

PLANT LIFE IN THE TAKLIMAKAN DESERT

Words

Write the letter of each definition with the word it defines. If you don't know the definition, use the context of the reading passage to help you. Look for the words in bold as you read the passage.

PARAGRAPH 1

Words	Definitions
1 occupy	A adj., small in numbers or amount
2 sparse	B adj., strong; sudden and destructive
3 swing	C adj., very severe or difficult
4 violent	D v., to be in a place; exist in
5 extreme	E n., a sudden or big change

PARAGRAPH 2

Words	Definitions
6 transitional	F v., to grow well
7 fringe	G adj., relating to change from one type to another
8 diverse	H v., to change to fit a situation or environment
9 adapt	I n., the edge of something
10 thrive	J adj., varied; of many kinds

PARAGRAPH 3

Words	Definitions
11 resilient	K adj., tough; able to endure difficult conditions
12 stressor	L v., to reduce to the least possible amount
13 minimize ¹	M n., methods
14 moisture	N adj., producing a lot of something
15 prolific	O n., something that causes great difficulties
16 mechanisms	P n., wetness or water

¹BrE: minimise

PARAGRAPHS 4–7

Words	Definitions
17 evaporation	Q v., to decide
18 dilute	R v., to gradually increase over time
19 determine	S v., to make weaker by mixing with water
20 accumulate	T n., the change from liquid to gas; loss of water to the air

Reading

Plant Life in the Taklimakan Desert

- (1) The Taklimakan Desert, second in size only to Africa's Sahara Desert, **occupies** some 337,600 square kilometers¹ (130,300 square miles) of northwestern China—an area about the size of Finland. **Sparse** rainfall, daily temperature **swings** of up to 20°C (68°F), and **violent** sandstorms make it one of the most **extreme** environments on Earth.
- (2) Eighty-five percent² of the Taklimakan Desert consists of shifting sand dunes, some up to 250 meters³ tall, that are largely free of vegetation. Yet, **transitional** areas between the open desert and oases on the desert **fringe** support **diverse** plant forms that not only have **adapted** to the harsh conditions but actually **thrive** there.
- (3) Successful desert plants are **resilient** to scorching summers and frigid winters, drought, and high-salt conditions. The plants' principal defense⁴ against these environmental **stressors** consists of drawing in as much water as possible while **minimizing moisture** loss. Three Taklimakan plants—*Populus euphratica*, *Tamarix ramosissima*, and *Alhagi sparsifolia*—represent some of the most diverse, **prolific** vegetation in the area; although they share many survival strategies, each has developed unique coping **mechanisms** of its own.
- (4) The Euphrates poplar, *Populus euphratica*, the only tall tree in the Taklimakan ecosystem, has an extensive root system that allows it to absorb water far from the standing tree. *P. euphratica* controls **evaporation** by opening and closing the stomata, or tiny

¹BrE: kilometres²BrE: per cent³BrE: metres⁴BrE: defence

pores, on the leaf surface in response to the amount of moisture being lost through the leaves to the surrounding air. These stomata generally remain open during the day while the plant conducts photosynthesis.

- (5) *P. euphratica* can endure high-salt concentrations in the soil. It takes in unlimited amounts of salt through the roots, up the stem, and into leaves, where it **dilutes** the normally toxic salt by increasing the number and volume of its cells.
- (6) *Tamarix ramosissima*, a small tree with needlelike leaves commonly known as tamarisk or salt cedar, takes in enormous amounts of water via a far-reaching root system many times the size of the plant above ground. Like *P. euphratica*, tamarisk can naturally **determine** when to close stomata to inhibit evaporation and regulate photosynthesis.
- (7) Tamarisk has a high tolerance for salty conditions and even produces its own salt, which it **accumulates** in special glands between the leaves and then releases onto leaf surfaces. Leaves dropping to the ground make the soil more saline, or salty, giving tamarisk a competitive advantage over less salt-tolerant plants.
- (8) *Alhagi sparsifolia*, a spiny shrub, thrives in the Taklimakan Desert even though it uses large amounts of water, especially during the summer months. With only a few wispy roots in the upper soil, it is unaffected by occasional flooding. Most of its roots reach down deep, where they take up water from as far as sixteen meters below ground. Unlike *P. euphratica* and *T. ramosissima*, which open and close stomata according to conditions on the leaf surface, *A. sparsifolia* does so according to hydraulic conductance—that is, the ease with which it takes up groundwater.
- (9) Although desert plants have adapted for their own survival, they also help protect their ecosystem by stabilizing sand dunes, preventing erosion, presenting a barrier to sandstorms, and conserving biodiversity.

Answer the questions about **Plant Life in the Taklimakan Desert**.

Questions 1–3

Choose the correct letter, **A**, **B**, **C**, or **D**.

- 1 Most of the Taklimakan Desert is covered with
 - A** tamarisk.
 - B** spiny plants.
 - C** sand dunes.
 - D** diverse plant life.
- 2 Plants in the Taklimakan Desert
 - A** grow only in areas above 250 meters high.
 - B** thrive in extreme conditions.
 - C** are not very hardy.
 - D** are mostly tall trees.
- 3 Environmental stressors in the Taklimakan Desert include
 - A** sparse sunlight.
 - B** lack of salt in the soil.
 - C** extreme temperatures.
 - D** periods of heavy rainfall.

Questions 4–7

Which of the following mechanisms used by plants to survive in the desert environment are mentioned in the passage? Choose **four** answers from the list below.

