



# الوجهات الطبيعية في مصر EGYPT'S PROTECTED AREAS

تم صدور قانون رقم 142 لسنة 1983 الذي يحدد مناطق مصر الطبيعية المحمية لحماية التنوع البيولوجي في مصر. وقد تم إعلان 30 منطقة طبيعية محمية في مصر، وهي:

1- محمية رأس محمد  
2- محمية أبو جادو  
3- محمية الأهراس  
4- محمية إلبو  
5- محمية أسيوط  
6- محمية سيدي بَرقيش  
7- محمية سانت كاترين  
8- محمية تشبه الجبل  
9- محمية باتر  
10- محمية جزر البحر الأحمر الشمالي  
11- محمية وادي الملوح  
12- محمية وادي أسيوط  
13- محمية قبة الحسان  
14- محمية غابات petrified Forest  
15- محمية كهف سنانور  
16- محمية نبق  
17- محمية أبو غالوم  
18- محمية تابو  
19- محمية بحيرات بونيلوس  
20- محمية جزر نيل  
21- محمية وادي دجلة  
22- محمية سيوا  
23- محمية الصحراء البيضاء  
24- محمية وادي الجبال  
25- محمية جزر البحر الأحمر الجنوبي  
26- محمية الجبل الكبير  
27- محمية الدوامة  
28- محمية السلوم  
29- محمية الواحات البحرية  
30- محمية تيرك جيل كنداس

Since the passage of the relevant law (102 of 1983), thirty Protected Areas have been declared in Egypt covering over 13% of the country. The Protected Area Network (PAN) represents most of the habitats and ecosystems of Egypt; however, there are other important habitats, which will be included in the future.

Over the last decades, the United Nations Development Programme (UNDP) has worked with the Ministry of Environment in promoting the establishment and management of this Protected Area Network and fostering the welfare of its local communities.

Biodiversity, outstanding landscapes and geological formations are all included in the PAN. Local people and their cultures, together with potential sites for eco-tourism are also important aspects of the protected areas.

Much effort and resources has been invested in the management of protected areas, so that they fulfil their objectives. Many of the sites now have effective management plans, infrastructure and equipment and are run by professional staff.

## الوجهات الطبيعية في مصر مدى اهتمامنا حسب تاريخ إعلانها:

- |                                    |                                    |
|------------------------------------|------------------------------------|
| 1- محمية رأس محمد                  | 16- محمية ترق                      |
| 2- محمية أبو جادو                  | 17- محمية أبو جادو                 |
| 3- محمية الأهراس                   | 18- محمية طابا                     |
| 4- محمية إلبو                      | 19- محمية جزيرة البريل             |
| 5- محمية أسيوط                     | 20- محمية جزر بحر الشمال           |
| 6- محمية سيدي بَرقيش               | 21- محمية وادي دجلة                |
| 7- محمية سانت كاترين               | 22- محمية سيوا                     |
| 8- محمية تشبه الجبل                | 23- محمية الصحراء البيضاء          |
| 9- محمية باتر                      | 24- محمية وادي الجبال              |
| 10- محمية جزر البحر الأحمر الشمالي | 25- محمية جزر البحر الأحمر الجنوبي |
| 11- محمية وادي الملوح              | 26- محمية الجبل الكبير             |
| 12- محمية وادي أسيوط               | 27- محمية الدوامة                  |
| 13- محمية قبة الحسان               | 28- محمية السلوم                   |
| 14- محمية غابات petrified Forest   | 29- محمية الواحات البحرية          |
| 15- محمية كهف سنانور               | 30- محمية تيرك جيل كنداس           |

## Egypt's Protected Areas listed chronologically by declaration date

1. Ras Mohamed National Park
2. Zaranki Protectorate
3. Ahrash Protectorate
4. Elba National Park
5. El Omayed Biosphere Reserve
6. Saluga and Ghazal Protectorate
7. St. Katherine National Park
8. Ashtum El Gamil Protectorate
9. Lake Qarun Protectorate
10. Wadi El Rayan Protectorate
11. Wadi Alag Protectorate
12. Wadi El Assuti Protectorate
13. El Hassana Dome Protectorate
14. Petrified Forest Protectorate
15. Sannur Cave Protectorate
16. Nabaq Protectorate
17. Abu Galum Protectorate
18. Tabu Protectorate
19. Lake Bunilus Protectorate
20. Nile Islands Protectorate
21. Wadi Degla Protectorate
22. Siwa Protectorate
23. White Desert National Park
24. Wadi El Gemal National Park
25. Red Sea Northern Islands Protectorate
26. Giff Kebir National Park
27. El Dababiya Protectorate
28. El Salum Protectorate
29. El Wahal El Bahreya Protectorate
30. Mount Kamel Meteor Protectorate

LIBYA

السودان SUDAN

السعودية SAUDI ARABIA

البحر الأحمر RED SEA

27°E 28°E 29°E 30°E 31°E 32°E 33°E 34°E 35°E 36°E 37°E



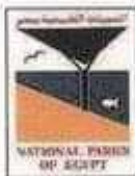


# Flora of Nabq protected area





Published by  
EEAA Egyptian Environmental Affairs Agency  
Cairo / Egypt. October, 2000

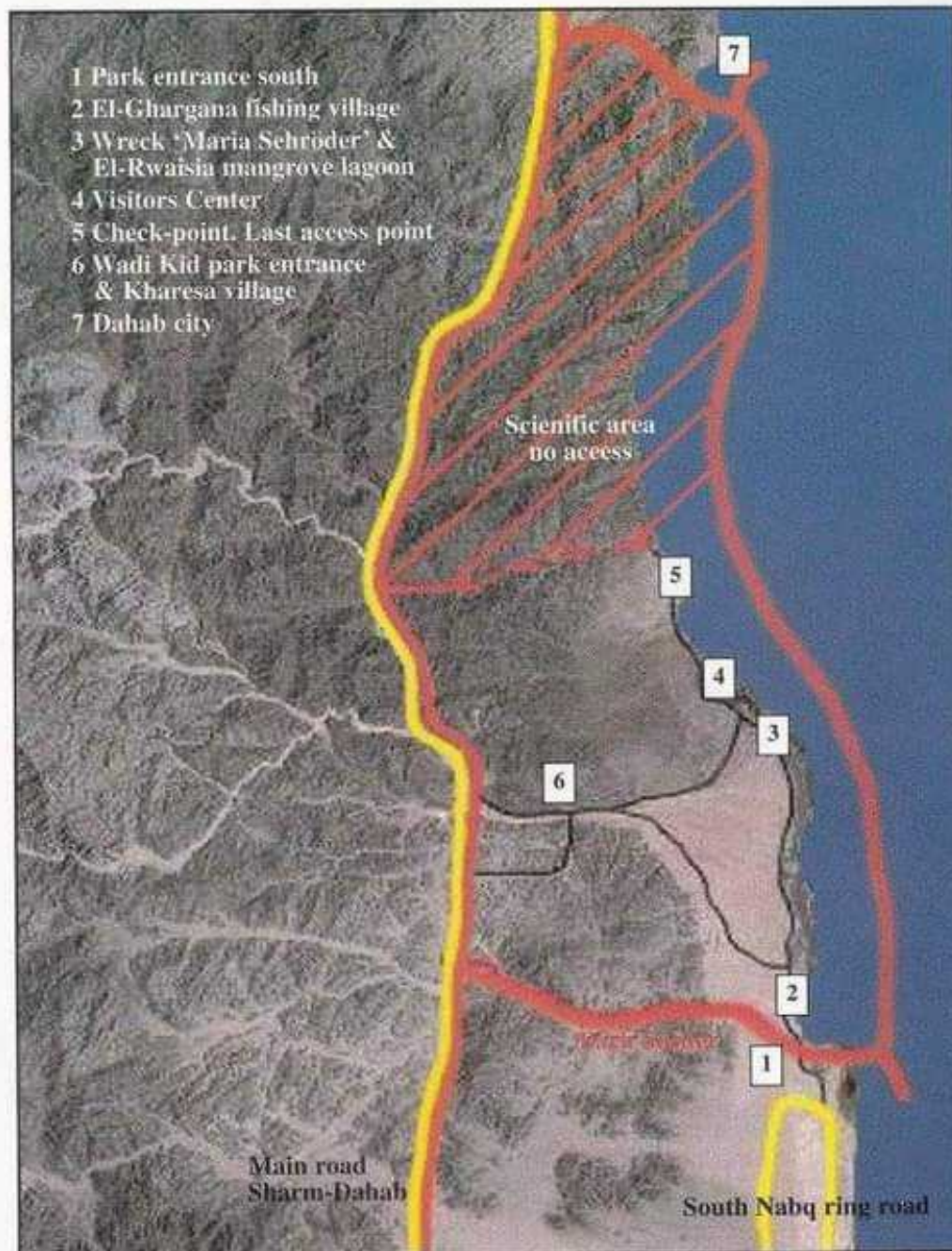


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Special thanks to  
Dr. Alain Jeudy de Grissac for his support  
Prof. Loutfy Boulos for reviewing all botany details





## Nabq overview

Nabq was declared a protected area in 1992 with the status Managed Resource Protected Area (MRPA). This term is an IUCN classification for a protected area managed mainly for sustainable use of natural ecosystems. It is an area containing mostly unmodified natural systems, managed to ensure long term protection and maintenance of biological diversity, while at the same time providing a sustainable flow of natural products and services to meet community needs.

Nabq Protected Area lies 35 km north of Sharm-el-Sheikh and is an outstanding natural area (600km<sup>2</sup> containing many unique systems of linked ecosystems. These include: coral reefs, seagrass beds, mangroves, salt marshes, brackish water oases and dunes covered by a unique vegetation. There are also a variety of desert ecosystems including mountains, wadis, plains and stone/gravel deserts.

Nabq is home to approximately 134 different flowering plants, six of which are endemic. There is also a good representation of fauna, e.g. gazelle, ibex, hyrax, reptiles, invertebrates, etc.

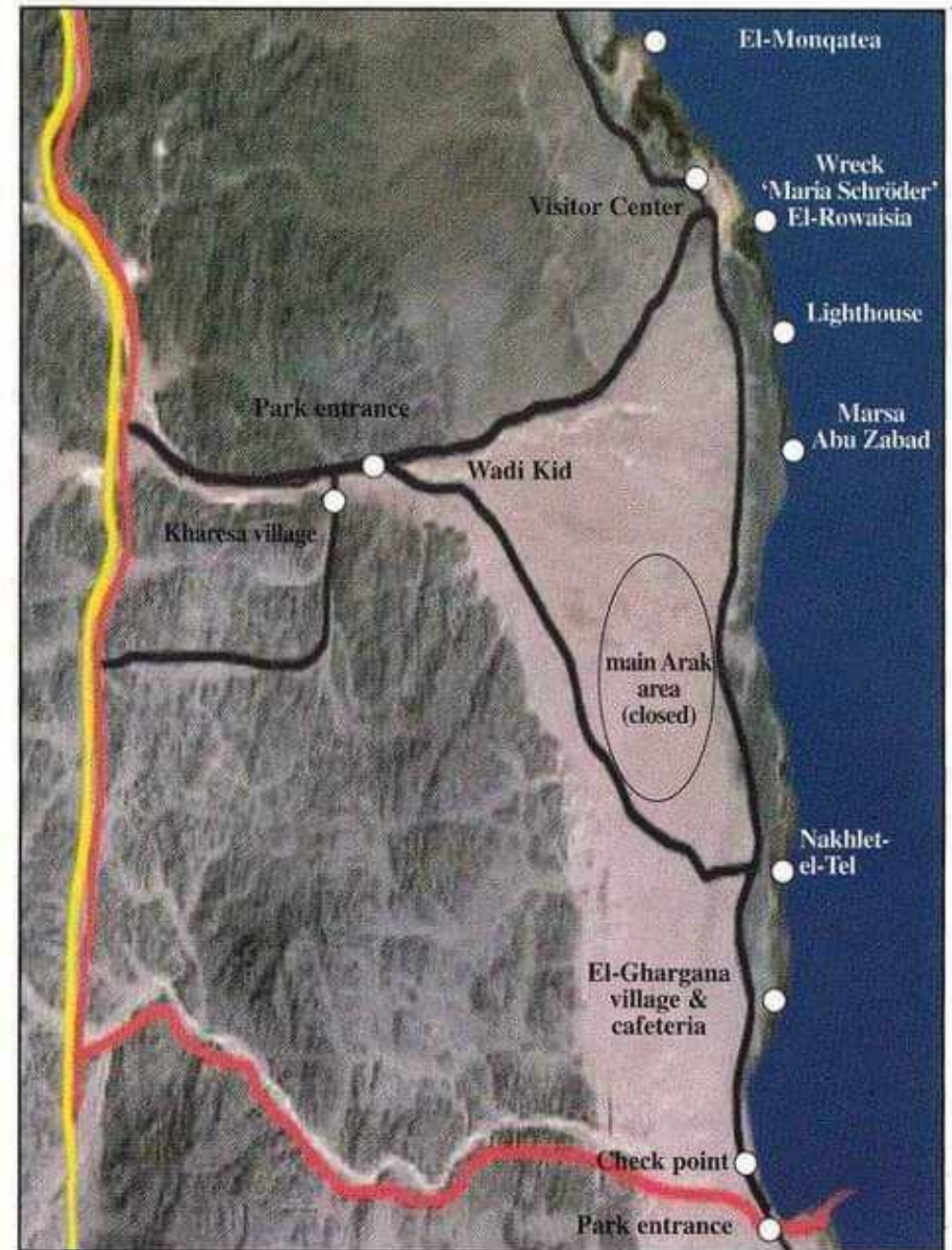
More information on these and about Nabq in general may be obtained through the Nabq Visitor Center or the Park Office and staff.

