GARDENS IN A SACRED LANDSCAPE

BEDOUIN HERITAGE AND NATURAL HISTORY IN THE HIGH MOUNTAINS OF SINAI

Samy Zalat & Francis Gilbert

Illustrations by
Ahmed Gheith

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The garden gate in the cover illustration depicts a Bedouin night alarm bell. The two pickaxe heads clash together if the gate is moved, and the noise echoes around the wadi, warning the occpuants that someone or something is trying to enter the garden.

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NATURAL HISTORY AND BEDOUIN HERITAGE IN THE HIGH MOUNTAINS OF SINAI

Samy Zalat & Francis Gilbert

with contributions by
Hussein Saleh, Hussein Moussa, Farag ᶜAouda & Soliman Farag

Paintings by
Ahmed Gheith

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The Plants

Preface

Over the long period we have been conducting fieldwork together with our Bedouin friends, we have been struck by three very obvious features: the richness of Bedouin knowledge of their environment; the fact that this knowledge is rapidly disappearing under the impact of tourism and development; and the virtual absence of recording this knowledge to preserve it for the future generations that will undoubtedly wish to recover it. Interestingly, in the past many travellers wrote about their experiences in visiting the Monastery of St Katherine, and recorded many observations about the Bedouin and their landscape. Today, very few such accounts are available.

The Gebaliya Bedouin rely on three elements of their environment: wild plants and animals, domestic animals, and agriculture within their orchard gardens. Their type of agriculture was established at least 1500 years ago, and is very much part of their heritage. The main aim of this book is therefore to try to record and document some of this environmental knowledge. We also aim to provide visitors to this land with some idea of the richness of the diversity of plants and animals, and a guide to what they may see while travelling in Sinai. We concentrate upon the fruits and vegetables of the gardens, but also we felt it important to include some information about the wild plants and animals that play such a major role in the lives of the Bedouin. We have therefore provided short notes about many of the wild animals that occur in the gardens, but we leave a full account to a future guide to the St Katherine Protectorate as a whole.

The information in this book was derived either from our own fieldwork over more than 20 years, the literature, or from discussions with individual Gebaliya Bedouin. We would like to thank everyone for sharing their knowledge of their history and environment. However, the information as written in this book expresses our own interpretation of the situation, rather than definitive statements of what is true. We have not been able to check the accuracy of every piece of information, and therefore some of the data reflect our understanding of Bedouin knowledge and beliefs rather than verified reality. The information is only relevant to the Gebaliya, and not to other south Sinai tribes, and definitely not to Bedouin elsewhere. It is possible that some of these traditions and practices are also carried out by other Bedouin, but we have not endeavoured to find out whether this is true. We are strictly concerned with the people of the Ring Dyke, i.e. just the

Gebaliya. We have, however, taken the opportunity to place their traditional knowledge in the context of Egypt as a whole, both ancient and modern.

Arabic is written with consonants only, and transliterating into English is always a problem. In a recent botanical paper written in English recording where some plant species had been found in the field, the same site was spelled three different ways on a single page! There is no easily available gazetteer of place names, nor any consistency in the spelling of plant or animal names. Thus great care is needed in recording the names of plants, animals, places, etc. In this book we have followed the method we used in our previous book '*A Walk in Sinai*', and have tried to record the way in which both Egyptians and Bedouins pronounce words. We have included a glossary of all the Arabic names and words used in the text, and an appendix detailing the method used in this book. This glossary serves also as an Arabic index to the book.

We have also provided lists of the plants and animals, together with their Bedouin and Arabic names. There is inevitably some repetition, but we think that this will be more than compensated by the ease of use of the book. Where there is no common name for plants and some animals, we have invented suitable ones, where appropriate.

Acknowledgements

We are delighted to introduce Ahmed Gheith as the artist who has documented the plants, animals, landscape and Bedouin life for this book. This is his first published work; many of his paintings from this book will be available also as prints and postcards. The drawings are almost all from life.

We are especially grateful to all our Bedouin colleagues and friends who have contributed their time and knowledge to helping to produce this book. Those who helped the most are listed on the title page. There are many more, but we would like particularly to acknowledge the help of Ramadan Moussa, Khaled Farag, Farag Ibrahim, Mahmoud Duquny, and Zayed FetiH in the monastery garden.

Hilary Gilbert made a number of important contributions to the book, not least of which was a very careful and critical review of the whole book in draft. Her comments stimulated great improvements. Dr Sean Dunkin, Dr John Grainger, Dr Virginia van der Lande and Dr Emma Loveridge also read the text and made important additions.

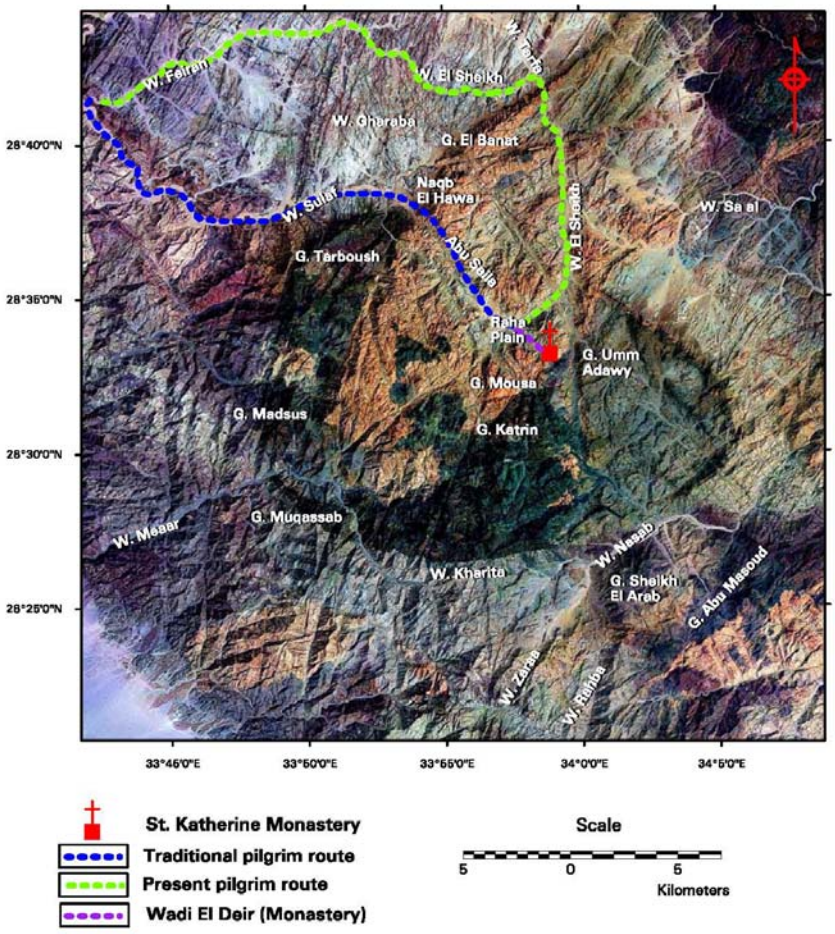
We appreciate the help and generous support of the Nature Conservation Sector, especially Professor Moustafa Fouda, and the staff of the management unit of the St Katherine Protectorate. Throughout our collaboration we have been

supported by the British Council in Cairo, and we are grateful for the vision and commitment of its successive Link administrators: Dr Julian Edwards, Anna Baker, Martin Daltry and Mike Coney. Special thanks and appreciation are due to Dr John Grote, Director of British Council in Egypt, Mike Coney, Heba Helmy and Doaa Hafez for their kind financial and administrative support in this work. We thank also Suez Canal University for the use of the facilities of the Environmental Research Centre over many years.

We thank Dr Sarah Collins (Nottingham University), Dr Selvino de Koort (Cambridge University), and students John Griffin, Sarah Woodcock, Lugain Mohi and Susan Ibrahim for the bird information; Karim and Heitham Samy for photography and scanning; We are very grateful to Mike James, Jennifer Johnson, Fred Manata, Tim Hurst, Kathy Meakin, Rebecca Guenther and Christian Dietz for the use of their photographs.

The staff of the BioMAP project helped in finalizing the book for publication, and we appreciate particularly the help of Eng. Ahmed Mohamed Hamed Ya^{c}qoub (who designed and prepared the layout of the book, contributing materially to its beauty) and Yasmine Safwat Salem (who checked all the Arabic names and added diacritical marks for pronunciation). We thank also Dr Abd El ^{c}Al Hassan Attia for preparing the Ring Dyke and other maps.

The Setting
معلومات عن المكان


W. Feiran
W. El Sheikh
W. Tarfa
W. Gharaba
G. El Banat
Naqb El Hawa
W. Sulaf
W. El Sheikh
W. Sa'al
G. Tarboush
Abu Sulla
Raha Plain
G. Umm Adawy
G. Mousa
G. Madsus
G. Katrin
G. Muqassab
W. Mesar
W. Kharita
W. Naqab
G. Shaikh El Arab
G. Abu Masoud
W. Zarae
W. Talaba
28°40'0"N
28°35'0"N
28°30'0"N
28°25'0"N
33°45'0"E
33°50'0"E
33°55'0"E
34°0'0"E
34°5'0"E
St. Katherine Monastery
Traditional pilgrim route
Present pilgrim route
Wadi El Deir (Monastery)
Scale
5
0
5
Kilometers

The Setting

Southern Sinai

> "Sinai is the land where Moses talked with God, and where the Jewish people took refuge during their persecution. Its name is mentioned in both Christian and Islamic holy books, many times in the case of the Koran. In written history since about 3000 BC, Sinai is where the ancient Egyptians travelled, searching for copper, turquoise and aquamarine: in Serabit El Khadim there are some inscriptions telling us about the first-ever human use of copper instead of stone. In Sinai, the first alphabet was discovered, later developed by the Phoenicians, and eventually becoming the basis of the Greek and Hebrew alphabets. Perhaps this developed because of the need to regulate the work of the mines in Sinai, recording the amounts of materials, food, etc.; this is very difficult to do in hieroglyphics." (Encyclopedia of Sinai, 1982).