- A** Having strong roots that can hold on during violent sandstorms
- B** Closing pores to minimize loss of moisture
- C** Occupying a place in the shade of a larger plant to avoid the scorching desert sun
- D** Diluting the salt that the plant takes in
- E** Having large root systems that can reach water far from the plant
- F** Adding salt to the soil to minimize competition from other plants
- G** Accumulating water in the leaves of the plant

Word Families

A

Complete each sentence with the correct word from the word family chart. Make nouns plural where necessary. Use the correct form of verbs.

noun	verb	adjective
adaptation	adapt	adaptable

- One way that plants to the dry desert is by developing deep root systems.
- Plants in the Taklimakan Desert have that allow them to live in dry, salty conditions.
- Most plant species are not to a desert environment.

noun	noun	verb	adjective
diversity	diversification	diversify	diverse

- The ways that plants adapt to desert conditions makes a fascinating study.
- Changes in climate can result in species
- There is a great of plant life in the fringe of the Taklimakan Desert.
- As the climate changes, plant species in an area may if conditions improve.

noun	adjective	adverb
extreme	extreme	extremely

- Temperatures in the Taklimakan Desert reach an during hot summer days.
- The weather in a desert is usually dry.
- Many plants cannot endure the heat of the desert.

noun	adjective	adverb
resilience	resilient	resiliently

- 11 Desert plants are to heat and dryness.
- 12 Desert plants grow in the heat.
- 13 The of certain plants allows them to thrive in the desert.

noun	noun	verb	adjective
stress	stressor	stress	stressful

- 14 Heat and drought both plants.
- 15 A long period of dryness causes a lot of to plants.
- 16 The main in a desert is lack of rain.
- 17 Certain plants thrive in the desert despite the conditions.

noun	adjective	adverb
violence	violent	violently

- 18 The of sandstorms keeps many plants from thriving in the desert.
- 19 winds tear up many plants or cover them with sand.
- 20 The winds blow during a sandstorm.

Word Families

B

Choose the correct word family member from the list below to complete each blank.

1	adaptations	adapts	adapted
2	extreme	extremes	extremely
3	stressor	stress	stressful
4	resilience	resilient	resiliently
5	Violence	Violent	Violently
6	diversity	diversify	diverse

Desert plants have a variety of **1**..... that allow them to endure the desert environment. Because a desert is **2**..... dry, plants need to be able to take in as much water as possible when it rains and to store the water for a long time. Special root systems and types of leaves enable them to do this. Another source of **3**..... in a desert is the high temperature, so desert plants need to have **4**..... . **5**..... storms can occur in a desert, and only plants with strong roots will be able to endure the storms. Considering the difficult conditions in a desert, the **6**..... of plants that can be found there is truly amazing.

Paraphrases

Read the sentence from the reading passage. Then, choose the sentence that has the same meaning.

- 1 *Sparse rainfall, daily temperature swings of up to 20°C (68°F), and violent sandstorms make it one of the most extreme environments on Earth. (paragraph 1)*
 - A The environmental conditions in the Taklimakan Desert are among the most difficult on Earth.
 - B On any day in the Taklimakan Desert, you might experience little rainfall, high temperatures, or strong sandstorms.
 - C The Taklimakan Desert has less rain, higher temperatures, and more frequent sandstorms than most other deserts.

- 2 *Successful desert plants are resilient to scorching summers and frigid winters, drought, and high-salt conditions. (paragraph 3)*
 - A Many plants suffer because of the extreme desert conditions.
 - B Plants that live well in the desert are able to endure the harsh environment.
 - C Few plants live in the desert because of the hot summers, cold winters, dryness, and salt.

Dictionary Skill**DIFFERENT MEANINGS**

Many words have more than one meaning.

Read the definitions below. Then read the sentences and write the letter of the correct definition for each sentence.

swing [SWING]

A *noun.* a sudden or big change

B *noun.* back-and-forth movement

C *noun.* a hanging seat that moves back and forth

- 1 The children played on the *swing* all afternoon.

- 2 After a rainstorm in the desert, there is a noticeable *swing* back to life.

- 3 The *swing* of the branches in the breeze made a creaking noise.

Listening

Track
3

Listen to the discussion. Complete the notes below.
Write **NO MORE THAN ONE WORD** for each answer.

Taklimakan Desert Plants

Many plants live in the **1** areas.

Stressors:

little rain

2 temperatures

rapid **3**

Adaptations:

ability to close pores

large root systems to **4** water

Writing (Task 1)

Unit 1

The charts¹ below show information about three different deserts around the world.

Summarize² the information by selecting and reporting the main information and making comparisons.

Write at least 150 words.

Sahara Desert (Africa)

Size	9,000,000 sq km
Average annual rainfall	7.6 cm (north) 12.7 cm (south)
Average temperatures	30°C (summer) 13°C (winter)
Temperature extremes	58°C = highest recorded

Taklimakan Desert (Asia)

Size	337,600 sq km
Average annual rainfall	3.8 cm (west) 1.0 cm (east)
Average temperatures	25°C (summer) -9°C (winter)
Temperature extremes	-26.1°C = lowest recorded

Great Basin Desert (North America)

Size	305,775 sq km
Average annual rainfall	5.1–51 cm
Average temperatures	30°C (summer) -8°C (winter)
Temperature extremes	57°C = highest recorded

¹BrE: tables

²BrE: summarise

Speaking

Talk about the following topics.

Are you interested in visiting extreme environments, such as deserts or high mountains? Why or why not?

Why do you think people like to visit extreme environments?

When you travel, do you adapt easily to new climates?