While in the park, visitors are encouraged to follow the Park's regulations:

- no collecting, removing or damaging of any natural resource
- no driving off marked tracks or on any beach
- no littering
- please do not climb on any dunes and respect designated walkways

The importance of Nabq as a protected area lies mostly with its extensive mangrove stands and its unique Arak dunes.

Close proximity of desert and maritime environments create a very special flair and unique beauty.





## Vegetation habitat types

**Coastal fossil corals** cover much of the shoreline and are home to a multitude of plant species, notably the black mangrove *Avicennia marina*, macroalgae and seagrasses.

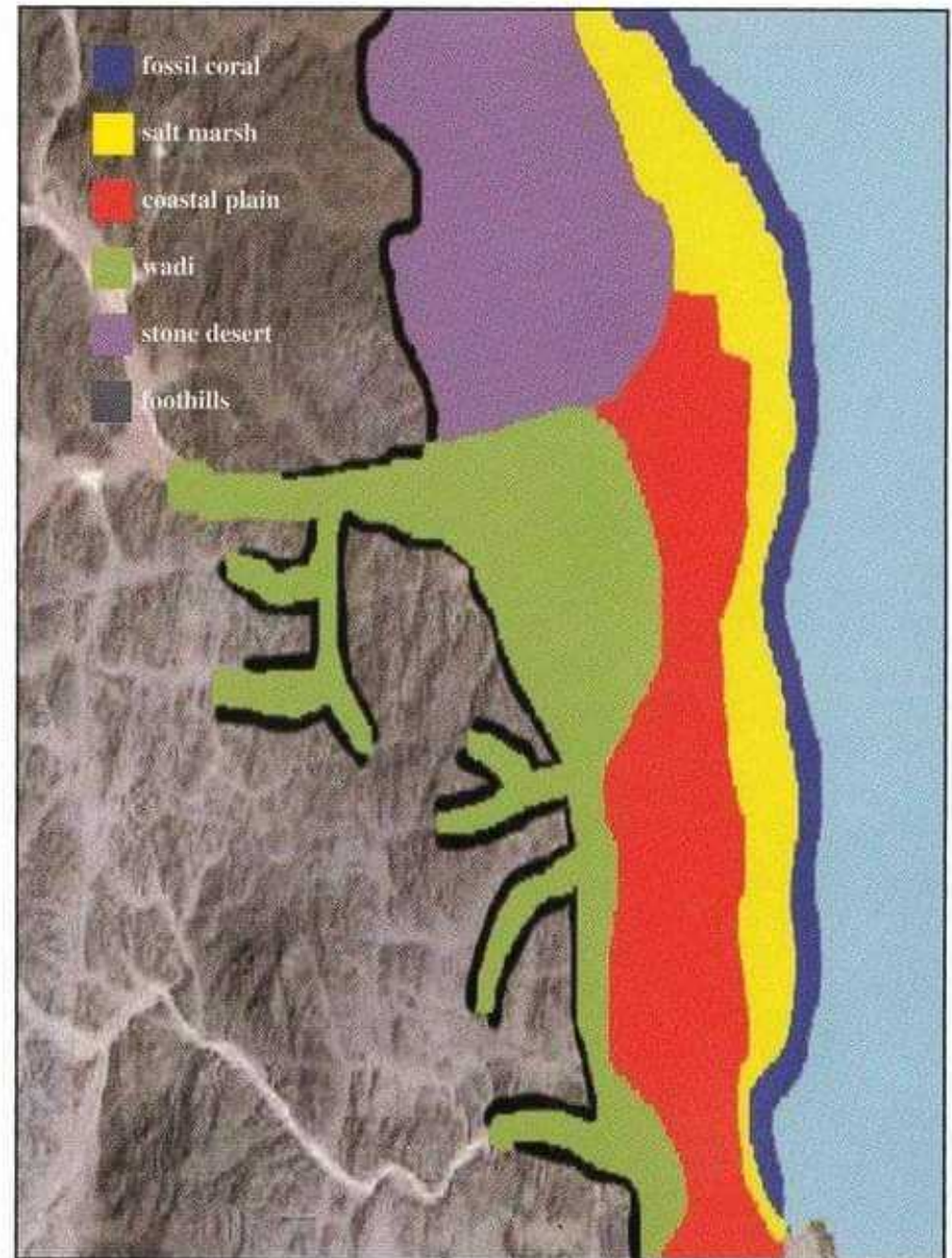
**Hypersaline marsh areas**, called sabkhas, can be divided into two types: wet and dry. Wet types become submerged due to their proximity to the high tide mark. These areas are occasionally populated by adapted, terrestrial mangroves (*Avicennia marina*). Dry marsh areas do not get flooded during high tide but, nevertheless, show a high salt content that varies from location to location. Vegetation here includes *Avicennia marina* (terrestrial) and a few salt-tolerant species like *Zygophyllum album*, *Nitraria retusa* and *Limonium axilare*.

**Stone deserts** allow very limited plant growth. Only on sites where there is some sediment cover do hardy plants exist, e.g. *Zygophyllum coccineum*.

**Coastal plains** present a variety of sub-habitats that range from sand dunes to silted catchment areas and runnels with different size boulders. Accordingly, the flora is diverse and consists of e.g. small annual herbs (*Showwia purpurea*) and also of much larger perennial shrubs, e.g. the Arak (*Salvadora persica*). Sand dunes (nebkas) can be further subdivided by their salt content, which is ruled by their distance to groundwater and to the shore. Both factors determine the species able to colonize the dunes.

**Wadis** run mostly from west to east and open directly to the coastal plains. They show an intricate network of small tributaries. Serving as flow channels for the occasional rainfall, they show the most favorable habitat for plant growth and accordingly, the majority of the vegetation is found there.

**Foothills and mountain sides** consist mostly of sandstone and granite rocks, having an infinite number of fissures, cracks and crevices. A quite common plant here is *Capparis sinaica*.





## Dune system habitat closeup

Sand dunes, so called nebkhas, are built by several plant species, depending on the salinity and water budget of each dune. Nebkhas are the most characteristic and unique habitats of the alluvial fan in the Nabq protected area.



*Z. album* dune system

This is the reason why dunes are inhabited by only one plant species.

With increasing distance to the shore, the salinity of the soil decreases. Further inland, plants like *Tamarix aphylla* and *Salvadora persica*, grow in their specific habitats. Both need access to fresh water in order to survive. Dune height is also a factor but only of subordinated significance. For the Arak it is much more important to have access to groundwater in deeper soil layers.

Dune building plants of the dry marsh zone (sabkha) all need to be salt- and draught tolerant to a greater or lesser degree. The salinity of each dune is a result of mainly two factors: distance to groundwater and distance to the shore.

Examples of plants in the sabkha area are: *Zygophyllum album*, *Nitraria retusa* and *Limonium axilare*. Each of them occupies its own special habitat which depends upon soil quality.



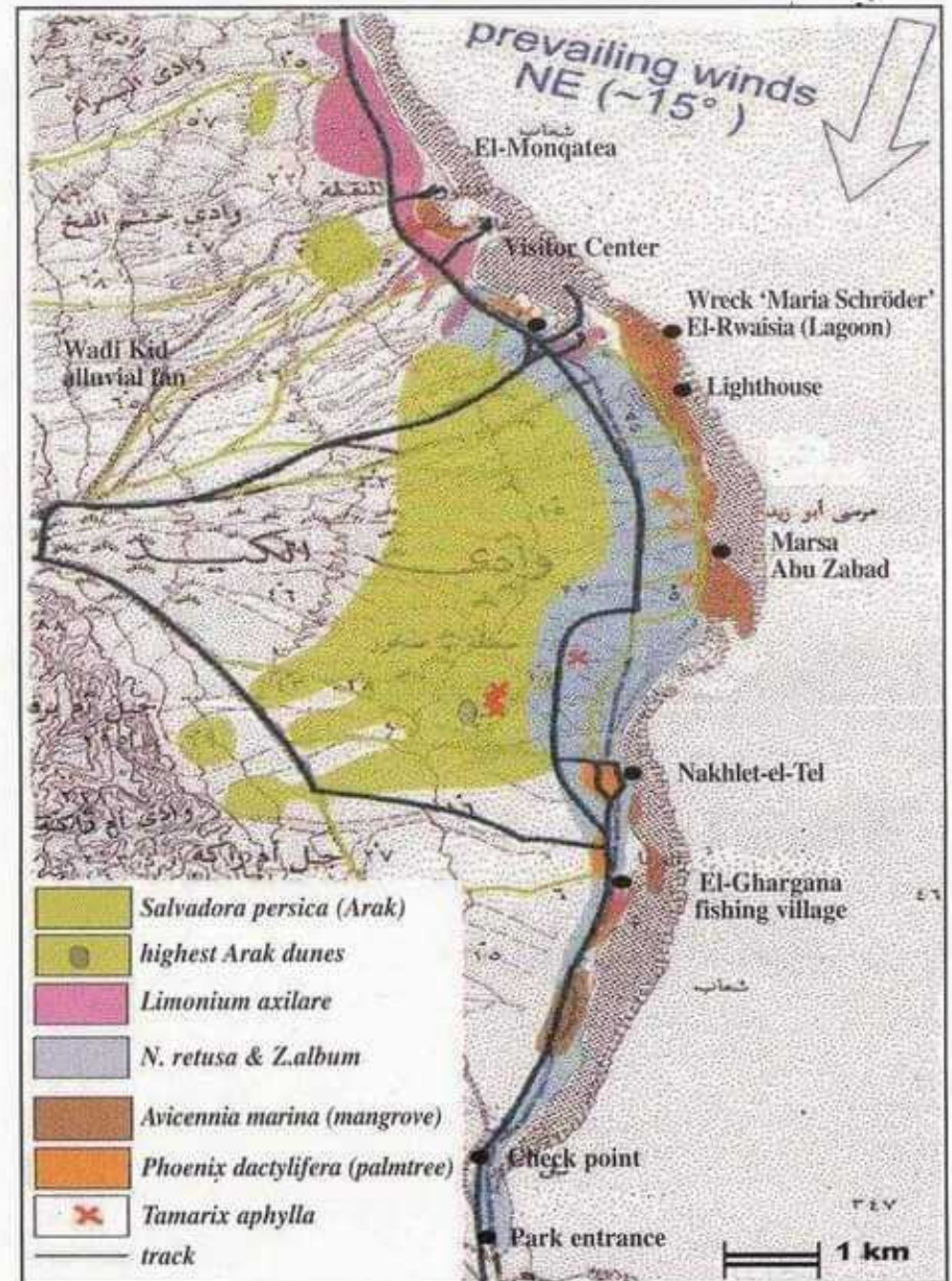
*L. axilare* dune system



*N. retusa* dune system



*S. persica* dune system





## The coastal salt marsh / Sabkha

Sabkha, the coastal salt marsh, is a habitat under influence of marine saltwater, either via surface floods and or via subsurface intrusion. The few plant species that are able to exist in this extremely harsh environment have the ability to stabilize accumulated sand by forcing shoots and roots through each new layer. They are also highly salt tolerant (halophytic) and drought resistant.

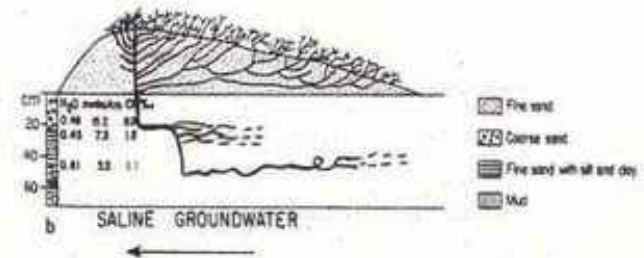
Salt marshes account for about 3% of the Egyptian coastline. This unique environment is highly endangered of being destroyed by coastal reclamation and through reckless behavior by visitors, e.g. off-road driving, littering.



