

Details of Native(indigenous) and Exotic Trees seen in Abu Dhabi

You would be surprised to learn that the sparse desert in the UAE too supports many hundreds of plant species! This vegetation is crucial for the fragile ecosystem that this land supports, of which man is also an integral part. It is needless to say, we need to protect them for posterity.

How do we have any forests?

The majority of the forests within Abu Dhabi Emirate are **artificial** and totally depend on human care.

Why do we cultivate these artificial forests?

The main purpose is to curb desertification and protect residential neighbourhoods and roads from encroachment by sand dunes.

Where can you go?

For schools in the Abu Dhabi Emirate

1. Remah Forests in the Eastern Region
2. Salamat Forests, near Al Ain

Attempts to regenerate native species are undertaken here. They also offer educational programmes.

3. Khab Al Dahs Forest, Madinat Zayed, Western Region

For more detailed information about locations that you can visit, contact the **Barari Forest Management**.

What are the types of forests you can see in the UAE?

While the word 'forests' would mean different things for different people, forests in the UAE, could be classified as afforested areas, groves of Ghaf or Samur trees and Saxual or dew forests.

Note: This classification is purely based on the common perceptions of what constitutes forests.

Afforested Areas

These are government forests covering 337,000 hectares of land in the UAE and refer to manmade plantations with local, indigenous trees in the desert and interior regions for protection against dune invasion or sand storms.

The commonly used trees are *Salvadora persica* (Toothbrush Tree), *Tamarix* (Ethel), *Prosopis cineraria* (Ghaf), *Conocarpus species* (Damas) and so on, for they need very little water for survival.



Tamarix (Ethel)



Prosopis cineraria (Ghaf)



Conocarpus species (Damas)



Salvadora persica (Miswak, Toothbrush Tree)

If you are interested in taking your students on a visit to the forests, take note of the following details.



You can access the areas by bus.



Dress comfortably, but suitably, preferably in slacks and shirts.



Wear walking shoes and socks to protect your feet.



Carry enough drinking water with you. There is none available on site.



There are no washrooms on site. You will have to avail of those at ADNOC petrol stations before and after the visit.

(Source: Barari Forest Management, Abu Dhabi)

'Saxual Forests' or 'Dew Forests'

A small belt of two to three metre high halophytic or salt tolerant shrubs, locally known as the Ghada shrub (*Haloxylon persicum*), can be found inland to the south of Abu Dhabi. This shrub is a hermaphrodite; its flowers have both female and male organs. The fine branches are able to collect moisture from the atmosphere and hence have been dubbed the 'dew forest' as their foliage drips



Ghada shrub (*Haloxylon persicum*)

condensation. Frequent fog in this region supports the growth of lichens on the barks of these shrubs.

The plant actually waters itself, a unique feature in the desert habitat, where water is a precious commodity! An important feature of adaptability to desert conditions is that many organisms in the desert depend upon dew to satisfy their fresh water requirement. These are probably the only true forests here and they cover a little less than 1% (200,000 hectares) of the total area of the UAE. Arabian Hares, gerbils, foxes, eagles and many species of birds frequent these very unique forests.

Groves of Ghaf and Samar

Communities of Ghaf trees in the desert, and the Samar trees in the gravel plain or hard ground can be seen in the inter-dune valleys or near the mountain and wadi areas. These trees have the amazing ability to withstand high temperatures, scarce water and poor soils.

These groves serve as a habitat for a variety of organisms in addition to giving many social and economic benefits to people living in these areas. They are a standing testimony to the fact that deserts are indeed very special habitats on Earth. Unfortunately, they are now threatened due to development and encroachments.

Local or indigenous trees

It may seem that there is a wide variety of trees in the cities of the UAE but in reality, the indigenous species may not exceed more than a dozen. Quite a few of the trees have been brought in from other regions, but have now established themselves in the wild as well. Species which can be stated as being wholly native and still widespread are the Ghaf Tree (*Prosopis cineraria*), Samur or Salam (*Acacia tortilis*), Garath (*Acacia arabica*), Sidr (*Ziziphus spinachristi*) and the Date Palm (*Phoenix dactylifera*).

Other popular indigenous trees which are not as widespread as the above species are:

- Ethel Tamarix (*Tamarix arabica*) is found near the Sabkhas.
- Two species of the fig, namely *Ficus salicifolia* and *Ficus johannis*, are found only in wadis and the Hajar Mountains.

