large plastered catchment basins and stored it for use in the dry season. For example, reservoirs at the Maya city of Tikal held enough water to meet the drinking water needs of about 10,000 people for a period of 18 months. At the city of Coba the Maya built dikes around a lake in order to raise its level and make their water supply more reliable. But the inhabitants of Tikal and other cities dependent on reservoirs for drinking water would still have been in deep trouble if 18 months passed without rain in a prolonged drought. A shorter drought in which they

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question 10

Directions: Select from the seven phrases below the phrases that correctly characterize the southern Mayan homeland and the phrases that correctly characterize the northern Mayan homeland. Drag each phrase you select into the appropriate column of the table. Two of the phrases will NOT be used. This question is worth 3 points.

- A. City of Tikal
- B. Predictable rainfall
- C. High above water table
- D. Used reservoirs
- E. Obtained water from wells
- F. Dramatically improved corn crops
- G. Had comparatively thin layer of soil