*Zygophyllum album*

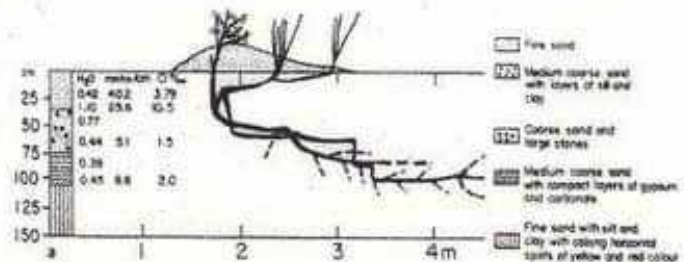
### *Zygophyllum album*

A low growing, succulent, shrub of silvery-green to blue-green appearance. Local names include 'ratrayt', 'bal-bal', 'hamd', 'tarteer' and 'batanaat'. This perennial plant (family Zygophyllaceae) prefers soils consisting of fine clay or sand and is therefore usually found in close proximity to the beach. The root system develops below the highest saline layer from approximately 15 - 60cm. *Zygophyllum album* colonizes areas where just a little sand is locally deposited and starts building small dunes. It is a real pioneer species.



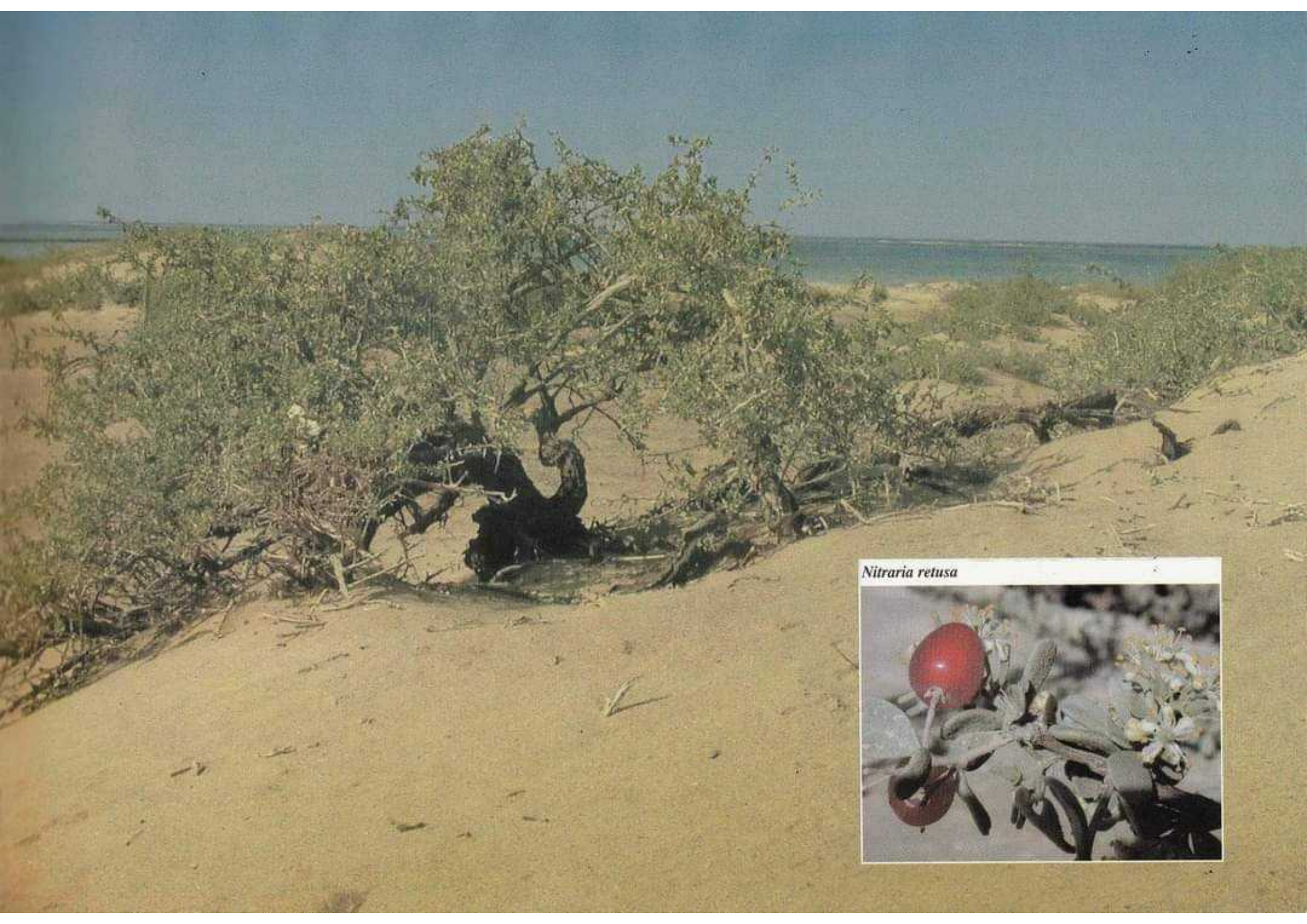
### *Nitraria retusa*

*Nitraria retusa* has many local names e.g. 'ghar-daq', 'agel-gaam', 'saha-noon', or 'tim-meir', 'ed-deeb' for the fruits. Large communities dominate the sabkha belt. It grows up to



120cm high, covering and stabilizing large and small sand dunes. This perennial shrub (family Nitrariaceae) has light green, almost silvery leaves, and tiny, yellowish flowers. During the fruiting season, pea sized red berries appear. These berries are edible, although quite sour in taste. The salt tolerance of *Nitraria retusa* can be compared to that of *Zygophyllum album*, but it needs a coarser substrate of sand or clay. It is therefore found less close to the beach than *Zygophyllum album*. No active roots develop above a depth of 30 - 40cm where there is usually little water and a lot of salt. The main roots appear at a depth of 1m, where the plant can tap into moist soil layers.





*Nitraria retusa*



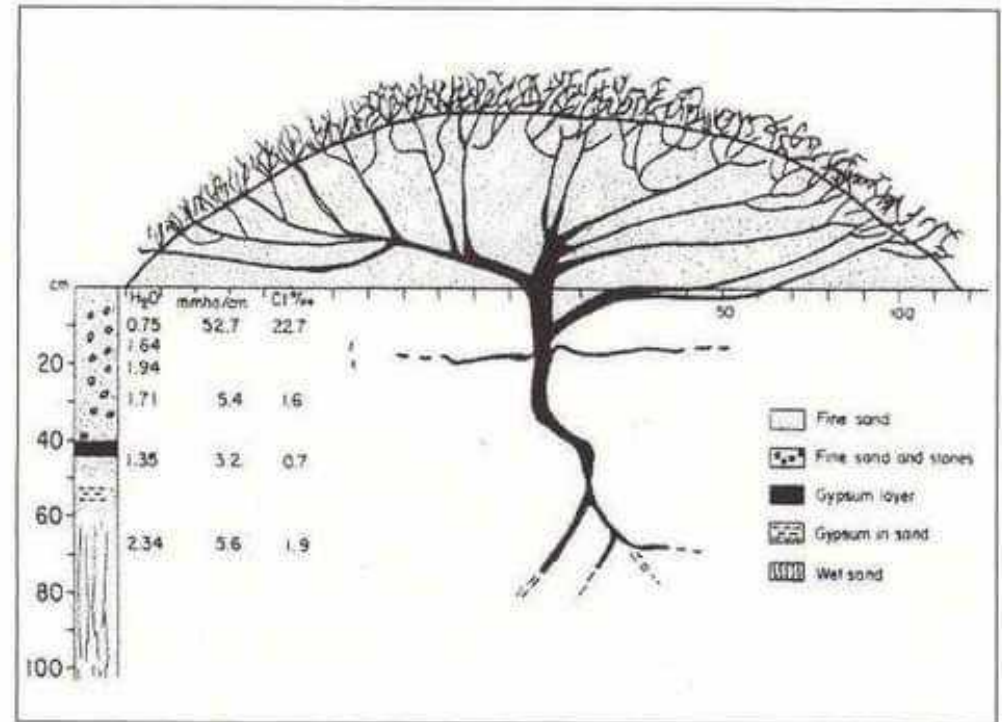


*Limonium axilare*

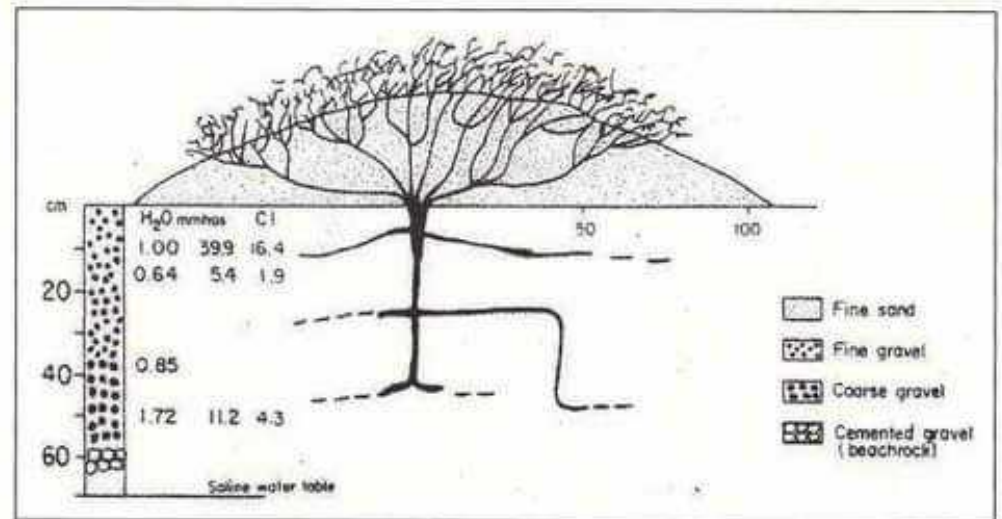
Large communities of *Limonium axilare* can be found in the dry salt marsh zone, especially south of the Bedouin village 'El-Ghargana' and the area around the parks Visitors Center.

This perennial, low-growing shrub of the family Plumbaginaceae is also called marsh rosemary, or, in Arabic, 'shaleel'. Come early summer, clusters of white to pink, papery flowers appear. It is the most salt tolerant plant appearing in the sabkha belt and also builds and stabilizes small to medium sized dunes.

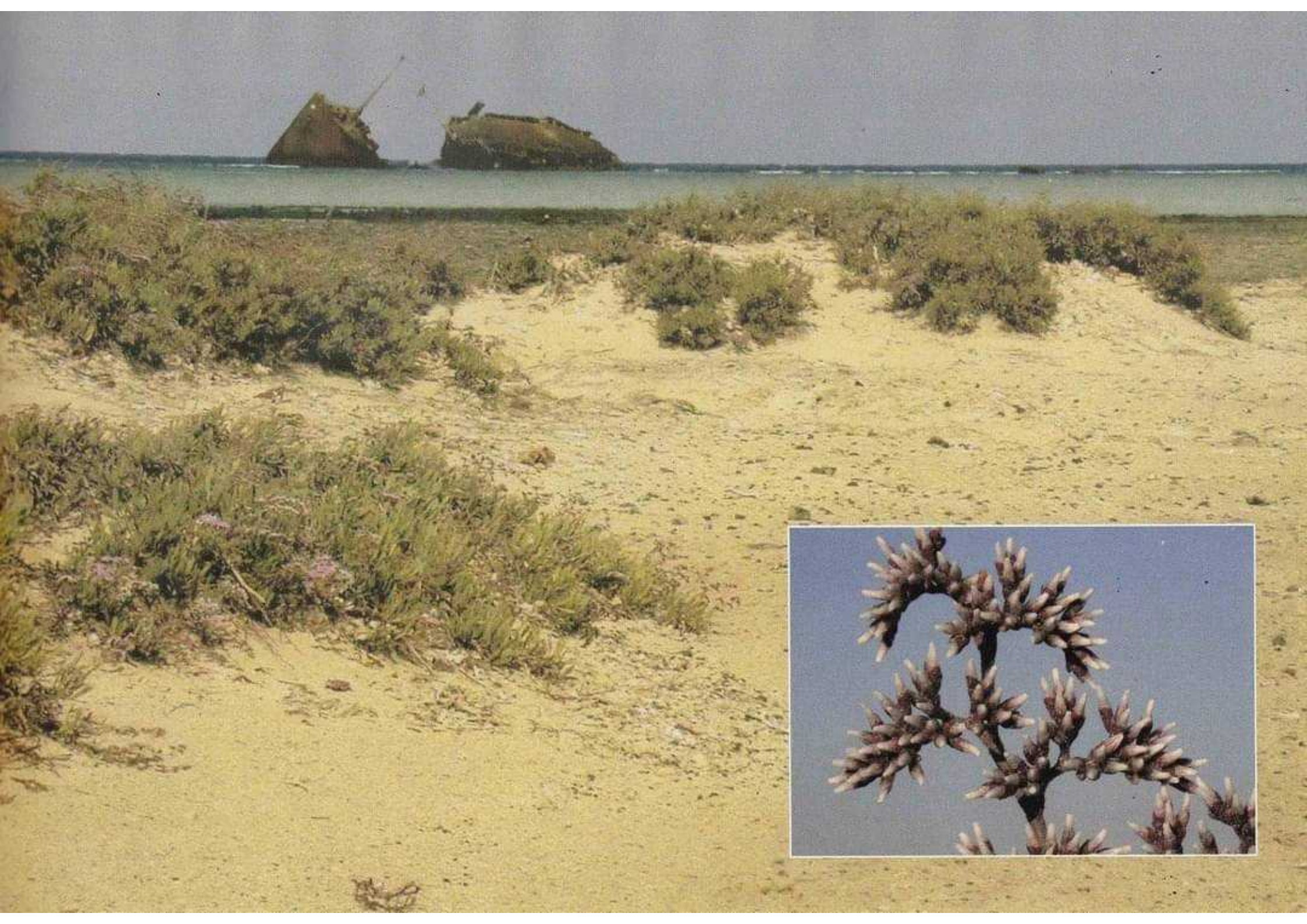
The roots force their way through the upper, most saline soil layer and develop a horizontal root system only at a depth of 20 - 90cm. Here the salt content is much reduced and the substrate remains moist.