- Moringa or Yasar (*Moringa peregrine*), is common in the Hajar Mountains or higher elevations in Jabal Hafit or in the wadis.
- Ashar or Sodom's Apple (*Calotropis procera*), is an indicator of a habitat that has been disturbed. Livestock keep away from this tree.
- Tecoma, with its yellow flowers, which grows naturally in the wadis, and has been recorded in the Northern Emirates, is used in gardens due to its large attractive flowers.
- Arakh, the Toothbrush Tree (*Salvadora persica*) usually grows in sand sheets and is used widely in plantations.

While the above is not an exhaustive list of all the indigenous trees found in the UAE, it nevertheless is an indication that deserts too have trees, albeit few, and each tree has a role to play in the complex web of life.



Sidr Tree



Date Palm Tree



Sodom's Apple Tree



Wild Drumstick Tree

Samur Fact File



- The *Acacia tortilis* is a typical tree which grows in hard soil near mountain areas or hard gravel plains unlike the Ghaf which is found in the desert or sandy areas.
 - As the Acacia groves inhabit gravel plains or mountain areas, the roots are unable to penetrate deep under the soil like the Ghaf. Acacia trees in the wadis depend on runoff water coming down the mountains after the rains or from flash floods.
 - The tree is also shaped like an umbrella so as to absorb moisture from the air through dew to meet its water requirements.
 - Extensive stands of the flat topped Acacia or the Samur trees are found in the rocky and gravelly parts of the North Eastern regions of the UAE.
 - Open Acacia woodland can also be seen in the Al Madam Plains on the east coast.
- The *Acacia tortilis* has a highly aromatic white flower. It can withstand high temperatures and poor soil.
 - The tree provides shade in the desert and the leaves are eaten by goats and camels.
 - The gum of the Acacia is edible and parts of the tree, including roots, shoots and pods, which are twisted and spiral shaped (hence the name “tortilis”), were used for decoration, weapons and medicines.
 - Extracting honey from the Samur trees, the main source of honey in the UAE, is an age old tradition. The honey produced has a distinct flavour.
 - It has excellent medicinal properties – helps with digestive disorders, diarrhea and also helps check bleeding.
 - The *Acacia tortilis* is threatened by habitat degradation and development.

Distribution of forests in Abu Dhabi Emirate

The EAD manages more than 400 forests with a total area of 220,000 hectares. These forests occupy 90% of the total area of forests within Abu Dhabi Emirate and 3% of the mainland of Abu Dhabi. Comprising a total of 208 separate forests, the individual areas vary from small forests which can be less than 1 hectare in area to large forests which could extend to more than 100 hectares in area.

Biodiversity

These forests are home to an estimated 42,000 animals of 14 different species. There are many types of trees in the forests. Some are native like the Ghaf, Christ's Thorn and varieties of Acacia, while some are introduced.

Where do these forests get water from?

The water consumption for these forests exceeds 176 million cubic meters per year! 9% of this water comes from sewage water and less than 1% from desalination. 90% is supplied by around 6000 ground water wells. Efforts are on to shift dependence to alternate sources.



Barari Forest



Flora

Most of the species of flora in urban areas are exotic, though you will see large numbers of a few native species of trees too. Efforts to increase the number of native species being planted are under way.

We provide a table listing some of the native as well as exotic species of flora found in urban areas.

Images and brief information about some of the species are provided at the end of this chapter.