Poetically, the Sinai peninsula is the wild junction of Africa with Asia, the famous wilderness connecting Egypt with the rest of Asia. It takes the form of an inverted triangle resting on the Mediterranean Sea, head-down, like a sword-point splitting the head of the Red Sea into the Gulfs of Suez and ᶜAqaba. The region designated as the Sinai peninsula was originally only the part between the two Gulfs, but later it was extended to include the El Tih plateau and then even further north to El Arish and the Mediterranean. Sinai as defined today is therefore surrounded by the Mediterranean Sea to the north, the Gulf of Suez to the west, the Red Sea to the south, and to the east by the Gulf of ᶜAqaba. Its northern half is delimited by the Suez Canal, and the straight line that runs from the top of the Gulf of ᶜAqaba to meet the Mediterranean Sea at RafaH.

Many suggestions have been made about where the name 'Sinai' comes from. One plausible explanation is that it is related to the local word 'seen', which in Hebrew means 'the moon', because the people living there used to worship the moon. This seems wholly appropriate for Sinai, which has the most beautiful moon, the clearest skies, and the most delicate of gentle breezes. Sinai was known to the ancient Egyptians by the name of 'tou-shet', which means the barren land. According to the ancient Ashoric people (living in present-day Jordan, Syria, etc.) it was known as 'Magan',

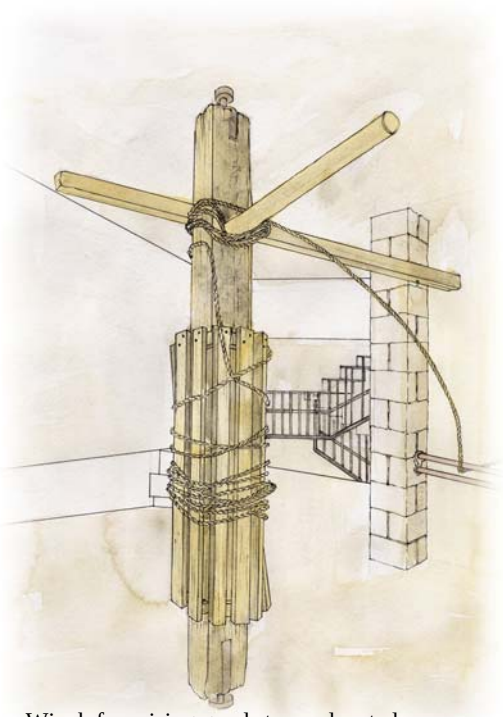
probably in error since historians believe that this name should be applied to the northern Hejaz and southern Palestine. The Greeks called Sinai the beginning of ‘Arabia Petraea’, or rocky Arabia. In the Old Testament it is known by the name ‘Horeb’, meaning ‘wilderness’. Biblical scholars believe this name applies to the whole country, with ‘Sinai’ applying only to the mountainous parts: eventually the name Horeb was forgotten, and Sinai applied to the whole peninsula. Although traditionally the people of Sinai are said to originate from the people of Sam (like Syrians, but not the Egyptians), the land itself has always been Egyptian.

Chapel on Gebal Katrin

The high mountains of southern Sinai contain some of the most beautiful places in the world. Steeped in history, the area around the heights of Gebal Katrin and Gebal Musa (=Mt. Sinai) is the homeland of the Gebaliya Bedouin. It is a region designated by other Sinai tribes as “the land of wormwood and scent and helianthemum and pyrethrum” because of the heady smells of these aromatic herbs that fill the wadis (the mainly dry valleys). These smells evoke memories or ideas of incense, lending an odour of sanctity to the entire landscape.

The area contains unique cultural, religious and environmental features, and occupies a special place in Egyptian natural history. It is best known for the Monastery of St Katherine and Mt Sinai, but also includes the highest mountains in Egypt with a large diversity of plants and animals, some of which occur nowhere else in the world.

The Monastery and Mount Sinai



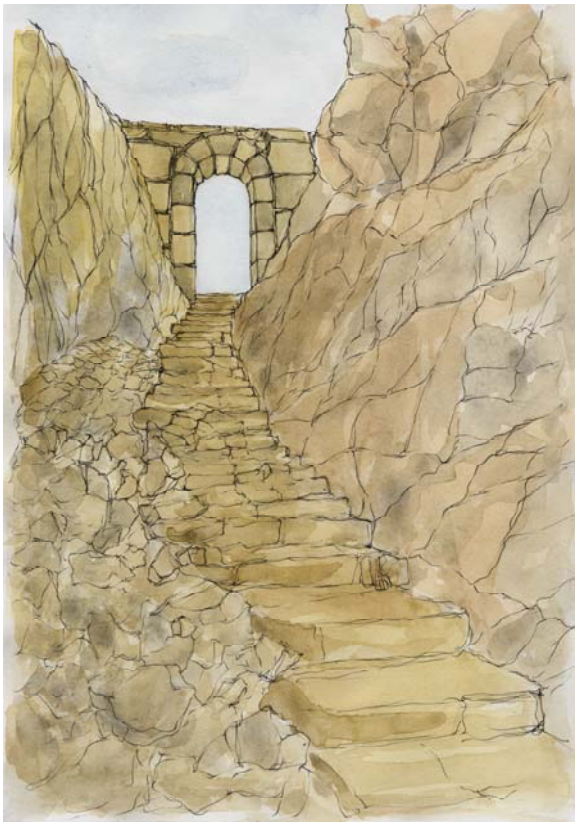
Winch for raising goods to an elevated hatch on the Monastery wall

The Monastery of St Katherine is one of the oldest of all Christian establishments, and is in fact the oldest monastery in continuous use in the world. The original chapel was built in 330 AD, supposedly on the site of the Burning Bush itself, and at the foot of Mt Sinai, where Moses met God and received the Law. The present Byzantine fortress was constructed at the end of the 6th century to protect the monks from marauders. The isolation of the monastery allowed it to escape the iconoclasm, the destruction of images in the 8th century, with the result that its present collection of icons and manuscripts is possibly the most important in the world.

Internal doorway in the Monastery

Pilgrims have visited the monastery throughout its existence, from the very first recorded pilgrim of the 4th century, the nun Egeria. Although thousands of pilgrims visited the Holy Land, rather few made the difficult, dangerous, and above all, expensive extra journey to Mt Sinai. Only a handful visited more than once, including the Russian Count von Tischendorff who in 1859 ‘borrowed’ its most precious manuscript, the Codex Sinaiticus, the oldest extant version of the Gospels and the only copy of the Greek original. He never returned the sections, and in 1933 the major part that included the New Testament was sold by the Russian

State to the British Museum, where it remains. A few extra pages were discovered in the 1970s in the monastery, and are on display in its museum.



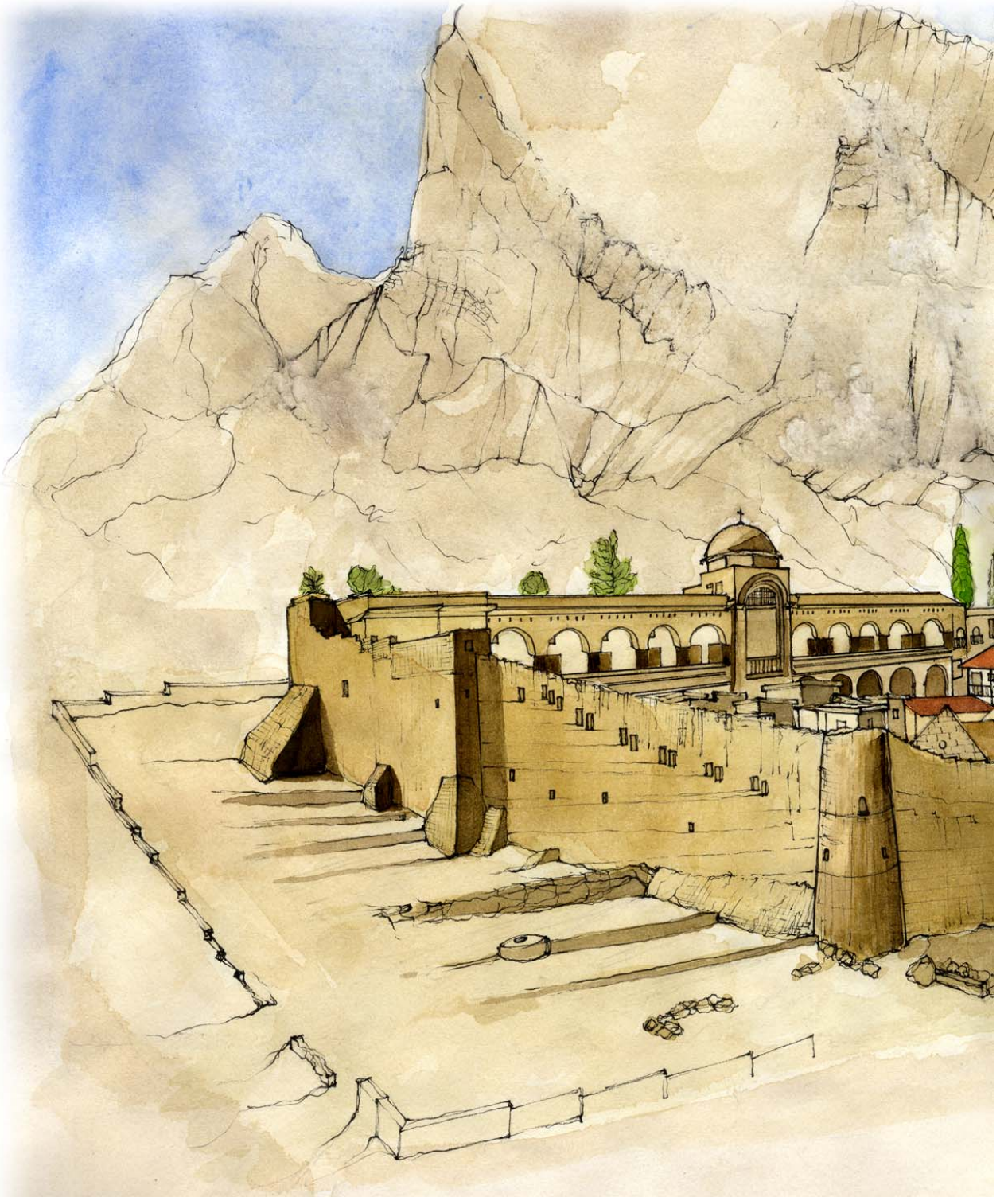
Stairway of Repentance and the Pilgrims Gate