Two examples of *Limonium axilare* root systems









## The mangroves

Mangrove trees, called 'shoora' by the locals, are found in two distinct locations in Sinai: one community in Ras Mohamed and four large communities on the Nabq coastline, comprising the northernmost mangrove stands in the Indo-Pacific region.

The four Nabq communities are found at the Bedouin village of El-Ghargana, Marsa Abu Zabad, El-Rwaisia and El-Monqatea. Probably the most famous stand (El-Rwaisia) is situated in front of the wreck of the 'Maria Schröder' and forms a beautiful, tranquil lagoon ideal for an extended visit and a swim.

*Avicennia marina* (family Avicenniaceae) is an evergreen tree growing up to 6m in height, showing the typical dark brown aerial roots that reach beyond the high tide mark. These roots form an intrinsic network which can best be appreciated at low tide. The mangrove tree is a natural desalinator. With the help of its aerial roots and leaves it filters the sea water so that enough moisture is available for growth.

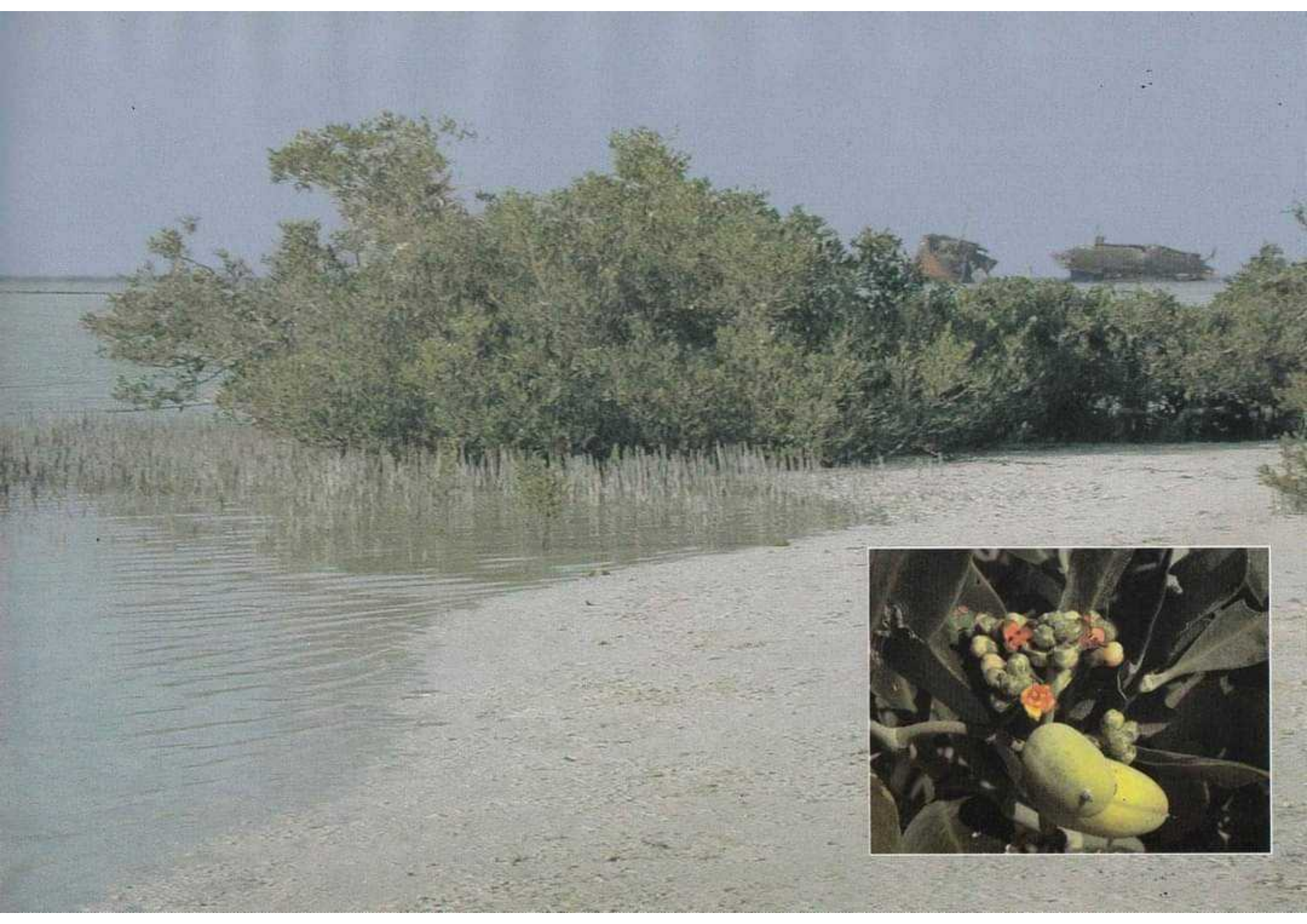


Mangroves on the Red Sea grow under extreme conditions of high salinity and low winter temperatures. Some of the Nabq mangroves have adapted to this harsh environment by becoming completely terrestrial, now forming part of the coastal marsh and dune vegetation (sabkha), having lost their aerial roots altogether.

*Avicennia marina* has elliptical, leathery leaves that are dark green on the front and grayish underneath, often crusted over with salt crystals. The tiny flowers are orange with hardy, exerted stamens. Fruits appear as green 'nuts'. When ripe, they drop into the water and the tides wash them to new locations. Young mangrove shoots are easily identified throughout the Nabq coastline.

Mangrove stands in Egypt form an important and sensitive ecosystem, providing an ideal environment for young fish and invertebrates, as well as a nesting and resting site for migratory and resident birds.







## The Arak dune system

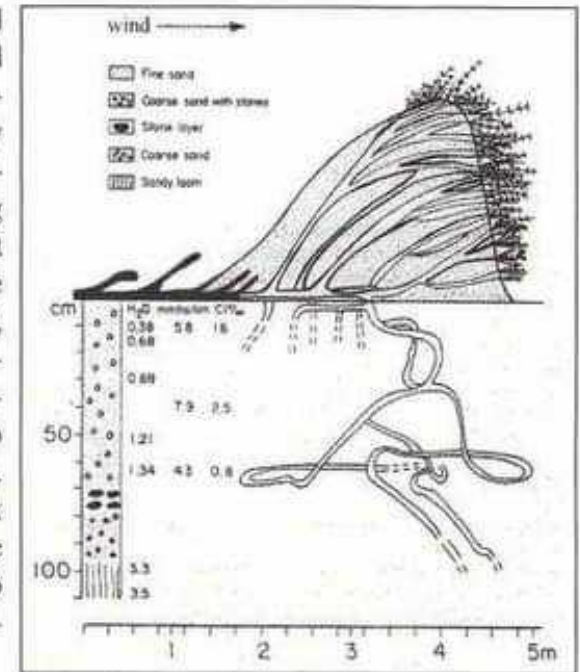
Unlike the dune building plants in the salt marsh zone, the Arak (*Salvadora persica*) needs a source of fresh-water to thrive. It is therefore only found further inland, on the dunes north and west of Nakhlet-el-Tel.

The evergreen Arak, called by Bedouins 'lish-lish', 'hemer' or 'meswaaq', is found only rarely in Sinai - apart from the extensive community at Nabq, which forms the largest stand in the Indo-Pacific region.

Traditionally, this plant was used extensively in folk medicine: a tonic prepared from the bark for treating poisonous bites; dried powdered leaves mixed with a little flour and honey as an anti-syphilitic; the fruit (very bitter) for stomach troubles and as a febrifuge; young twigs striped of any leaves as toothbrushes and toothpicks.



The Arak stabilizes accumulated sand via extensive root and branch systems and also by trapping old layers of leaves and dry stems. Due to eroding and accumulating processes by prevailing winds (NNE to SSW), plant growth increases towards the south. North of the Arak area, plants grow very low and creeping. Dune height increases towards the center of the area to reach a maximum of about 10m. To the south-west of the Arak dunes, dune shapes become sometimes overhanging due to extreme erosion on the wind exposed side.