Kind of plant	S. No.	Scientific name	Common name
Native species of trees	1.	<i>Prosopis cineraria</i>	Ghaf Tree
	2.	<i>Phoenix dactylifera</i>	Date Palm
	3.	<i>Ziziphus spina christi</i>	Sidr Tree
	4.	<i>Acacia nilotica/arabica</i>	Arabian Gum Tree, Babul
Exotic species of trees	1.	<i>Millingtonia hortensis</i>	Indian Cork Tree
	2.	<i>Azadirachta indica</i>	Neem Tree
	3.	<i>Delonix regia</i>	Flame Tree
	4.	<i>Conocarpus erectus</i>	Damas Tree, Land Mangrove Tree
	5.	<i>Caesalpinia pulcherrima</i>	Red Bird of Paradise
	6.	<i>Citrus limonum</i>	Lemon Tree
	7.	<i>Cordia sebestena</i>	Geiger Tree
	8.	<i>Plumeria alba</i>	Frangipani
Shrubs	1.	<i>Tecoma stans</i>	Yellow Trumpet Bush, Yellow Bells, Ginger Thomas
	2.	<i>Bougainvillea glabra</i>	Paper Flower, Lesser Bougainvillea
	3.	<i>Nerium oleander</i>	Oleander
	4.	<i>Crinum asiaticum</i>	Poison Bulb
	5.	<i>Canna indica</i>	Canna
Other plants	1.	<i>Cathartus roseus</i>	Rosy Periwinkle
	2.	<i>Tagetes sp.</i>	Marigold
	3.	<i>Zinnia elegans</i>	Zinnia
	4.	<i>Petunia x hybridas</i>	Petunia
Ground cover	1.	<i>Rhoeo discolor/Rhoeo spathacea</i>	Boat Lily
	2.	<i>Sesuvium portulacastrum</i>	Sea Purslane
	3.	<i>Portulacarium afra</i>	Dwarf Jade Plant
	4.	<i>Portulaca grandiflora</i>	Moss Rose
Grasses	1.	<i>Paspalum spp.</i>	Biscuit Grass
	2.	<i>Pennisetum setacean rubrum</i>	Purple Fountain Grass



Scientific name: *Prosopis cineraria*
Common name: Ghaf Tree

The Ghaf Tree is a tall, drought-tolerant evergreen native tree found along streets and gardens. It has drooping branches, small grey-green leaves and produces tiny yellow flowers on spikes from March to May and October to January.



Scientific name: *Ziziphus spina christi*
Common name: Sidr Tree, Christ's Thorn Tree, Jujube

The Sidr Tree is about 7-8 m. tall and sturdy, with shiny ovate leaves, and yellowish to orange edible oval fruit with a single stone like the olive.



Scientific name: *Azharidacta indica*
Common name: Neem Tree

The Neem Tree is a tall evergreen tree with innumerable medicinal uses. It has a straight trunk, bright green alternate leaves consisting of several leaves with serrated edges. It produces small white blossoms in the Spring season, followed by small, ovoid shaped yellow fruit.



Scientific name: *Milingtonia hortensis*
Common name: Indian Cork Tree

The Indian Cork Tree is tall with a straight trunk, very few branches and ornamental leaves. It has very fragrant white trumpet shaped clusters of flowers that hang down on straight stalks.



Scientific name: *Cordia sebestena*
Common name: Geiger Tree, Scarlet Cordia

An ornamental flowering plant native to the American tropics, the Geiger Tree is a drought tolerant plant. About 3-7.5 m. tall, it has dark green oval shaped leaves and bright orange tubular flowers.



Scientific name: *Plumeria alba*
Common name: Frangipani

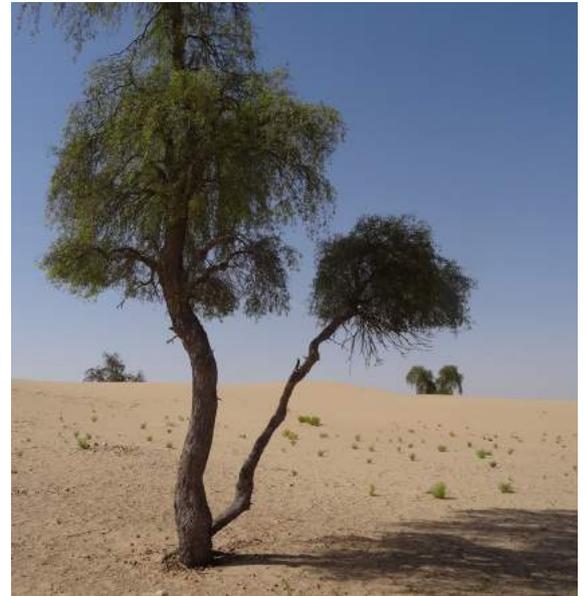
The Frangipani is a small drought tolerant tree. It is about 5-6 m tall, with wide branches, long, oval leaves, and clusters of white or cream, sweet-scented flowers, or even pinkish-red flowers.

Let us take a look at the national tree, the Ghaf Tree.