In the mediaeval period after the Crusades, religious pilgrimage brought many visitors who were essentially tourists to the monastery. When the Ottomans took over the region in the 16th century, travel became very difficult and there were few visitors. But in the 19th century, travelling became easier and modern tourism started. This tourism was not problematic for the monks until the last two decades, when enormous numbers of people have arrived by road merely to visit and see, rather than to gain any religious solace. There were more than 230,000 such tourists in 2004, increasing at a rate of 10% per year.

Chapel of Elijah

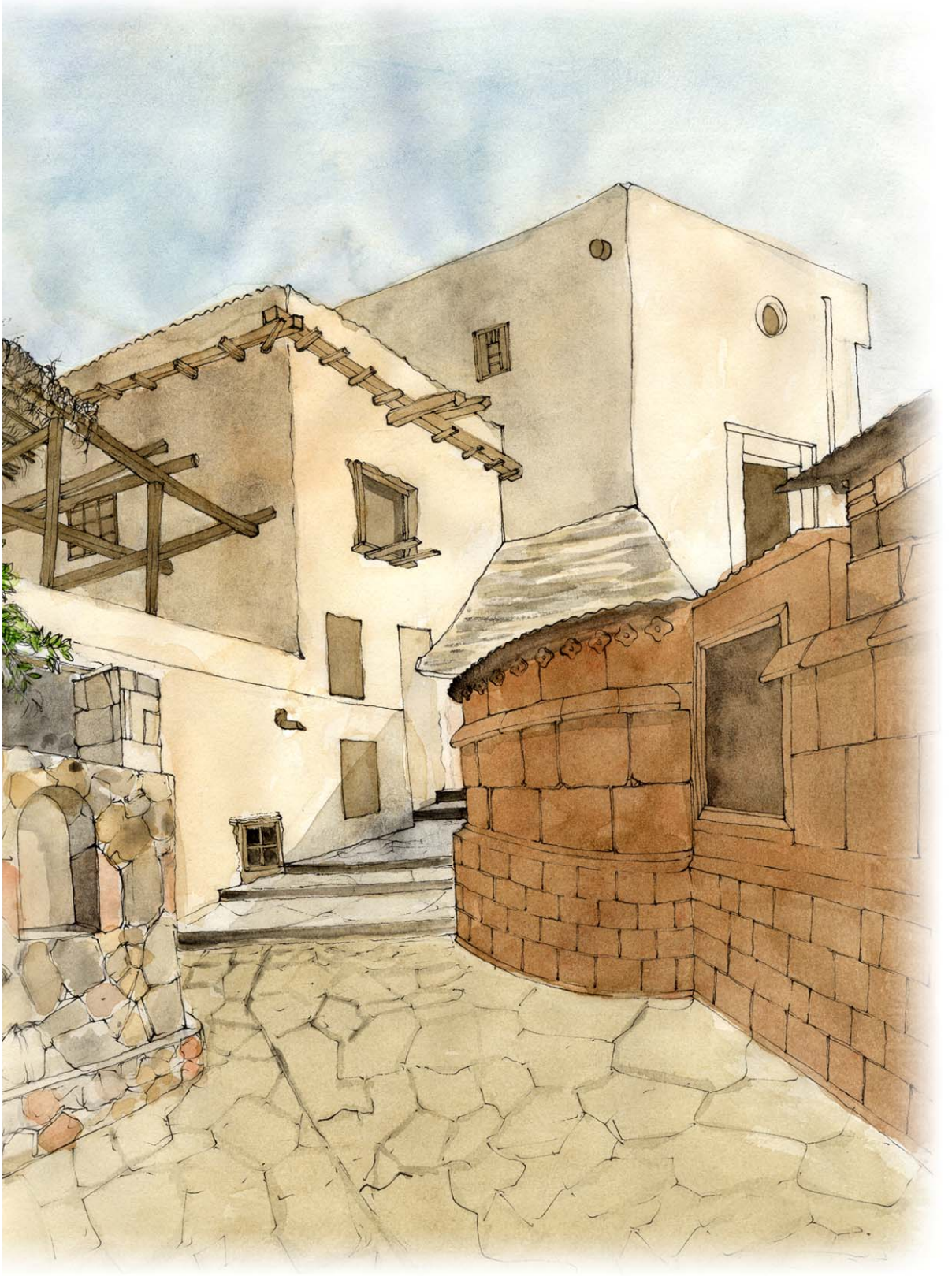
Aaron’s Chapel at the mouth of Wadi El Deir

Chapel on Gebal Al Monajah



The Monastery of St Katherine

The Burning Bush (*Rubus sanctus*)



The town of St Katherine

There is only one town in these mountains, the small town of St Katherine with only slightly more than 4000 inhabitants, mostly Bedouin but also containing a rapidly expanding Egyptian population. Many visitors come mainly to see the famous Monastery; and at night many climb the 3750 stone steps to the summit of Mt. Sinai to see the sun rising over the whole peninsula. Some visitors stay for longer periods in order to trek in the wadis, which form a maze of interconnecting valleys traversing the region enclosed within the great Ring Dyke. For these visitors the experience of trekking in the Sinai mountains is often unique and unforgettable, transforming their lives.

The town of St Katherine has grown rapidly since the metalled road was built. It exists primarily because of the presence of the monastery. Most of its Bedouin population live in the El Kweza area to the west and southwest of the centre of the town. There are more than 1100 hotel beds available for visitors, and plans for 850 more to be built in four new hotels. The main tourist season runs from mid-September to April, peaking in December, and even now the hotels are far from full - in fact on average there is only 20% occupancy of beds. The average daily water demand of all the people, tourists and residents, is already three times greater than the supply from ground water and wells; water therefore already needs to be brought in by tanker.

Mike James

Dawn over the town of St Katherine

The Protectorate

Most of the mountainous area of southern Sinai, encompassing 4,350 square kilometres, was designated a Protectorate in 1996. Its aim is to conserve the natural and cultural features of the area, while allowing the local Bedouin people to continue their way of life. The Protectorate was set up and developed by the Egyptian Government (through the Egyptian Environmental Affairs Agency) with financial and technical assistance from the European Union. Part of the role of its management is to encourage sustainable development to preserve Bedouin culture. A very successful handicraft project is evidence that this can work well.

National Parks of Egypt

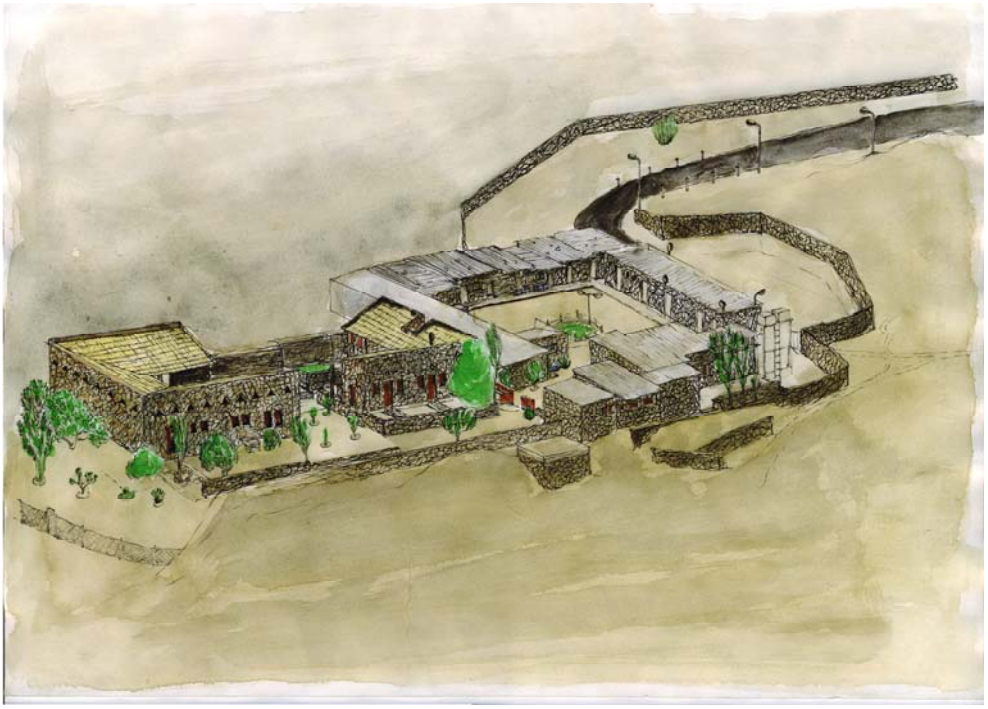
The importance of the Monastery was recently recognised in declaration of the Ring Dyke region (600 km²) as a World Heritage Site in 2002. The citation placed the Monastery at the heart of the award. "The architecture of St Katherine's Monastery, the artistic treasures that it houses, and its domestic integration into a rugged landscape combine to make it an outstanding example of human creative genius. St Katherine's Monastery is one of the very early outstanding examples in Eastern tradition of a Christian monastic settlement