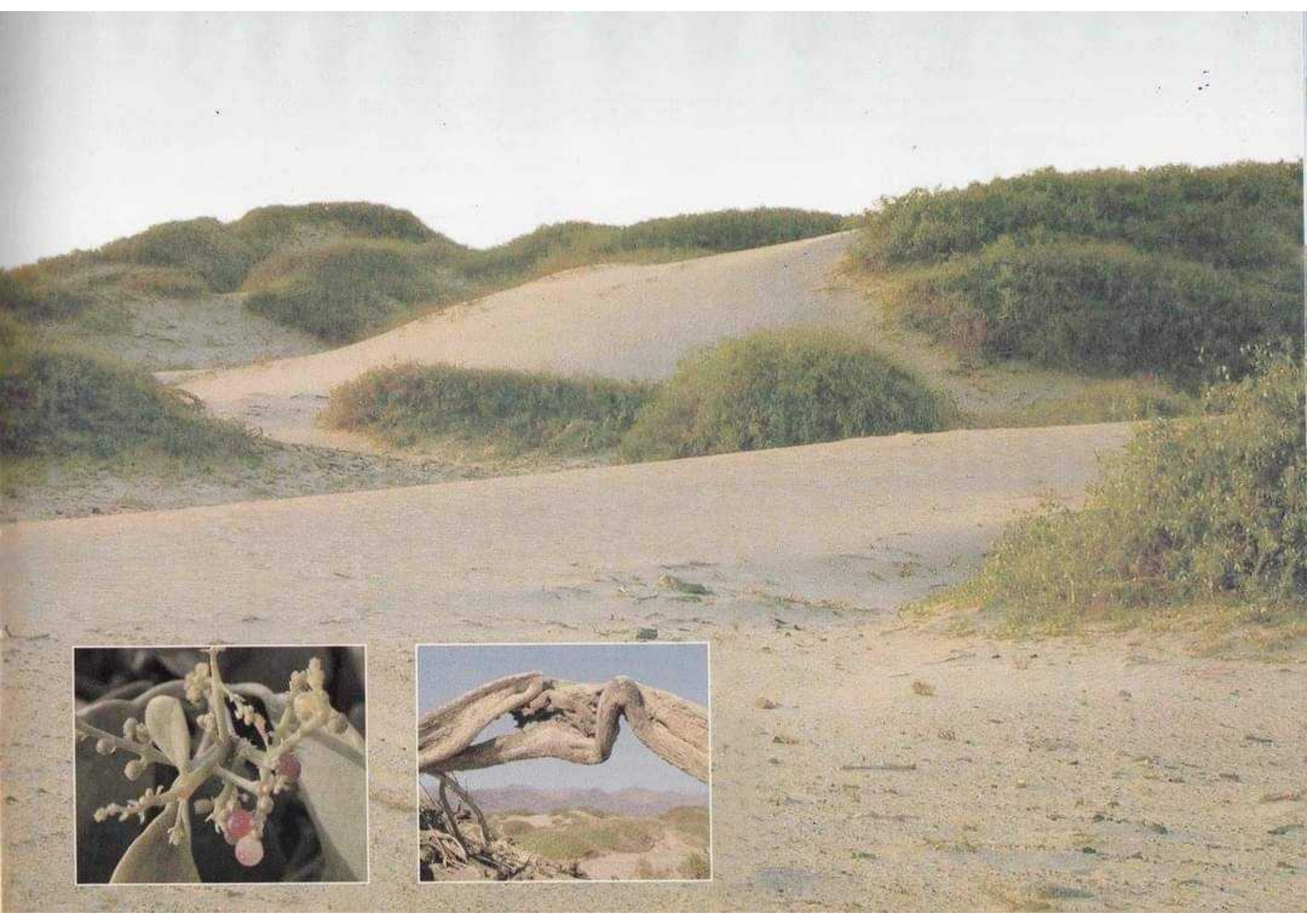


*Salvadora persica* root system

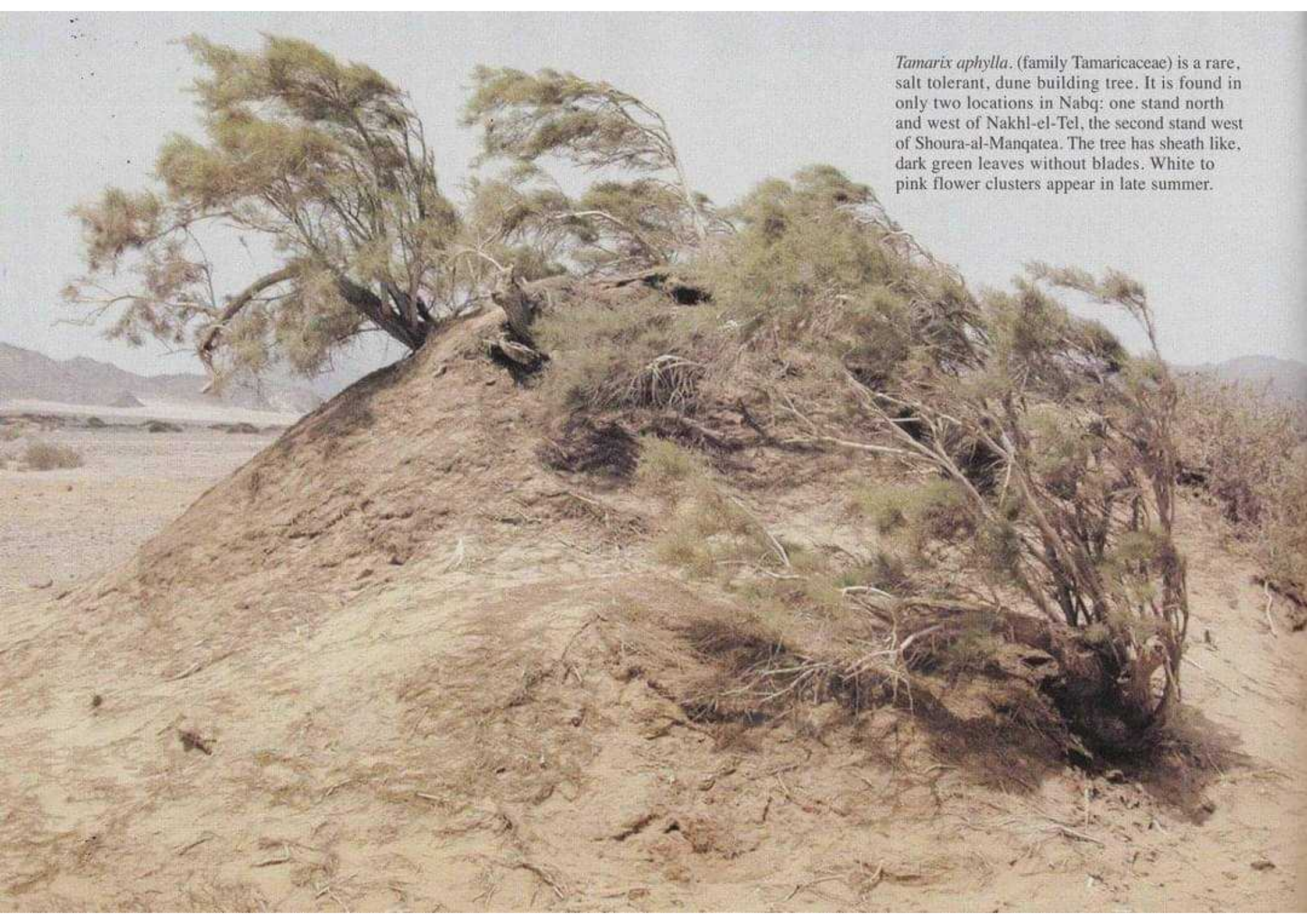
The description of 'tree' can be confusing, as this plant rather grows sideways, climbing and covering dunes. The Arak has, however, a large woody trunk, the size of which depends on the age of the plant. Most trunks are twisted in a snake-like manner and split in several sections that rejoin again. Inside the dune, the Arak forms many side branches. The tip of each branch and its leaves stick out of the dune. These die off as the wind lays open the northern, wind-exposed parts of the dune, without killing the plant. In this way, the dune and its Arak grow and move towards the south in accordance with the prevailing winds.

The Arak has opposite pale green leaves. Tiny white flower clusters appear in spring to be followed later by small, white fruit that redden upon ripening. Leaves and fruit are edible, but quite pungent and bitter.









*Tamarix aphylla*. (family Tamaricaceae) is a rare, salt tolerant, dune building tree. It is found in only two locations in Nabq; one stand north and west of Nakhl-el-Tel, the second stand west of Shoura-al-Manqatea. The tree has sheath like, dark green leaves without blades. White to pink flower clusters appear in late summer.



## Coastal plains and wadis

The windswept, extremely dry, rocky, elevated coastal plains show very little vegetation. The more sheltered, sandy and nutrient rich wadis and wadi runnels, however, present a totally different picture. An astonishing number of plants grows here. Some appear only after a spell of rain, like many of the beautiful ethereal desert flowers, others can be enjoyed even after extended periods of draught.





## Vegetation of Wadis

Wadis are surface channels and erosion paths in stone deserts and form the most favorable habitats for plant growth in arid regions.

After the occasional rainfall, they carry surface and subterranean runoff water. Salt crystals and nutrients are washed out, especially in the upper-course of the wadi, and carried to lower lying parts. The process of evapo-transpiration results in upper wadis getting more moisture than lower ones. Also, the amount of salt deposits towards the end of the wadi increases.

Interestingly, the center of the flow path is almost devoid of vegetation. Most sedimentation and erosion takes place here. Plants generally prefer the border areas of these flow paths, away from the danger of being flooded or buried.

Rain occurs only very sporadically in Sinai and most plants rely on deep, penetrating roots, able to tap sources of moisture. This is especially true for all perennial plants that are to some greater or lesser extent drought-resistant. Short lived annuals appear only after winter rains.

The characteristic species of wadi vegetation are called the **Acacia-Panicum-community** and include *Acacia raddiana*, *Panicum turgidum*, *Iphiaea scabra*, *Blepharis edulis* and *Pulicaria crispa*.

This type of community is typical for wadis under moderate conditions. Soils generally show a low salinity and a relatively high moisture content, especially in the upper wadi reaches.

As soon as the salinity of the soil increases, as in lower lying parts of the wadi, species like *Calotropis procera*, *Zilla spinosa* and *Zygophyllum coccineum* appear. They are the character plants of the saline sub-type of the Acacia-Panicum-community.

### *Zygophyllum coccineum*

This hardy, drought resistant, light green perennial plant with succulent leaves belongs to the family *Zygophyllaceae*. It is a 'cousin' of *Zygophyllum album*.

This plant is an extremely adaptable species, found in almost any habitat - from the extremes of the marsh zones to even the desolate areas of the stone desert. It is one of the most common plants in Sinai.

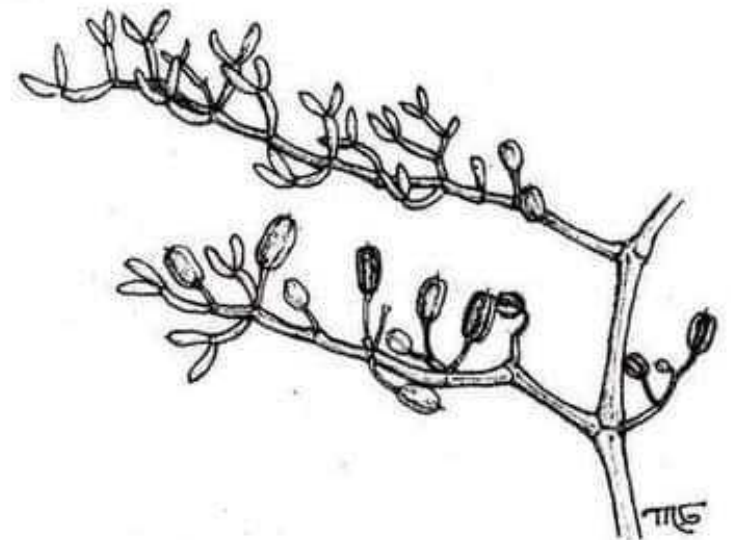
As soon as there is a little sedimentation cover and a bit of moisture, *Zygophyllum coccineum* seedlings appear. This pioneering ability is only surpassed by *Zygophyllum album*. It does, however, prefer less salty and coarser substrate than *Zygophyllum album* and therefore populates areas of silt or sand deposits further inland.

Under good conditions

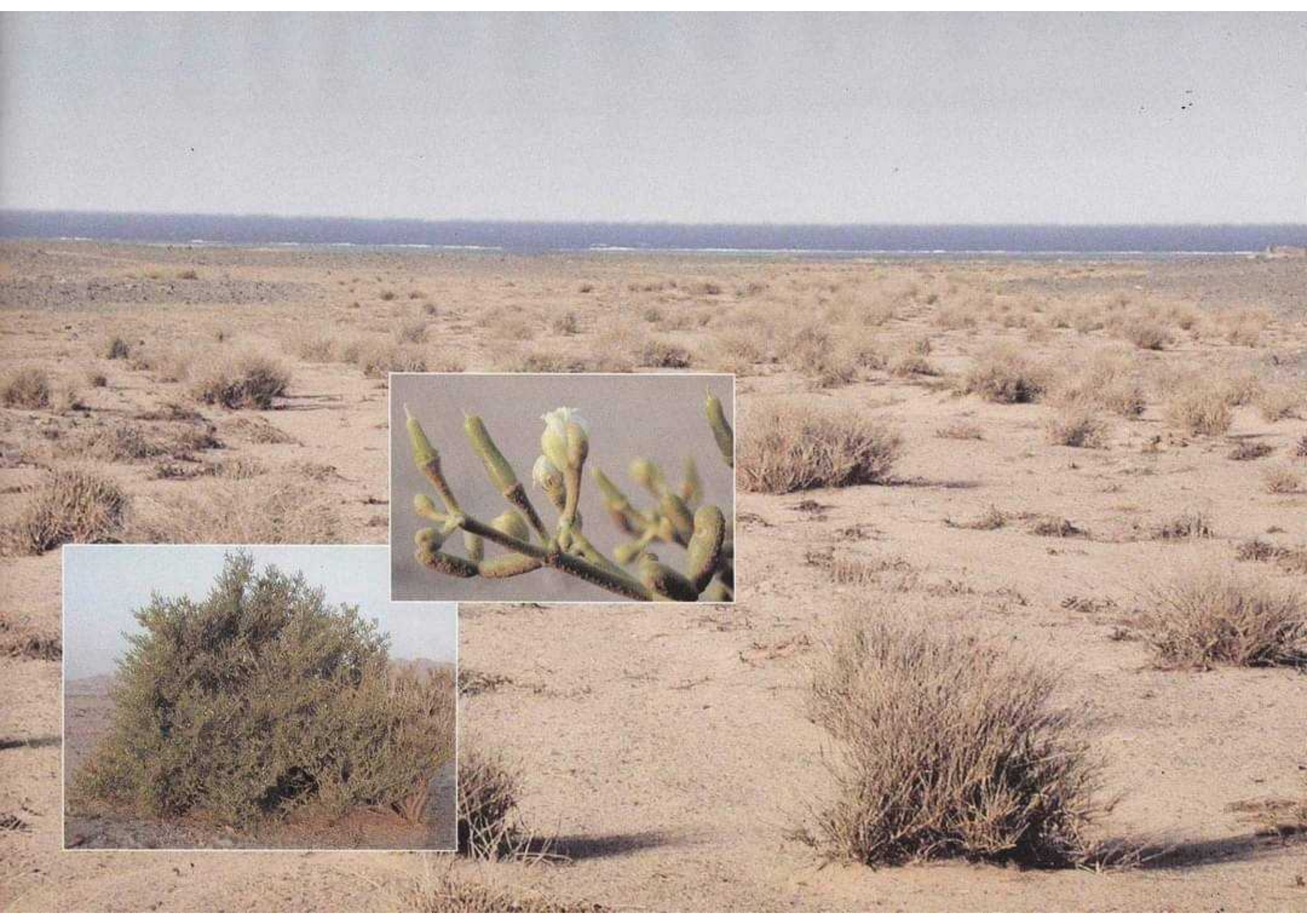
*Zygophyllum coccineum* can grow to a stately size of one meter and a circumference of up to three meters, possibly more. However, smaller specimens are the rule, sometimes showing just a few side branches.