The Ghaf Tree is a drought tolerant, evergreen, native tree and the sturdiest of species. Its presence indicates underground water. Its roots can tap underground water as deep as 30 m!

Ghaf Fact file

- As many organisms in the desert depend on the Ghaf, it is designated as a “keystone” species in the desert.
- Its fruits, flowers and leaves are an important source of food for animals in the desert as they are rich in proteins.
- The Ghaf can withstand very high temperatures and very dry conditions. The leaves are small to help reduce any loss of water due to evaporation.
- The seeds can germinate only when there is heavy rain. Even then, the seed pods get eaten by animals as they are easily digestible. Hence the tree also propagates itself through asexual reproduction from its lateral roots. You may find an offspring of a Ghaf Tree at a great distance from the parent tree!
- The Ghaf Tree is able to tap water from 30 m. below the ground. Its presence points to the availability of underground water in the desert. So, it is a **‘phreatophyte’** or a plant whose rooting system is in contact with the water table.
- A lone Ghaf Tree in the desert serves as a niche ecosystem by itself. It supports mammals, reptiles, scorpions, rodents, insects and birds. It also enriches the soil and helps fix nitrogen in the air.
- It provides shade to livestock and weary travellers.
- Its leaves are fodder for the camels.
- In the past, the nomads used its leaves in salads.
- Its wood was traditionally used for construction and as fuel.

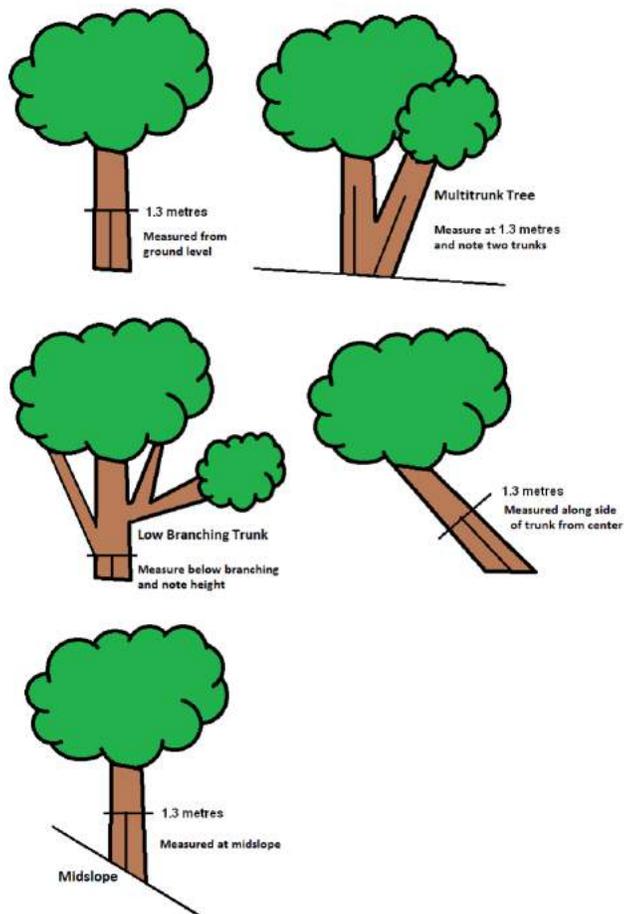


Threats to the Ghaf Tree

The national tree of the UAE, the Ghaf Tree is now endangered due to the lowering of water tables as a result of excessive water extraction and overgrazing by camels near the Ghaf forests. How can you tell? The Ghaf trees in the urban settings have drooping branches that hang low. But in the desert, you are likely to see these trees sport an umbrella shape! Do you know why? This is the favourite food of the camels and they nibble at the branches that hang low and trim them short! This is an interesting riddle that could be posed to your students. Ask them why the trees in the desert seem trimmed in comparison with what they see in the city.

How to measure the Circumference of the Tree Trunk?

1. With the measuring tape, measure 4.5 feet (= 1.3 metre) up the trunk of the tree from the ground. Use a thumb tack to mark the height on the tree.
2. Wrap your string or measuring tape around the tree trunk at 4.5 feet. Make sure the string is straight and tight around the trunk, and mark or cut the circumference on the string.
3. Measure the length of string or note down the marking on the measuring tape (in centimetres) to get the circumference of the tree.



(Image Source: Wikipedia)