located in a remote area. It demonstrates an intimate relationship between the natural grandeur of the environment and human spiritual commitment. Ascetic monasticism in remote areas prevailed in the early Christian church

and resulted in the establishment of monastic communities in remote places. St Katherine's Monastery is one of the earliest of these and the oldest to have survived intact, being used for its initial function without interruption since the 6th century. The St Katherine area, centred on the holy mountain of Mt Sinai, like the Old City of Jerusalem, is sacred to three world religions: Christianity, Islam, and Judaism. It is vital that this heritage is conserved for the enjoyment of future generations."

The Environmental Research Centre of Suez Canal University

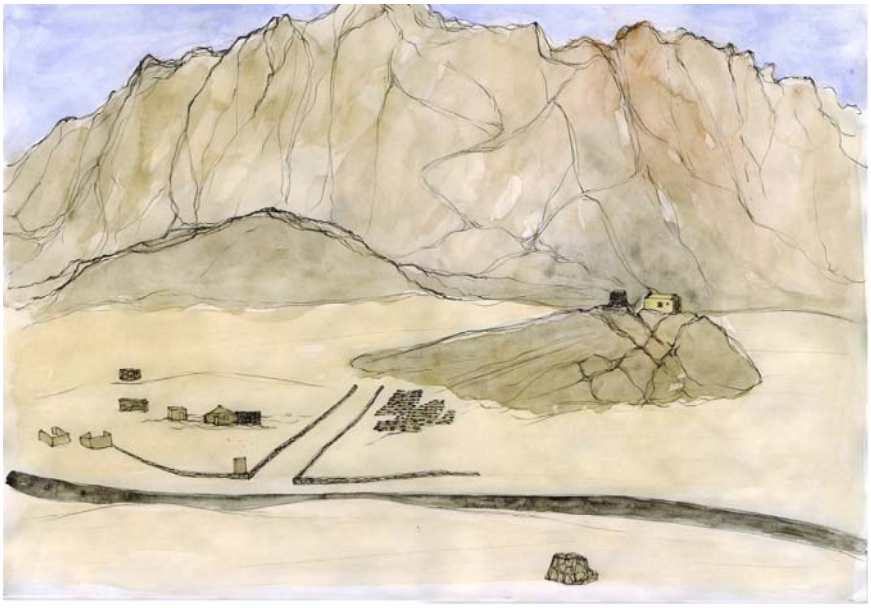
The buildings of the Centre were established by the Israelis during their occupation of Sinai from the late 1960s and 1970s. They built it as a field station, the Tzukei David Field School, for use by universities and schools. The Centre was handed over to Suez Canal University in 1979, who maintained and developed the facilities as a research centre for environmental studies. It has been the main centre for scientific work on the terrestrial environment of Sinai for more than 30 years. The Centre is available for the use of international and Egyptian scientists who are interested in studying this arid mountain ecosystem.



The Environmental Research Centre

The Great Ring Dyke

The Sinai massif contains some of the world's oldest rocks, and is geologically very complicated. 80% of the rock dates from 600 million years ago, and is the very characteristic red granite. Overlying the granite in many places is a dark, almost black, volcanic rock, the result of volcanic activity about 10 million years ago. This volcanic activity created a number of the mountain peaks, including Gebal Katrin and Gebal Musa. In the satellite image (see page 8), or alternatively from the magnificent view at the top of Gebal Serbal, you can see the vast ring of black volcanic rock (with the peaks of Gebal Katrin, Tarboosh and Madsous) enclosing the red granite of the town of St Katherine and the mountains around Gebal Musa. Actually, as you can see from the image, the ring is incomplete, with red granite emerging from the mouth to the north, and a straight wall of red granitic mountains streaming away towards the northeast from the western tip, finishing at Wadi Sa^{c}al. More or less at the junction between the black volcanic tip and the red granite mountains, the wall is pierced by a number of gaps, one of which leads to the pass of Naqb El Hawa ("the pass of the winds"). This was the traditional route taken by pilgrims, who came from Wadi Feiran, through Wadi Eslaf and Gharaba to Naqb El Hawa, finally passing up to Abu Seila, the plain of El RaHa and the Monastery.



The mouth of Wadi El Deir

The present main road takes a different but equally ancient route, leaving Wadi Feiran further north through Wadi Sheikh, and piercing the wall of mountains through the very narrow gap of the Watia pass, near Tarfa. At one side of this gap is a natural rock formation traditionally labelled as the Chair of Moses. On the other side of the gap is a small white chapel recently established (in the 1970's). This old Egyptian track and the replacement metalled road made by the Israelis have been washed away in flash floods many times. A third, southern route by which pilgrims reached the high massif from El Tur on the coast was through the beautiful Wadi Isla.

The permeable black volcanic rock results in a very different environment from the impermeable red granite. Plants grow earlier and faster on soil derived from the black rock; and these places are hotter and significantly harsher, something to be aware of as a visitor, since there is an increased risk of heatstroke there. Very different sorts of plants grow in the two areas. Since red granite is not permeable to water, in granitic basins where soil can accumulate there is a much greater density of vegetation than can exist on soils derived from the black rock, because the water does not drain away. Most of the cultivated gardens of the Bedouin occur in these basins.

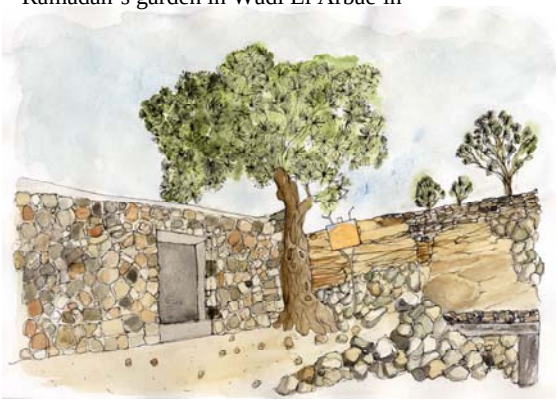
The red mountainsides are everywhere criss-crossed by stripes of darker volcanic rock: these are called dykes, and are places where the rock has split and molten volcanic rock has seeped up. Where they cross the wadi bed they are usually places where water collects, and therefore are good places for digging wells - the Bedouin refer to them as Jidda (='grandmothers').

The wadis

A wadi is a valley created by the action of water, but running water is normally absent - in Sinai and in Egypt generally the term wadi therefore

refers to an ancient watercourse that is now dry. A number of wadis radiate out from the town of St Katherine. They vary most obviously in length, width and availability of water. Often different parts of a single wadi bear different names, eg Tobouq, El Tall^{c}a, ItlaH and Genab are all sections of the same wadi. This is due to the natural geography of the Bedouin, who tend to give names to rather small places to help them to locate people and livestock accurately.

Ramadan's garden in Wadi El Arbae^{c}in



The Monastery is in Wadi El Deir (the 'Monastery valley'), but the best known wadi is actually Wadi El Arbae^{c}in, the valley of the 40 martyrs ('Arbae^{c}in' means '40' in Arabic). The martyrs referred to were not from Sinai, but Turkey - how or why this legend was transferred is not known. The very oldest name of this wadi is RaafeDiin, which means 'wadi of the people who refused', although quite what they refused to do seems to have been forgotten. Another older name, Wadi El Lega or Leja, was used until quite recently: this is the name on 19th-century maps of the region. Israeli accounts say this is a Hebrew name meaning 'barren', but this seems odd because all wadis are barren and Arbae^{c}in, ironically, is one of the richest and least barren of all of them. The Bedouin say the name means 'echo', referring to the

Moses' rock in Wadi El Arbae^{c}in

enhanced echo in this heavily used wadi. It contains the famous rock which Moses is said to have hit with a stick to produce 12 springs of water: there is

Old olive tree

a small chapel adjoining one side of it, built in 1974, and the rock is now enclosed by a high wall built in the 1990s by the Monastery. At the end of Wadi El Arbae^{c}in is a large and beautiful garden full of old olive trees, and containing the ancient Monastery of the 40 Martyrs, Deir El Arbae^{c}in. Next to the garden there are a number of Bedouin houses, including that of Ramadan Ibrahim, who looks after the garden for the Monastery. He has established a captive breeding population of Hyrax, starting with four orphaned young animals, and now numbering more than 100 individuals.