In spring to early summer it produces minute

white to cream colored flowers. These are followed later by small seed pots. Bedouins call this plant variously 'qarmelaen' or 'karamaani' and use the seed pots in folk medicine for rheumatism, gout, asthma, hypertension, and as a diuretic, anti-thelmic, and anti-diabetic.







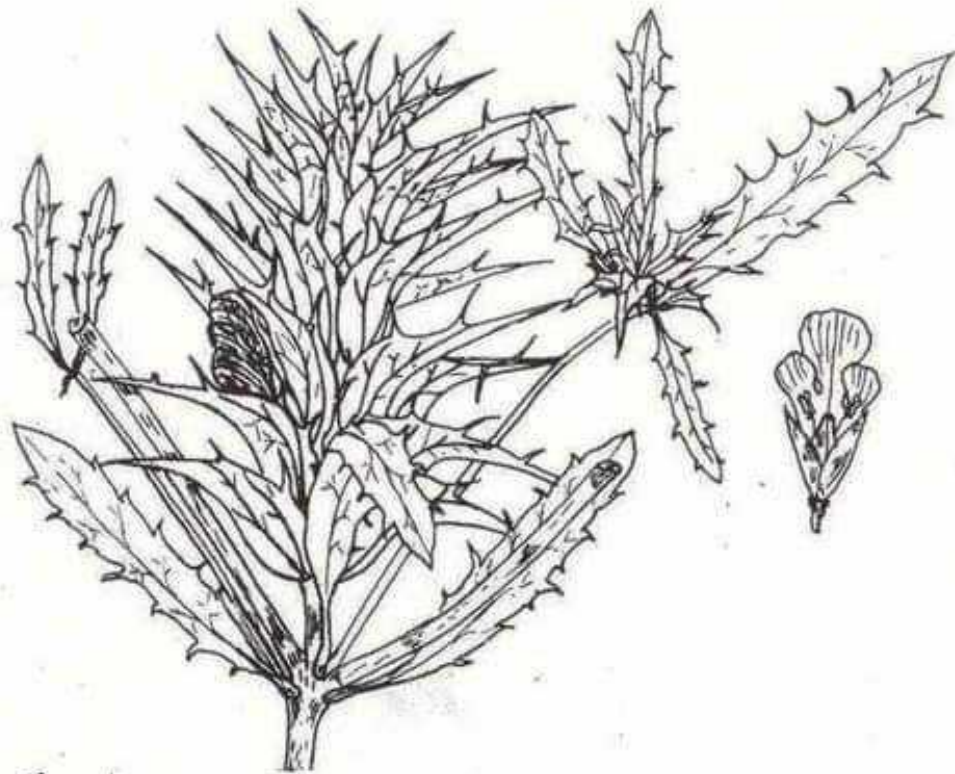


### *Blepharis edulis*

This thistle-like, spiny herb is a quite rare perennial found in sandy wadi runnels. It belongs to the figwort family Acanthaceae.

*Blepharis edulis* has silvery-green, spiny and prickly toothed leaves and spectacular, approximately 2 cm long purple - blue flowers, consisting of a short tube and a solitary broad, flat limb.

Local names are: 'shoak ed-dab', 'shoak ed-deeb' and 'saha'.



### *Rumex cyprius*

Called 'hommeth' by the local Bedouins, this beautiful plant of the Buckwheat family Polygonaceae is not only pretty to look at, it is also edible. Young plants are sometimes picked and added to salad. Goats and sheep graze on it.

*Rumex cyprius* is an annual herb with dark green, succulent leaves of oval-triangular shape and only appears after a spell of rain. Soon thereafter it produces spectacular, deep red winged fruits.

It is such a pretty plant, that some botanists have even seen its potential as an ornamental.

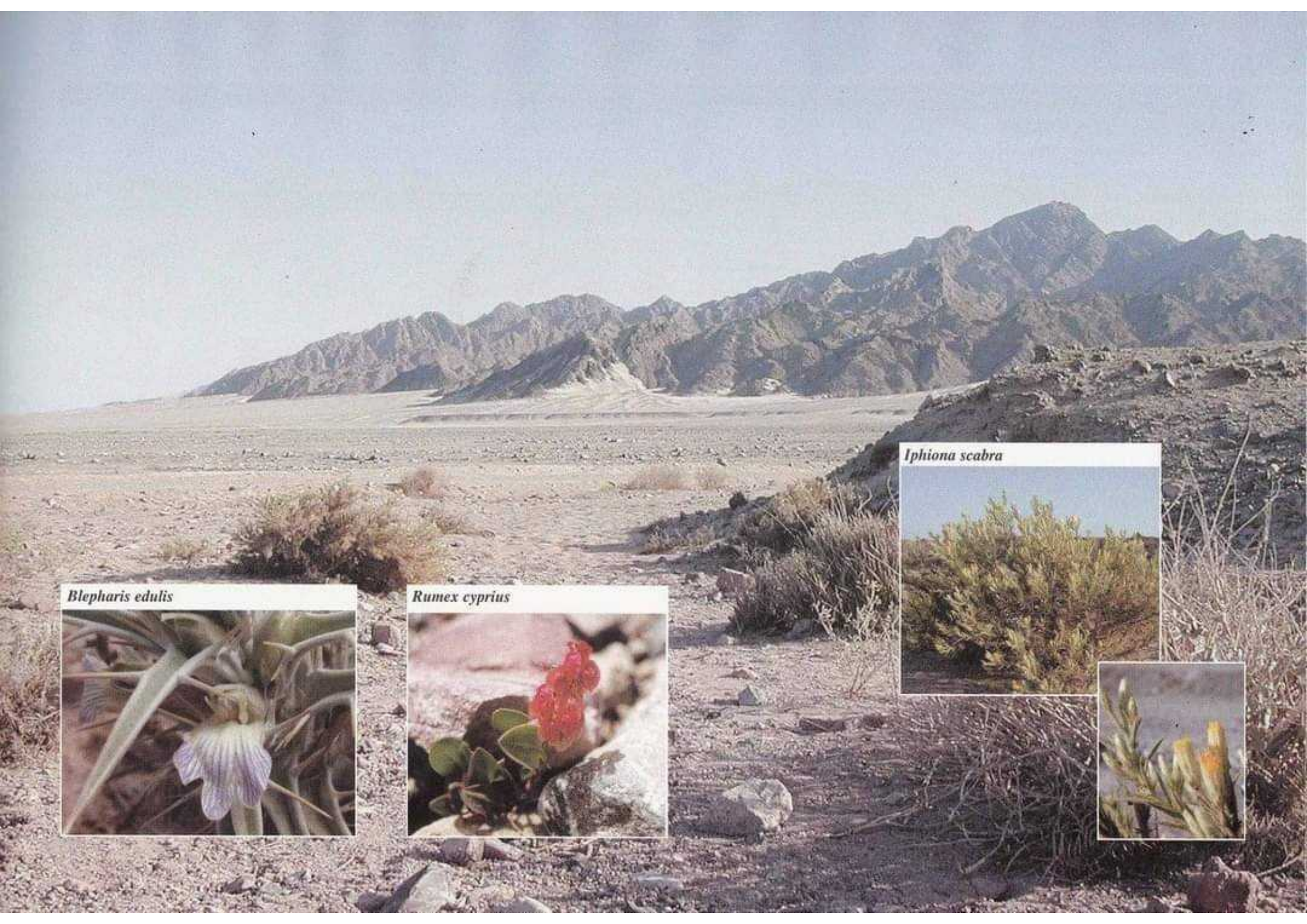


### *Iphiona scabra*

Standing close to one of these plants in the middle of the afternoon heat, one does not need eyes to identify it, one can actually smell it. This scabrous, densely leaved shrub has needle-like leaves that give off a characteristic, pungent scent.

It is a common annual shrub and one of the classic species of wadi communities. A member of the large family of Compositae, *Iphiona scabra* grows up to 70cm high. Narrow yellow flowers appear from spring to summer. Called 'dhafra' by the locals, this plant is used as animal fodder and fuel.





*Blepharis edulis*



*Rumex cyprius*



*Iphiona scabra*



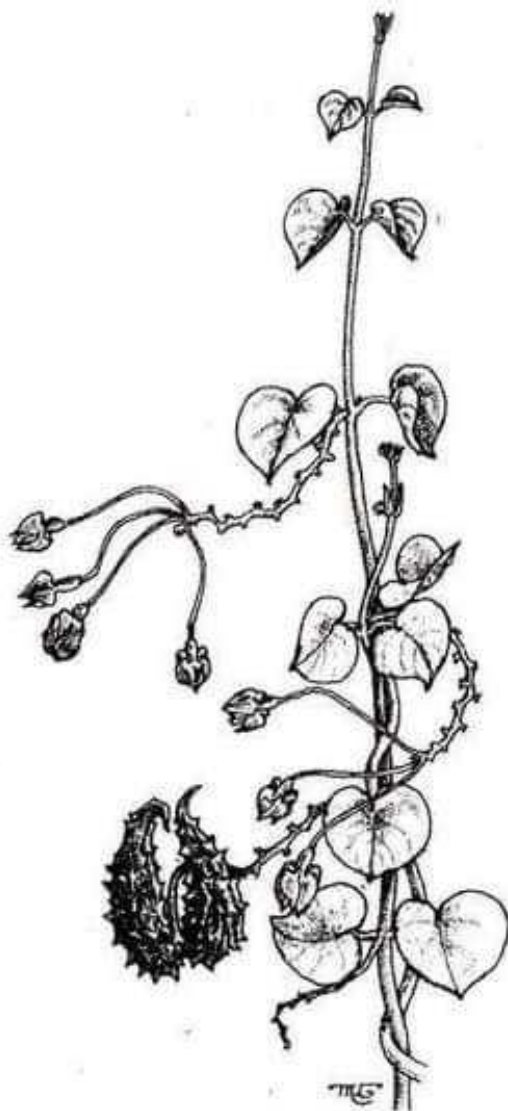


### *Pergularia tomentosa*

Variouly called 'ghala', 'om-el-leben' or 'el-himara' by the locals, this perennial shrub is found twining around other plants in a vine like fashion. It has opposite, cordate leaves of light green to silvery green appearance. In spring, tiny white or light purple flowers appear. These are followed by triangular shaped fruits containing hairy seeds.

*Pergularia tomentosa* belongs to the Milkweed family Asclepiadaceae and secretes a toxic milky fluid (latex) when disturbed. This latex is highly toxic and could cause blindness when brought in contact with the eyes, extreme skin irritation, or cardiac arrest when ingested.

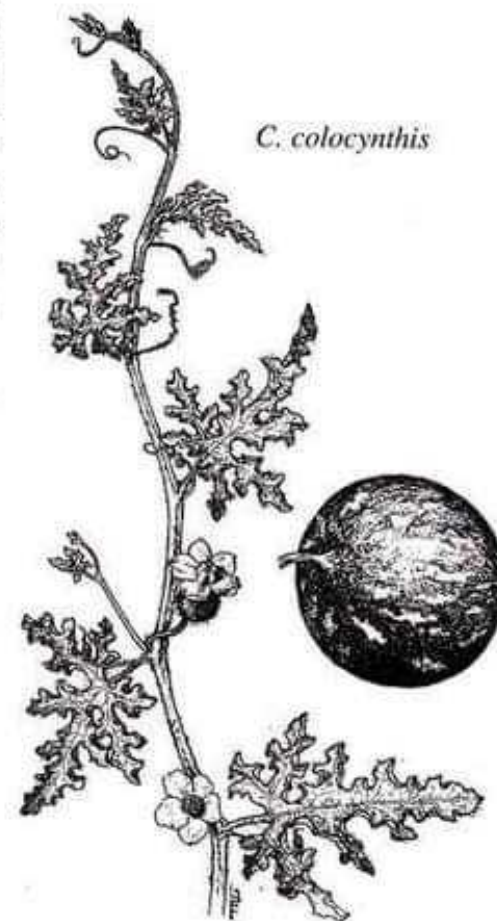
Latex from this plant has been used traditionally as an animal skin curing agent and for hair removal. Great care is needed when handling this plant.



### *Cucumis prophetarum* / *Citrullus colocynthis*

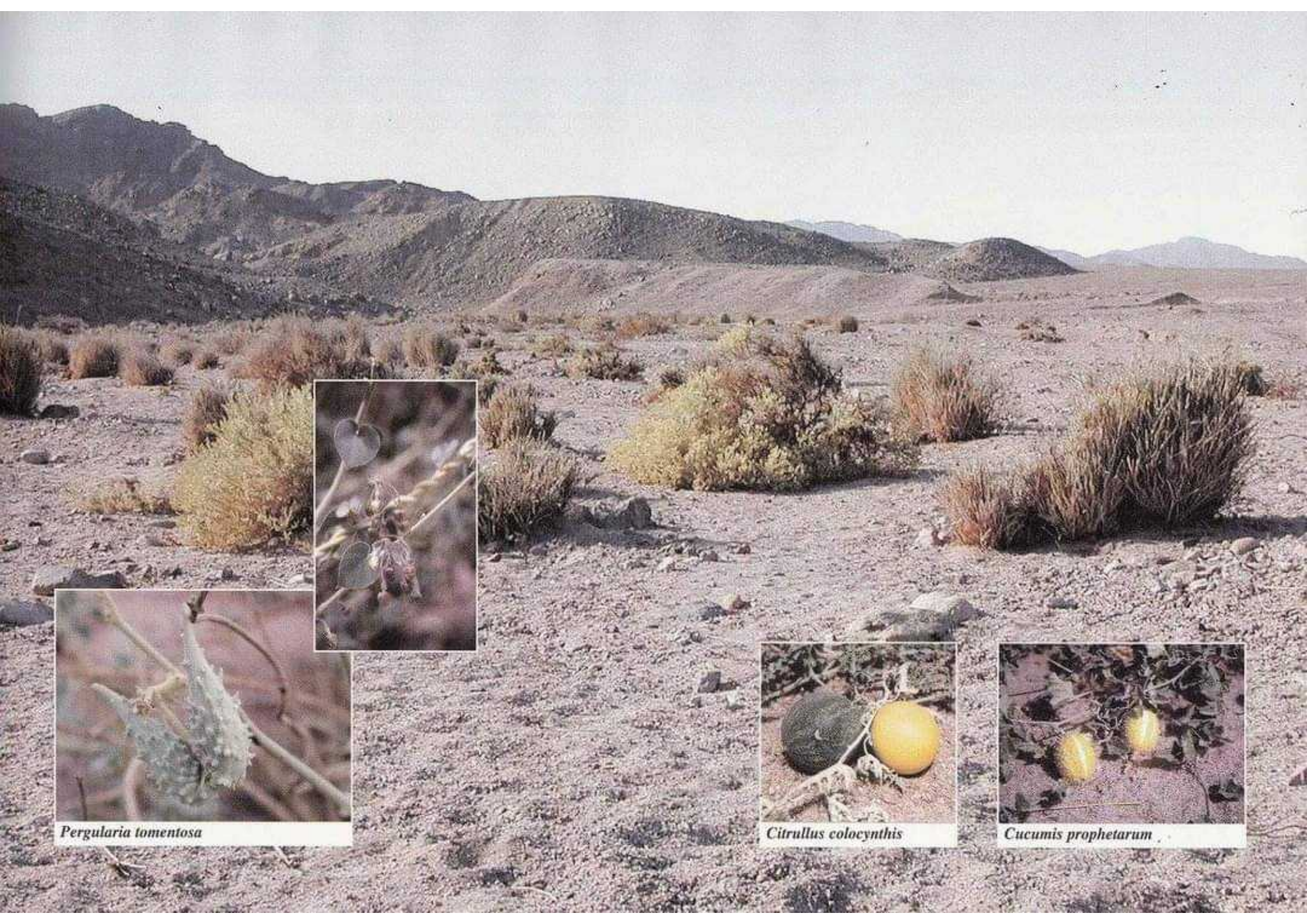
These two desert 'melons' or desert 'squashes' belong to the Gourd family Cucurbitaceae. Both rapid growing ground creepers can be found in gravelly soil of many wadis, although *Cucumis prophetarum* is rather rare. As 'cousins', their appearance is very similar: a prostrate, very scabrid herb with long trailing branches. The leaves are triangular shaped with many clefts and narrow segments. The small unisexual flowers (either male or female) open for a short time only. Both species produce a large, hard-rinded fruit that turns from green to yellow upon ripening. However, the appearance of the fruit makes the unique distinction between the two species. Whereas the fruit of *C.colocynthis* (drawing) is a mottled green, smooth round ball, *C.prophetarum* is much more spectacular in its more oblong and 'spiky'-corrugated appearance.

Both plants are used traditionally as folk remedies, but since *C. prophetarum* is very rare, the following applies mostly to *C. colocynthis*: the crushed fruit is macerated in olive oil and used as an anti-rheumatic rub. Alternatively, fruit halves are heated and placed over arthritic areas. Green, unripe fruits, are used as mothballs and the hard shells are made into containers.



**CAUTION: TOXIC LATEX. HANDLE WITH EXTREME CARE**





*Pergularia tomentosa*



*Citrullus colocynthis*



*Cucumis prophetarum*



### *Hyoscyamus muticus*

A member of the nightshade family Solanaceae, this perennial herb with fleshy, ovate-rhombic leaves produces large, funnel-shaped, purple flowers. The plant is also hairy and rather 'sticky', trapping lots of insects. A viscous liquid, scopolamine or hyoscyamine occurs in the roots of this plant. This chemical compound, also found in more limited quantities in the leaves and stems, is optically active. It is used medically to dilate the eye, depress the central nervous system and acts as a sedative and anesthetic. It also can prevent motion sickness and muscle spasms, as in duodenal ulcers. In large doses it is a hallucogenic.

Common names are: Egyptian henbane, 'sakaraan' 'semm-el-faar' (trans. 'rat-poison'), 'tatoora'. Traditional uses include: anticolic, bladder irritation, hysteria, irritable cough; Cataplasm of fresh leaves as painkiller, dried leaves smoked against asthma.



### *Fagonia scabra*

This quite rare, low growing shrub appears only after a spell of rain in areas of gravelly soil. Its small trifoliate, silvery-green leaves are hairy, and so are the stems.

Pretty, white to rose colored flowers (18mm) appear for only a few weeks and are followed by tiny, 4mm long seed capsules.

*Fagonia scabra* has many local names e.g. 'estikaha', 'eshgar' and 'halawa'.

### *Chrozophora oblongifolia*



This undershrub is commonly called 'ghobbeira', 'ghobayra', 'neela' or 'neeli' and belongs to the spurge family Euphorbiaceae. *Chrozophora oblongifolia* has dark green, thick, woolly leaves. Small, yellow flowers appear in a spike-like arrangement. Upwards there are numerous sessile male flowers, and a few pedicelled female flowers. It flowers in spring to early summer.

### *Capparis sinaica*



*Capparis sinaica* is a large, evergreen shrub or small tree of the family Capparaceae. It is commonly found wedged between mountain cliffs, taking a foothold in seemingly impossible rock fissures and cracks.

It has woody, thorned branches and oval, leathery, deep green leaves.

Large white flowers appear at the beginning of summer. These are followed by pear shaped fruits. The fruits turn red when ripe and are edible. Called 'lassaf' by the Bedouins, this plant is used traditionally as food: the bitter peel is removed from the ripe fruit and sometimes the fruit is also pickled.





*Fagonia scabra*



*Caparis sinaica*



*Chrozophora oblongifolia*



*Hyoscyamus muticus*



### *Shouwia purpurea*



A tall, stout, glabrous, plant belonging to the mustard family Cruciferae. Its dark green fleshy leaves are edible, although somewhat peppery and bitter in taste. This annual herb shows purple flowers that are about 15mm long. Broadly winged seedpots appear beneath the flowers.

Although *Shouwia purpurea* is reported throughout the western Mediterranean and all deserts of Egypt, in Sinai it seems only to inhabit certain areas of Nabq, namely the eastern parts of Wadi

Kid, around the area of Wadi Kharesa. Being an annual, it appears only after a spell of rain, when it suddenly appears as if from no-where, forming large communities. Bedouins call it 'nimnam' and eat young leaves after soaking them in water to remove some of the bitterness.

### *Solenostemma argel*



Yet another medicinal plant of the milkweed family Asclepiadaceae. This widespread perennial shrub is found in gravelly soil, usually in close proximity to cliffs. It has dark to blue-green, opposite leaves and small clusters of white to cream colored flowers. Large seed

pods, resembling figs contain hairy seeds. Called 'argal' by the locals, the leaves and stems are harvested and dried for use as a stomachic infusion. The seed hairs are collected as stuffing material. Interestingly, plants at higher elevations produce a milky latex, while the latex of those closer to the sea is a clear liquid. Both kind of latex, however, are toxic and can cause temporary blindness when brought into contact with the eyes.

**CAUTION: TOXIC LATEX, HANDLE WITH EXTREME CARE**

### *Indigofera arabica*



Called locally 'gidab', this perennial herb has light green simple, or imparipinnate leaves of one or several pairs of leaflets. Pretty, pink to purple flowers appear at the beginning of summer. The seed pods are bean shaped, narrow and flat legumes, a characteristic of the Leguminosae family of which this plant is a member.

It is the only *Indigofera* species so far recorded in Sinai.

### *Lavandula coronopifolia*



This densely branched, bush-like, aromatic plant is variously called 'zeiti', 'diktae' or 'netash'. It belongs to the mint family Labiatae. Its leaf segments are very narrow and leaves disappear altogether in the upper parts. It produces small, but splendid purple flowers on long flowering racemes.

### *Pulicaria crispa*

An annual, woolly herb that can cover whole wadis with its bright yellow flowers and fills the air with a rich perfume. Most plants appear with only a few flower bearing branches but, under good conditions, it can grow into a splendid bush.

The local name 'shai-el-gebel' gives the secret away that this plant is used as a herbal tea and as a medicinal plant. As the flower shape suggests, it belongs to the daisy family Compositae.





*Solenostemma argel*



*Shouwia purpurea*



*Indigofera arabica*



*Lavandula coronopifolia*



*Pulicaria crispa*

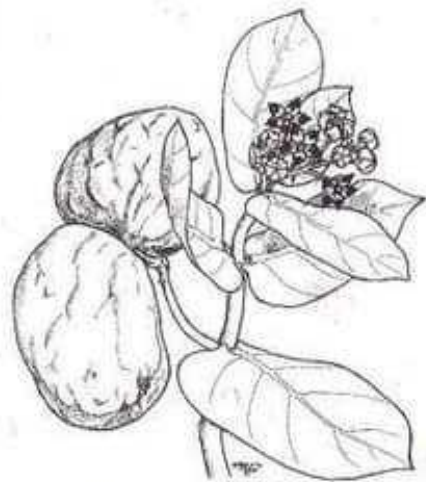


### *Calotropis procera*

Belonging to the milkweed family Asclepiadaceae, this unique tree is only rarely found in Sinai. In the Nabq Protectorate, one tree stands solitarily in the middle of Wadi Kharesa, just south of the same named Bedouin settlement. Two more trees can be seen in a ditch on the Dahab road, south of the Wadi Kharesa junction.

The trunk of *Calotropis procera*, called 'oshaar' by the locals, has many cracks and fissures in its light brown bark, giving it a rather rugged appearance.

At the beginning of and throughout summer, this tree produces beautiful white, purple-tipped flower clusters and green, apple-like fruits. These spongy fruits turn yellow upon ripening, then split open and scatter their seeds. It has broad, oval



shaped, fleshy leaves which secrete a poisonous milky liquid when damaged. This latex contains six very toxic cardioactive substances, one of them being calotropin, which has a stronger action than strophanthine, causing death by paralysis of the heart when ingested. Furthermore, the latex is very caustic towards skin and mucous membranes and can cause blindness when brought into contact with the eyes. Local Bedouins are aware of these potential hazards and only experienced persons handle the plant, if at all. Traditional uses include use as an abortifacient; seedhairs for stuffing.