Wadi El Arbae^{c}in

On the other side of the St Katherine basin, across El Kweza which contains the main Bedouin settlement of El Milqaa, is another green and fertile wadi, called Wadi ItlaH. As mentioned above, this is actually a continuation of Tall^{c}a, and is famous for its palms and other fruit trees. It is also famous as the site of the cave where St John Klimacus spent 40 years in silence in the 7th century AD. Many gardens were established here by the Monastery, and they produce a surplus of fruits and vegetables. The monks used to signal to

the Bedouin living around the Monastery to come and collect this produce by blowing a horn (Bouq) towards Abu Seila from Wadi ItlaH through a small wadi known as Wadi El Bouqeya (valley of the horn blast). Although now dry almost all year round (except in April), during the 1980s this wadi had a stream 30 cm deep running throughout the year.

Upstream from Wadi ItlaH lies Wadi Tall^{c}a, containing several large gardens with ancient olive trees. At the top end this wadi has been almost completely blocked from its continuation as Wadi Tobouq by a natural rockfall called Sed Dawoud (David's Dam). The only way to pass this dam is to creep through a vertical hole only as wide as one person. Wadi Tobouq is the final part of the Wadi Gebal system, which we have described in detail in our book *A walk in Sinai* (Zalat & Gilbert 1998).

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Climate

The climate of southern Sinai is characterised by long hot rainless summer months and mild winters. During the winter and spring there can occur brief but high-intensity cloudbursts that shed a great deal of rain into the wadis, causing very destructive flash flooding. Despite these, normally most of the precipitation of the year occurs as snow on the highest mountains, which melts in spring and seeps into the porous volcanic rock. For climatological data for the area see Appendix II.

Mike James

Flood in Wadi El Arbaeʿin

Egypt is perhaps the most arid country in North Africa, with most of it including south Sinai classified as 'hyperarid'. However, despite southern Sinai having an average of only 10 - 20 mm of annual rainfall, the lower massif has on average 30 - 50 mm, and the highest parts 70 - 100 mm. This is four to ten times the amount of rain of most of mainland Egypt. Despite appearances to the contrary, therefore, in fact the area has a great deal of water. Some wadis such as Wadi Isla have virtually permanent running water. It always seems miraculous to come across lush vegetation with ferns in the midst of the arid desert. Averages hide substantial year-to-year variation, and there can be periods of great drought as well as short spells of devastating floods. The road from Suez via Wadi Feiran has been washed away several times, including the spring of 1991 when torrential rains resulted in terrible floods that killed an estimated 150 people. The worst drought in living memory is happening as we write, in 2003.

The average maximum daily temperature in summer occasionally reaches 34°C, but this is not extreme by Egyptian standards. However, although the temperature is not very high, the intensity of the solar radiation is extreme - the highest recorded in the Middle East. In winter temperatures regularly fall below freezing at night, with snow frequent at high elevations.

Water resources

Despite the mountains of southern Sinai having the highest precipitation in the whole of Egypt (except perhaps for Gebal ᶜElba in the extreme south east), there are no natural permanent streams, so the only source of fresh water is precipitation during the winter falling as snow and rain. The seasonal climate can be split into two: a hot dry season (summer) when rain never falls, and a 'wet' season (autumn-winter-spring) when rainfall is at least possible. The causes of rainfall over southern Sinai during spring and autumn are monsoon depressions formed over Sudan that move northwards over the Red Sea. Sometimes this coincides with the occurrence of a depression over the eastern Mediterranean, leading to severe thunderstorms. However, even 'wet'-season rainfall is rare, and many years have no rainfall at all: even when it does occur, it lasts only for a short time and the number of days with rain is very low. Most of the precipitation falls as snow on the mountain peaks during winter. On average there are only 13 days per year in St Katherine when at least 0.1 mm of rain occurs in a single day, and only three days with more than 5 mm. The highest value ever recorded in St Katherine for a single day was 76.2 mm in November 1937, contributing greatly to the highest annual total of 123.2 in the same year. In recent years the highest amount that can be expected in a day in St Katherine is about 25 mm, and this happens only once every ten years. Much larger amounts are certainly possible: there were devastating floods during the 1968-69 winter that destroyed many gardens. Outside the Ring Dyke, approximately 200 mm fell in three hours over Wadi Watir to the east of St Katherine in October 1997, causing a huge flood that destroyed the road and carried away several cars, killing their occupants.

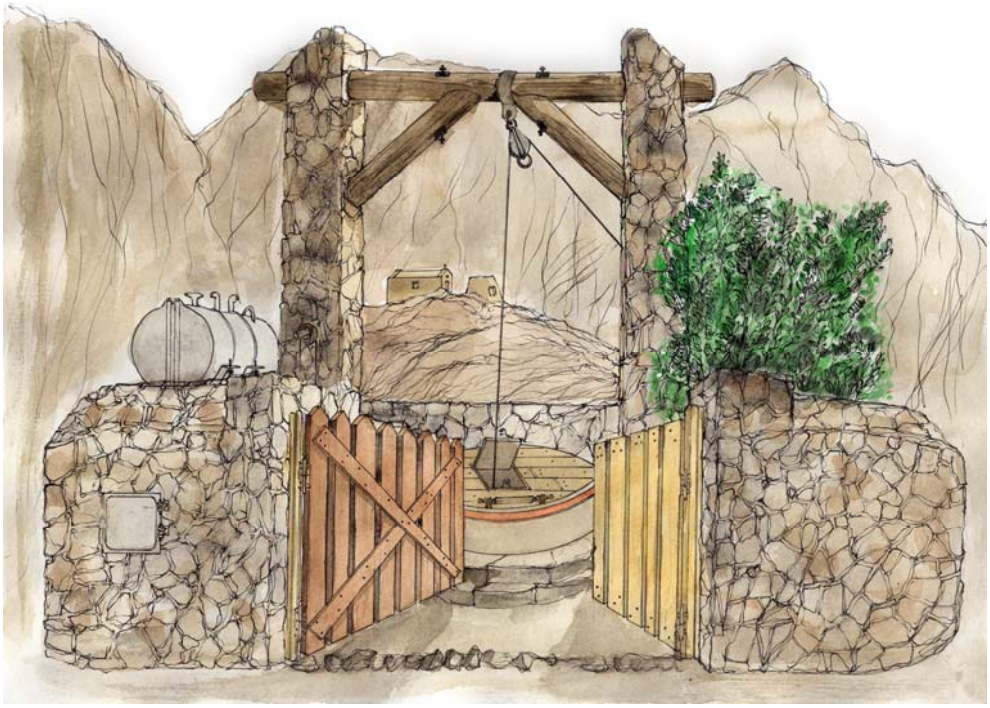
Well of a Bedouin garden

The wadis of the St Katherine area drain into three separate catchments which meet at Gebal Musa/Katrin. The Wadi Feiran catchment drains to the northwest, Wadi El ᶜAwag to the west, and Wadi Dahab to the east. Together with the Wadi Watir catchment north of Wadi Dahab, which has the highest runoff, these four catchments provide 59% of the eastern and 51% of the western runoff. The Feiran, Dahab and Watir catchments are by far the most dangerous in terms of the frequency and violence of flash floods.

These four catchments also dominate the recharging of underground aquifers, returning on average a volume about three times greater than the runoff. In general in Sinai, the total surface runoff of water to the west is approximately three times higher than the eastern-flowing catchments, reflecting the 35% greater area and 17% greater rainfall.

Further to the south lie the small but biologically rich catchments of Wadi Hebran-ImleHa, Wadi Isla, and Wadi Thiman. As the Egyptologist Raymond Weill described in 1908, Wadi Isla is “one of the most perfectly beautiful routes in the whole peninsula”, highly tortuous and passing between “extraordinary vertical cliffs of red granite”, running with water and with an exceptionally dense vegetation. In the summer of 1995 we ourselves walked the old pilgrim route from St Katherine to the El Qaᶜa plain through this wonderful wadi. At that time, water was running throughout most of the wadi, and the central part was a forest of bamboo

and palms, so dense that it was difficult to pass through. Near the wadi mouth there were a number of natural pools surrounded by dense thickets of mint (*Mentha longifolia*), the strongest indicator of water availability in Sinai.



The Well of Haroun (Aaron) near the Monastery

Tim Hurst

A water reservoir in Wadi El Arbae[c]in

Agriculture and biodiversity

The Bedouin rely heavily on the biological resources of their environment. Wild plants and animals have traditionally supplemented their diet, providing for health and income, and shaping their material culture. The use of these natural resources therefore not only contributes to the well-being and prosperity of the Bedouin, but is a valuable source of knowledge about how to use nature in a sustainable way. One important aim of the management of the Protectorate consists of trying to maintain these uses, preventing the invasion of destructive and exploitative modern techniques that ignore traditional ways of conserving resources.

There are a large number of environmental problems in the Protectorate, including overgrazing of endemic and rare plants, the unsustainably heavy collection of medicinal plants used in folk medicine, hunting of wild animals (e.g. Ibex), the shortage of seeds especially of economic plants, a lack of knowledge about the main pests and diseases of vegetables and fruits trees, lack of knowledge about diseases

Ibex

(e.g. internal or external parasites) infesting wild and domestic animals, and a lack of educational environmental programmes at school and in the community about using natural resources in a sustainable manner. The Bedouin have a largely unstudied, very sophisticated relationship with their environment which deserves wider dissemination, especially within Egypt, since all Egyptians could benefit from an appreciation of its complexity. All of these issues are in the process of being addressed as part of the work of the Protectorate.

A wide variety of vegetables, wheat, barley and fruit trees (e.g. fig, pear, apple, peach, plum, apricot, olive etc.) are grown in the isolated gardens of the area. This produce is usually for family consumption, but some families near towns sell their surplus to shops and cafeterias. Despite being generally very healthy, these crops can suffer from pests, especially when grown at lower elevations (see p.56).