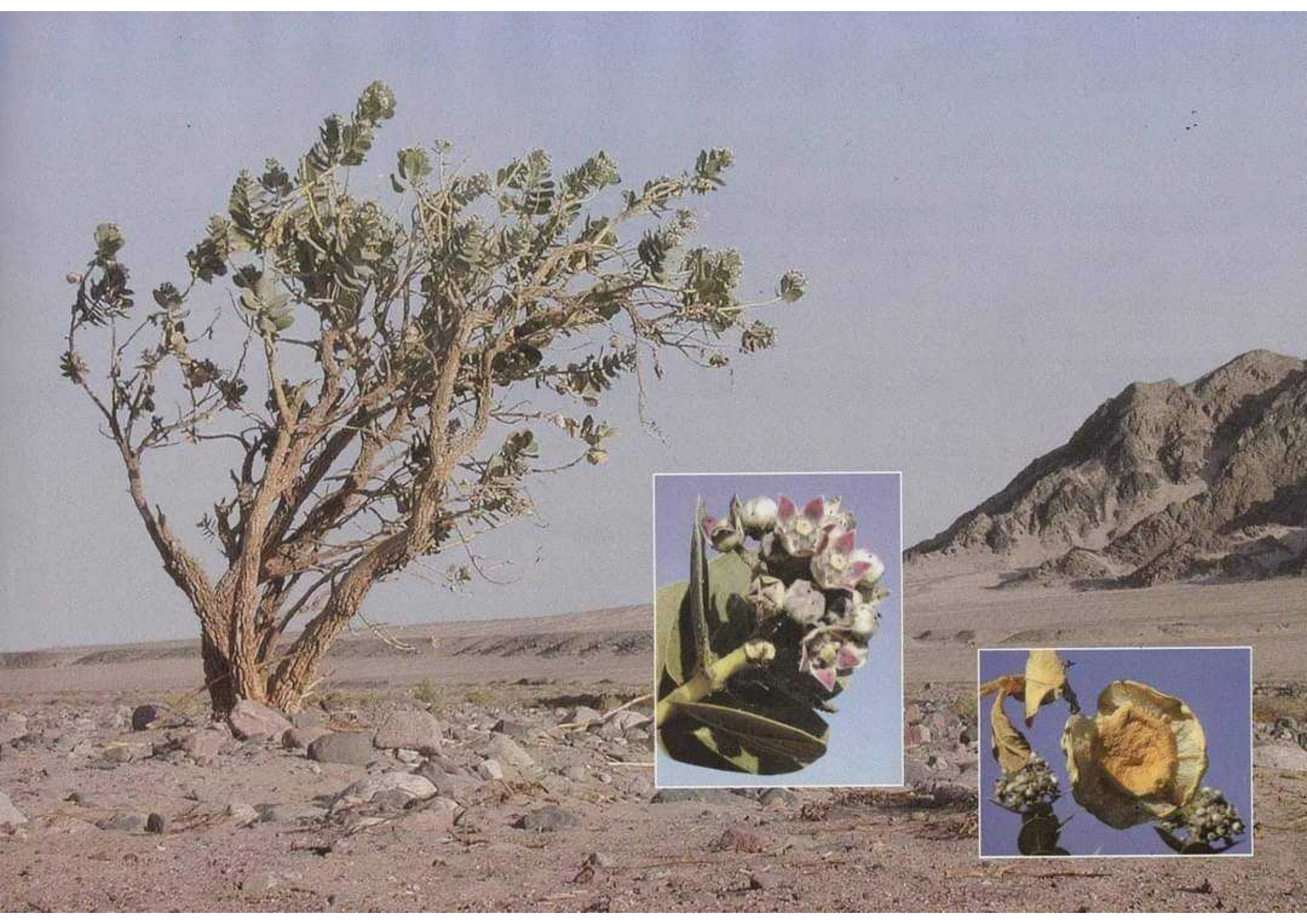
**CAUTION: TOXIC LATEX, HANDLE WITH EXTREME CARE**

In Ethiopia and Nigeria, the latex of this plant is used as cheap coagulating enzyme in traditional cheese production. Repeated boiling of the milk for processing/preservation and frying of the cheese seem to negate any toxic effects.

Plant-toxicological literature from India, East- and South Africa tells us that the latex has also been used as an arrow poison, to cause abortion, to kill enemies and to commit suicide. On the other hand, the tree has also positive medicinal values. In Hindustan, for example, a tincture is prepared from the powdered tree bark and used to break up mucus, as e.g. in the treatment of bronchitis. The root bark is used as a treatment for elephantitis, leprosy, chronic eczema, diarrhoea and dysentery. Finally, the latex is used in the treatment of warts.









### *Acacia raddiana*

The umbrella shaped acacia tree (family Leguminosae) is easily spotted in many areas of Sinai, occurring mostly in sandy wadi beds. Together with the salt cedar *Tamarix*, the Mangrove and *Calotropis procera* it is the only 'real tree' native to Sinai. Less well known is the fact that the acacia exists in two distinct forms: one as a hardwood tree with reddish bark, and one as a low growing shrub without trunk. Both forms, however, exhibit the same characteristics,

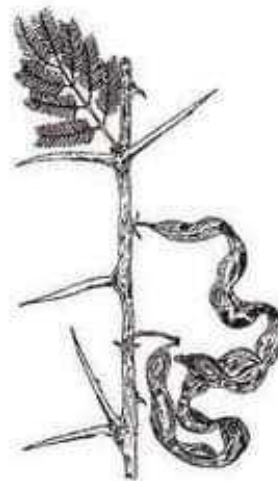


which include: long, sharp, silvery-white thorns (strong enough to puncture a tire) and feathery, double branching leaves.

Fluffy yellow or cream colored flowers appear in high summer, followed by the characteristic 'beans' that contain the new seeds. Due to the harsh desert conditions, acacias grow very slowly in Sinai. A mature tree of 8 to 12 meters height is approximately 80 to 100 years old.

Like all members of the Leguminosae family, the acacias roots contain rhizobium bacteria

which are capable of converting atmospheric nitrogen into nitrate ( $\text{NO}_3^-$ ) that then can be utilized by the plant.



Local Bedouins hold the acacia tree in great respect; after all, this tree has served them well for centuries and has many traditional uses. To cut down an acacia is considered a crime and punished accordingly within tribal laws.

This status of high respect goes back to biblical times. In Exodus 25, the Ark of the Covenant is described as being made of acacia wood.

Most trees of the acacia species produce a gum, a sticky and thick fluid, when the tree trunk is cut. This gum is part of the plants natural defense mechanism to ward off any intruding organisms while the wound is healing. Some acacia species yield high quality gum arabica, myrrh and benzoin which are used commercially.

Bedouins in Sinai have used the local acacia gum dissolved in water to treat eye problems and to promote wound healing.

Dried acacia seeds, whole or powdered is a remedy for diarrhoea. The flowers and fruits are harvested to supplement the scarce animal fodder in high summer and also for use as stuffing material, e.g. camel saddles and bedding. Wood is still harvested today by shaking the tree branches until loose, dry twigs fall to the ground.

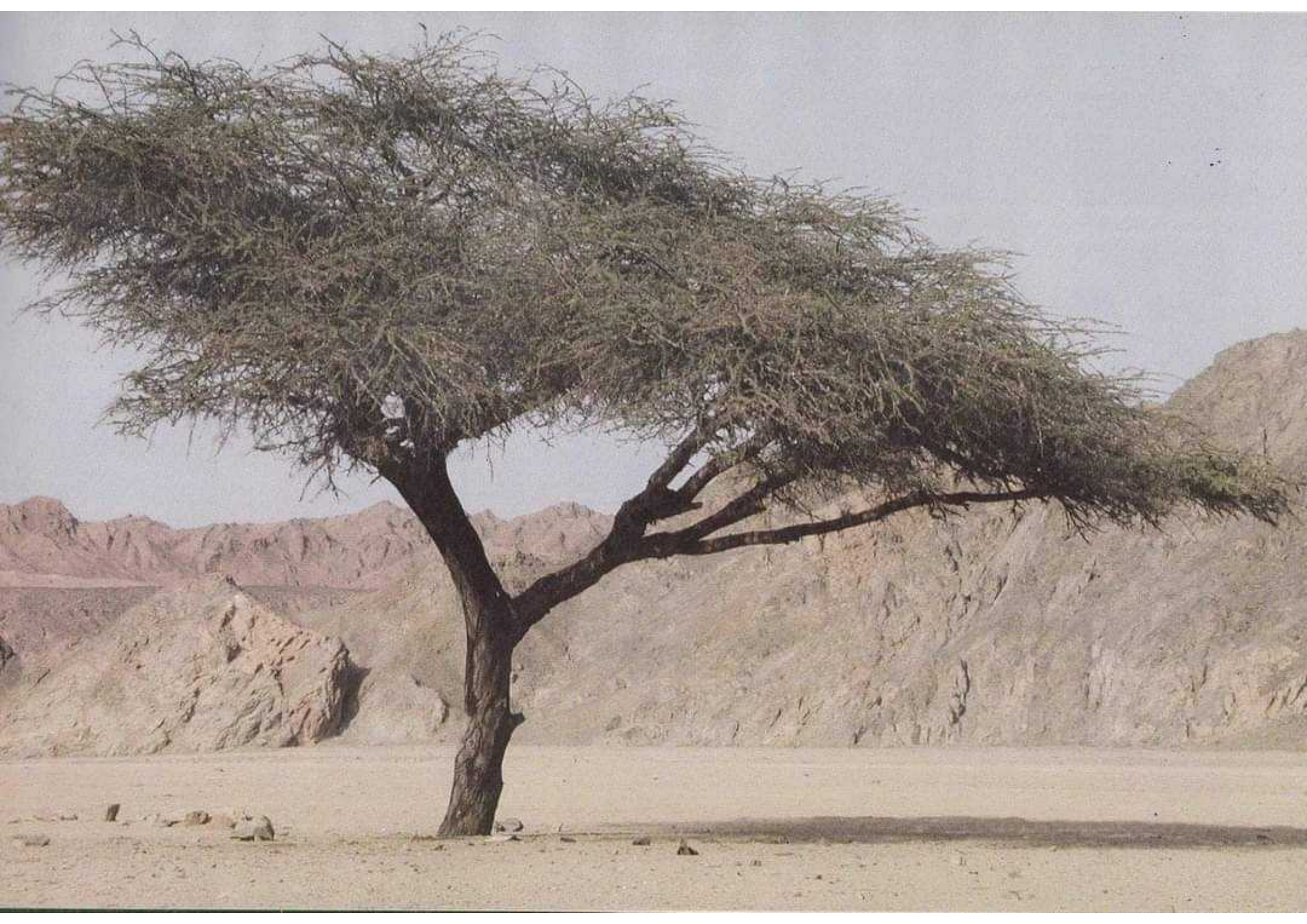
Another, rather curious looking traditional use is as a temporary storage closet.



Sometimes in the middle of seemingly nowhere you might find an acacia tree and on its branches hang various Bedouin belongings like folded up tents, cooking utensils, clothing etc.

The owner of these items has temporarily left the area, knowing, that his belongings will be safe until his return.









*Acacia raddiana*



*Citrullus colocynthis*



*Indigofera arabica*



*Pergularia tomentosa*



*Solenostemma arghel*



*Avicennia marina*



*Chrozophara oblongifolia*



*Iphiona scabra*



*Pulicaria crispa*



*Tamarix aphylla*



*Blepharis edulis*



*Cucumis prophetarum*



*Lavandula coronopifolia*



*Rumex cyprius*



*Zygophyllum album*



*Calotropis procera*



*Fagonia scabra*



*Limonium axilare*



*Salvadora persica*



*Zygophyllum coccineum*



*Capparis sinaica*



*Hyoscyamus muticus*



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## References

- Al-Cibahy, A., 1994, Current Status of Vegetation Diversity Nabq Protected Area, internal report EEAA.
- Boulos, L., 1999, Flora of Egypt.
- El-Gazzar, A., El-Demerdash, M.A., El-Kady, H.F., Heineidy, S.Z., 1995, Study for the EEAA, internal report EEAA.
- Dinter, W., 2000, Nature Landuse Protection and Development at the Managed Resource Protected Area of Nabq, report Institute of Geocology University of Potsdam.
- Renken, D., 1999, Plant Communities of the Nabq Managed Resource Protected Area - South Sinai Sector, report Potsdam University.
- Täckholm V., 1974, Student Flora of Egypt.
- all plant drawings from 'Student Flora of Egypt' Täckholm Vivi, 1974.
- root system drawing from Dinter W. (as above).
- map 'dune system closeup' (modified) from Dinter W. (as above).
- all other maps (modified) from SSS GIS Unit.
- all photos by Monika Al-Mufti.



## Glossary

alluvial	deposits by rivers or floods
annual	lasting for only one season
cleft	split
cordate	raised edges
ephemeral	lasting for only a short time
exserted	protruding
halophytic	salt tolerant
herb	plant with a soft stem
imparipinnate	arranged on stem off-set, not opposite
latex	milky or clear fluid
pedicelled	attached to main stem by a small stem
perennial	lasting for several seasons
prostrate	lying flat on the ground
raceme	flower clusters attached by short stalks
sabkha	saline, dry marsh zone
sediment	particles of solid matter carried by water or wind
sessile	directly attached, no small stems
stamen	pollen bearing male organ of a flowering plant
succulent	fleshy, full of juice
tributary	stream



جمهورية مصر العربية  
رئاسة مجلس الوزراء  
وزارة الدولة لشئون البيئة  
جهاز شئون البيئة  
المحميات الطبيعية بمصر  
نبق / بحر

محافظة الجيزة

القيمة / القرد

الرقم :

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لا تأخذ شيئاً معك ، لا تترك شيئاً خلفك ...