Goat/sheep herding and the use of camels are traditional activities of all Bedouin tribes and play an important role in their social and economic life. Herds are not sold because they represent the wealth of a clan or tribe and as such are a valuable resource, playing a wide variety of roles in the Bedouin economy (transport, meat, milk and milk products, wool and wool products, skins). However, the livestock also have many diseases, especially internal and external parasites, that affect dramatically their productivity, impacting on the Bedouin life. As we discuss below, the average size of goat herds has decreased during the 20th century, reflecting changes in the Bedouin economy.

Improving agriculture and management of natural resources in an economic and sustainable way can help Bedouin families in their traditional settlements to make life easier by improving their nutritional and health status, and by generating income. This will help to improve the quality of life of the Bedouin and reduce their current poverty.

Tim Hurst

The Gardens

Gardens in Egyptian history

The idea of gardening may have started and developed during the Fourth and Fifth dynasties (2600-2300 BC) in Egypt. Many drawings on the walls of Egyptian tombs show the attention paid to gardens for their different fruits (palm, fig, grape, jujube, pomegranate, olive, etc.), shade trees (e.g. Persea [*Mimusops*], tamarisk, acacia, willow etc.) and flowers, involving different horticultural practices. The ancient Egyptians believed that a person's dead body would enjoy the shade of garden trees during hot days: this is described on the wall of one of the tombs thus:

> "Every day I walk on the beach, and my soul rests on the tree branches which I cultivated to enjoy myself under the shade of the fig tree".

The fig (*Ficus sycomorus*, the 'sycamore' of the Bible) was one of the most widespread trees in the gardens of Pharaonic Egypt: the sarcophagi of the Pharaohs were made of its wood, lovers used to meet under its shade, and the tree is mentioned as a holy tree since the gods lived on its branches. There was a god called "Khem", whose hieroglyphic symbol also meant 'garden'; this name is very close to "Khemi" one of the names applied to Egypt itself. There was an annual feast called the "feast of the gardens" when the trees were green with beautiful flowers and ripe fruits, and the ancient Egyptians used to spend this day playing, dancing and singing.

The ancient Egyptians had various different types of gardens including palace, temple, house and tomb gardens. The huge Palace gardens of the Pharaoh surrounded the palace, divided into small separate areas by large doors. The most famous was the garden surrounding the palace of Amenhotep III (1388-1350 BC). For this he ordered a huge lake more than 1.5 km long and about 300 metres wide to be dug. He celebrated his second year as king with a picnic in the garden with his wife Ti. One can just imagine the great Pharaoh relaxing in his cool garden, surrounded by his intimates.

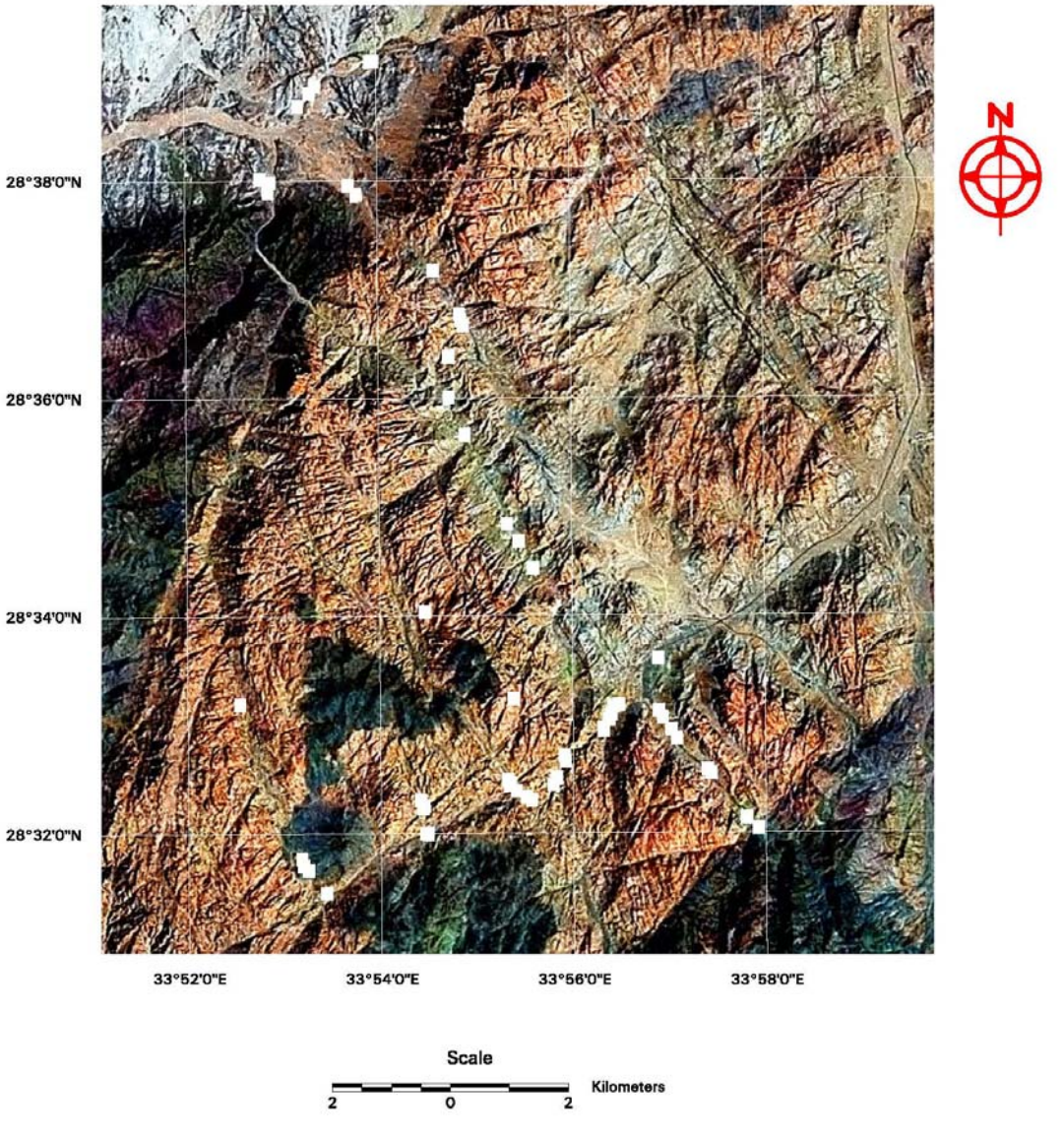
The New Kingdom and later (1550 BC onwards) was characterized by the establishment of gardens with many trees around temples, sometimes in the shape of the sun in the middle. Each temple had a large garden with a special holy tree in the middle, and its corridors were ornamented with

colourful flowers. Honeybee colonies were established within these gardens, and the honey was offered to the gods to preserve the temple. Queen Hatshepsut erected a splendid temple at Deir El BaHari in Thebes for the god Amun with three terraces cultivated with different, carefully selected trees. These trees were irrigated from the Nile by a set of pipes. Excavations have shown trunks of *Mimusops* trees carefully planted in rounded walled pits, indicating careful placement and husbandry.

House gardens with many trees and high walls were established by wealthy people around their houses. A famous example is depicted on the walls of Ennene's tomb: this man was in charge of grain stores during the reign of Amenhotep I (1525-1504 BC). There were 435 trees of 23 species in this garden, including 170 date-palms *Phoenix dactylifera*, 73 sycomore figs *Ficus sycomorus*, 31 *Mimusops schimperi*, 120 doum palm *Hyphaene thebaica*, 12 grape vines *Vitis vinifera*, 10 tamarisks *Tamarix articulata*, nine willows *Salix* sp, five common fig *Ficus carica*, and five pomegranates *Punica granatum*. The garden was delineated by a number of wooden posts with their tops in the shape of *Nymphaea* lotus flowers with different colours. The garden walkways to the house were tunnels of trellised shade plants laden with flowers. In the middle of the garden, there was a rectangular pool with lotus flowers, and *Hyphaene* and *Mimusops* trees at the corners. There was also a grain-store with two floors. The Egyptian Museum in Cairo contains a model of a Pharaonic house from Tel El ᶜAmarna surrounded by a large garden with a water reservoir and different trees, with tools for irrigation, grain stores, and pens surrounded by hedges for cattle and buffalo.

Tomb gardens were characterized by their small size since most of them were in the arid desert with little vegetation. A good example is a cemetery built by Ahmose (ca. 1550-1525 BC) for his grandmother in Abydos, with a pool surrounded by many trees. In the Egyptian Museum there is wall painting showing such a garden with various trees, a table for offerings, and women crying in front of the tomb. In the temple of Philae in Aswan there is a painting of a tamarisk tree in the room dedicated to the god Osiris. Muddy fertile soil is commonly found in front of ancient Egyptian tombs, and it is thought that gardens were routinely established in front of the tomb gates, watered by relatives or friends from the Nile or a well.

Map of (selected) gardens in St Katherine Protectorate



The Bedouin, their environment and their gardens

The total Bedouin population of southern Sinai was estimated at 24,000 in 1996. 'Bedouin' simply means 'people of the desert'. There are about 6-7,000 Bedouin living a semi-nomadic existence in the mountains. They belong to seven main tribes, each occupying a fairly well-delimited region (although there are places jointly occupied by two or more tribes). The 2,500 Gebaliya Bedouin are the descendants of a group of Christians brought by the monks of the Monastery from Wallachia in Romania to help them live at the Monastery. However, their numbers were probably augmented by additions from Syria, and others from the Delta of Egypt. Already by the 7th century virtually all had converted to Islam, although the last Christian Gebaliya was a woman who died in 1750. 'Gebaliya' merely means 'mountain people'. Some of the Gebaliya families have Yemenese blood since within living memory (great grandfathers) some people from Yemen came and regenerated the gardens, and stayed to intermarry. In 1972 the Israeli authorities estimated the number of the Gebaliya at 1245, and therefore their numbers have doubled in approximately 25 years.

Each tribe controls a different part of the Sinai, and the area around St Katherine belongs mainly to the Gebaliya. Bedouin live in small groups of 4-5 families: there are about 40 such settlements in the St Katherine area, more than in other areas because of its natural advantages as well as the availability of work at the Monastery and in the tourist trade. In the only study of the orchard agriculture of the Gebaliya, Perevolotsky cites a total of 170 families living in the high mountain region. The men work as guides, drivers and labourers, but the women never leave their settlements: unmarried or elderly women look after the goats and sheep. Typically each extended family has 5-10 goats, 4-8 sheep, 2-4 camels and 4-8 hens: some also have donkeys to carry water and baggage on very steep slopes or in very rocky wadis. These animals represent a substantial proportion of the family wealth: for example, at 2003 prices a camel costs anything between LE 3-5,000.

Traditional Bedouin tent

Traditional small-scale orchard agriculture is typical of the Bedouin, practised in the walled gardens that are so characteristic of the wadis. According to Perevolotsy, the 170 Gebaliya families own 231 of the 440 gardens he counted; the rest were generally owned by Gebaliya living outside the region; less than 20% were owned by families of other tribes (mostly Awlad Sa^{c}id). About one quarter of Gebaliya families do not own a garden (mostly the recently married), and 60% own only 1-2 gardens. Some of these tend gardens belonging to the Monastery in return for half of the produce. Vegetables and cereals (wheat and barley) are grown during spring and summer, whilst fruit (almonds, figs, pears, olives, plums, etc.) is the main autumn and winter crop. Water is the principal limiting factor, and the Bedouin possess great skill in using the erratic rainfall and limited groundwater. Such traditional skills are passed from father to son. Gardens and orchards are always near wells or springs: the black plastic hoses that are now a feature of virtually every wadi bring water from higher wells or springs to the gardens. Most of the produce of these gardens is for consumption by the family; only families living near St Katherine sell their

surplus produce. This pattern is probably rather recent: in the past, much of the produce ended up in the markets of Cairo. Falling prices, or more lucrative alternative sources of money may have caused this change.

In this book we have tried to describe the varieties of the fruits and vegetables grown in the gardens of the Bedouin. In doing so we rely on each Bedouin farmer to name and classify the varieties cultivated in the garden. This can produce problems because some classify the varieties by size, and others by taste, and yet others by shape, texture or hardness. We have correlated these names as much as we can in order to arrive at a relatively objective view of the situation.

The Bedouin also have a huge number of names for the different parts of their environment, for the general areas, the wadis, the mountains, and even for very small sites. This enables them to locate people or animals very accurately, especially helpful in emergencies. The names are often descriptive, but also are often connected with stories, accidents, or some other event in the past. They themselves make no distinction between descriptive and historical names, and this may create some difficulties in understanding what the names mean. There are even differences in the interpretation of these meanings amongst the Bedouin. For example, the path from St Katherine into Wadi Gebal is called Abu Geefa. 'Abu' (literally, 'father of') means 'a man/male/thing' (in Arabic, all nouns are male or female), qualified by a characteristic: in this case 'Geefa', meaning 'bad-smelling carrion' or 'death'. Thus most Bedouin agree that Abu Geefa evokes the idea of the smells associated with the camel traffic up its slope, because the slope is steep and hard-going, and because the luggage is heavy. Some, however, believe that the name is a poetic description of the fact that while climbing and getting very tired, you can see nothing but the uninteresting rock which, just as carrion, would provide an unrewarding sight, in contrast with the beautiful view behind you.

Even when the meaning is unambiguous, transliterating the name can be a problem because of different pronunciations and sounds that do not occur in English (see Appendix VII for an explanation of the way in which arabic letters are represented in English). This is a particular problem in some words. For example, the arabic name for mint plants in general (*Mentha* spp) is Ne^{c}na^{c}: there is only one species in Sinai, *Mentha longifolia*, whose patches produce one of the most evocative and memorable fragrances for visitors to the wadis. The Bedouin name for this plant is 'Habaq', ending with the guttural arabic letter 'qaf', but some pronounce it as 'Habak', or

‘Habag’: it should be ‘Habaq’, because this means in Arabic ‘a fragrant place’ (‘Habak’ means ‘perfect in trickery’, clearly inappropriate here).

The advent of the Protectorate has ushered in modern ways of conservation, but in earlier times the Bedouin had their own method of preserving their environment in the system of ‘Helf’. This tradition is common to the whole Arabian peninsula, and therefore presumably came into the Sinai with the immigration of the Bedouin tribes. Helf was essentially a verbal agreement to a system of fallow rotation, selecting particular wadis and deliberately not grazing them for a specified period of time, or until the plants had recovered to a specified height. Sometimes only certain animals were allowed to graze. Helf was also applied to the cutting of trees, preventing this unless urgently required.

A person local to the declared Helf area was appointed as a monitor, whose job it was to see that no accidental or deliberate flouting of the agreement occurred. Breaking of Helf had serious consequences. A person sending animals to graze in a Helf area would either be fined, or would lose them, since any such animals could be awarded to the person reporting the incident.

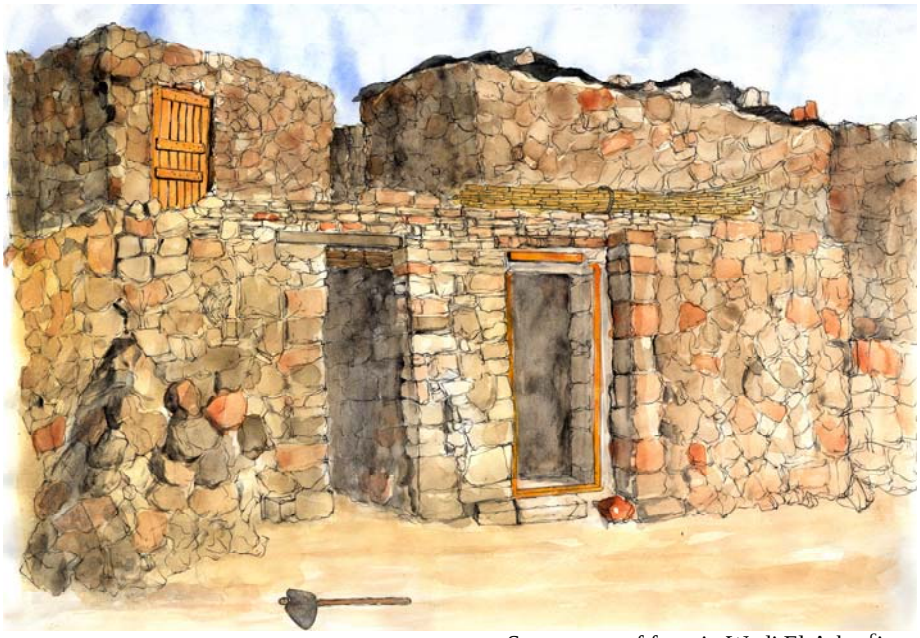
Islamic principles supported Helf but prevented its over-zealous application that might deny food or fodder to hungry people. The rules applied on a large scale among tribes, so that (for example) during periods of drought, areas with water would be accessible to the inhabitants of drought-stricken lands.

In the 20th century this system fell into disuse, but clearly re-establishing it would be good for the management of the Protectorate; this is exactly the strategy of the management unit of the St Katherine Protectorate. With local agreement, an area of Helf has been declared on Gebal Safsafa in order to conserve Sinai Thyme and the tiny endemic butterfly that feeds exclusively on it (the Sinai Baton Blue butterfly, the smallest butterfly in the world).

As we have noted, the mountainous environment of the Protectorate consists of several different drainage systems, each made up of a number of connected wadis. Within each wadi there are scattered walled Bedouin gardens of different sizes (see map on p. 29), built around wells providing a source of permanent water. There are about 400 orchard gardens in the mountains of the Gebaliya territory, each on average about 0.2 hectares in area and containing 50 trees. The gardens are places to occupy in summer,

when the family moves from their winter house at lower elevation (nowadays usually in the town of St Katherine). They are beautiful places, and most Bedouin pine for their gardens during the winter: as Joseph Hobbs described: “the Gebaliya orchard is a paradise”.

Almost all the crops of the Bedouin are produced without the use of pesticides or fertilizers, and are therefore completely organic. Traditionally the only fertilizers are the droppings of camels and goats that are collected and spread onto the soil, although some artificial fertilizers are beginning to be used in Wadi Feiran. The high altitude and harsh conditions reduce the occurrence of pests and diseases to generally low levels, and therefore the crop plants are in general very healthy.



Storerooms of farm in Wadi El Arbaeʿin

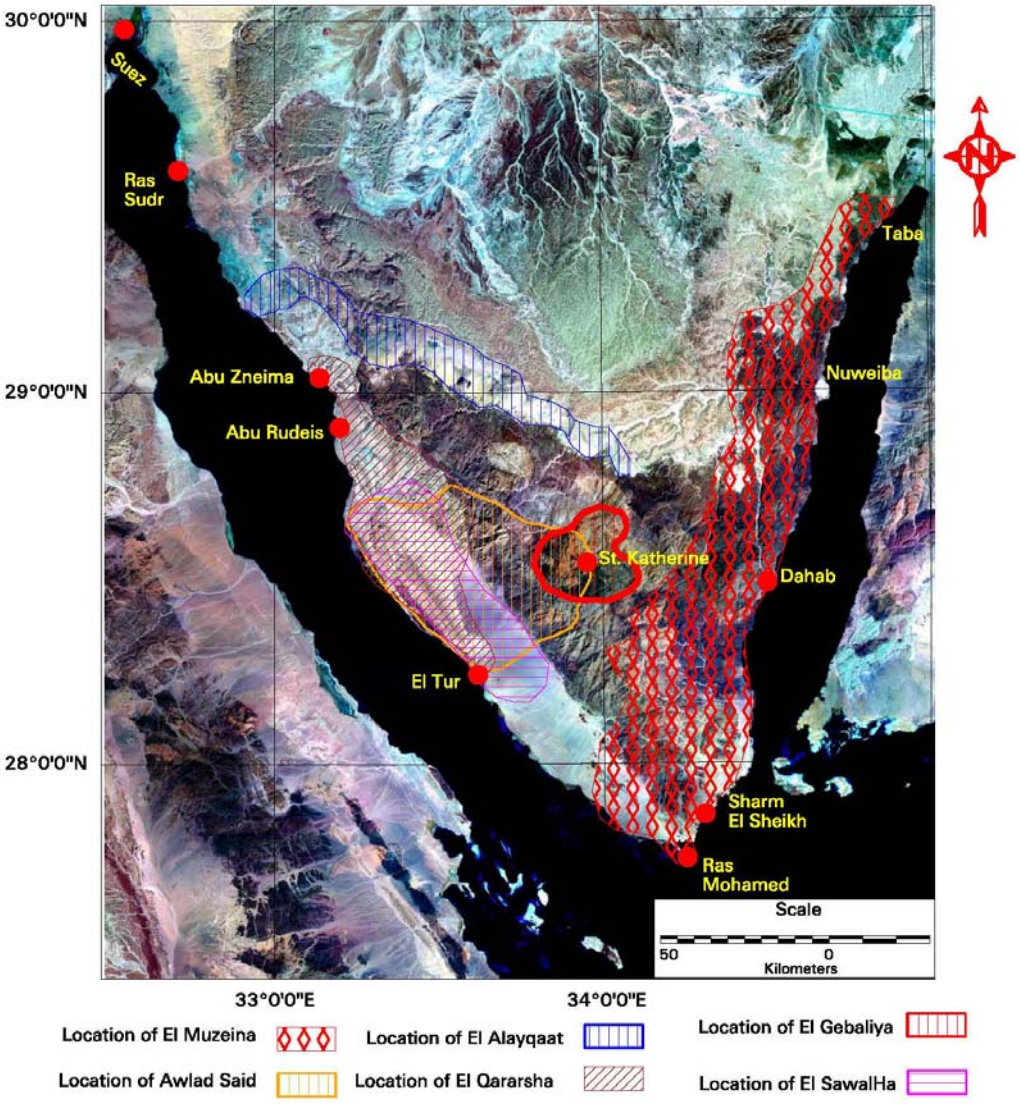
History of orchard agriculture in Sinai

Orchard agriculture was typically practised under Byzantine Christianity, and during the Byzantine era there were hundreds of monks, hermits and orchard-owning farmers living in the area. Thus in Sinai the idea of building gardens for produce from plants probably originated with the hermits coming to settle in the area during the first few centuries AD. The Gebaliya have established farming as a significant, regular and reliable source of food, unlike almost all other Bedouin in the Middle East: the only similar group are the Bedouin of the Negev highlands, who also live near ancient

Byzantine settlements. The only other instance of Bedouin gardening comes from Saudi Arabia, where it is somewhat different: the Bedouin there create large (mud-) walled gardens, mainly for date palms but also planted with vegetables and animal fodder. They used to irrigate these from wells, as in South Sinai, but now many are supplied by the state with piped desalinated water.

The large, well-organised walled gardens of South Sinai were first established probably when the Monastery itself came into being at the end of the 4th century. The Arabic invasion of the 7th century cut the region off from its centralized Byzantine governmental support (even though Sinai remained largely untouched by the incoming Muslim administration). Most of the settlers left, and the garden agricultural way of life deteriorated in most places, maintained only in the isolated high mountains in south Sinai. The oldest of the walled gardens in Wadi El Deir, Gebal, Arbae^{c}in and ItlaH almost certainly date from this period, as do others in widely scattered monasteries elsewhere in the mountains (Deir Antoush in Ras Zerigeia near Gebal Um Shomar and Wadi RemHan; Deir El Banaat in Wadi Feiran; Deir Segillya in Wadi Agala near Gebal Serbal; Deir Abu Maghar in Wadi El Frai^{c}, part of the El RaHa plain). In the Wadi Gebal system, the oldest gardens are those in Wadi El Zawateen and Al Galt Al Azraq; the best-known one is Geninat El Nasrani, the ‘garden of the Christian’. All these gardens were cultivated by Byzantine Christians before the advent of Islam. The present pattern of gardens is clearly a remnant of a much more extensive network established by monks and hermits from the 4th century onwards.

Wadi El Zawateen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Suez
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Abu Zneima
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St. Katherine
El Tur
Taba
Nuweiba
Dahab
Sharm El Sheikh
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Scale
50
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Kilometers
Location of El Muzeina
Location of Awlad Said
Location of El Alayqaat
Location of El Qararsha
Location of El Gebaliya
Location of El SawalHa

Table 2: *Structure of the Bedouin tribes of the Tuwaara alliance, i.e. those tribes of the mountains of southern Sinai, concentrating in detail on the people owning land within the Great Ring Dyke centred on St Katherine.*

The hierarchical structuring of Bedouin tribes is difficult to express in English, mainly due to the ambiguous nature of the word 'family', which can mean either the nuclear family or the extended family. In the Gebaliya the nuclear family of a husband and wife and their children is merely the smallest element embedded within a large hierarchical structure composed of lineages (ᶜayla: the extended family) within the four clans (the Rub'a, or 'quarters') that make up the tribe.

Tribe القبيلة	**Main distribution**	**Notes**	
El ᶜAlayqaat **العَلَيْقات**	El Ramla to Wadi Gharandal		
El Muzaina **المُزَيْنة**	South of El Tur to Ras Mohamed, Dahab, Nuweibaᶜ and Taba	Within the Ring Dyke, this tribe owns only the gardens and produce, but the property rights of their land are not clear	
El SawalHa or El ᶜAwarma **الصَوالْحة أو العَوارْمة**	El Tur, Wadi Feiran, Abu Rudeis		
El Qararsha **القرارْشة**	El Tur, Wadi Feiran, Abu Rudeis, Abu Zneima	The traditional main enemies of the small SawalHa tribe, but because the latter have a mutual-protection agreement with the Gebaliya, this enmity is transferred to the Gebaliya	
Awlad Saᶜid **أوْلاد سَعِيد**	El Tur, Wadi Feiran, a few in St Katherine (Wadi Razana, Lamasridi and Wadi AHmar)	The subtribe Al ᶜAwarma lives on all the land encircling the Gebaliya territory, plus a few areas within the Ring Dyke itself	
Gebaliya **الجبالِية**	Environs of St Katherine (within the Ring Dyke)	Descendants of people sent at various times to help the monks of the Monastery, from Wallachia in modern Romania, Alexandria, the northeast Delta, and the Black Sea coast of Anatolia in modern Turkey	
	Clan (Rubᶜ) الرُبْع	**Lineage (ᶜa'ela) العائلة**	**Location and other notes**
	Al Waheebaat **الوَهِيبات** (Tarfa, Wadi Gharaba, Wadi Feiran, town of St Katherine)	Abu Heib **أبُو هِيب**	Town of St Katherine; the original lineage of the clan
		Abu Kersh **أبُو كِرْش**	Town of St Katherine; Wadi Nasb
		Al Hanaina or LeHnanie **الحَنايْنة أو لِحْنانِيى**	Wadi Feiran, Wadi Esbaᶜeia
		Abu Saᶜid **أبُو سَعِيد**	Town of St Katherine; Abu Geefa
	Al Hamayda **الحَمَايْدة** (Wadi Esbaᶜeia, town of St Katherine, El RaHa)	Abu Hegaazy **أبُو حِجازى**	A few in the town of St Katherine
		Abu Msaᶜid **أبُو مُساعِد**	Town of St Katherine
		Al Saanaᶜ	Wadi Esbaᶜeia and El RaHa

		الصائغ		
		Al Hashash الحَشَّاش	Town of St Katherine	
		Abu Sa^{c}eda أبُو سَعِيدة	Town of St Katherine	
	Awlad Seliim أوْلاد سلِيم (Tarfa, Wadi Feiran, Wadi Esba^{c}eia)	Abu Meghanim أبُو مِغْنِم	Tarfa, Wadi Feiran, Wadi Esba^{c}eia: the original lineage of the clan	
		Abu Rafia^{c} أبُو رَفِيع	Tarfa, Wadi Feiran	All founded by brothers of Abu Meghanim
		Abu Ghanaim أبُو غْنايِم	Wadi Esba^{c}eia, Abu Seila	
		Abu ^{c}Abeid Allah أبُو عَبِيد الله	Wadi Esba^{c}eia	
		Abu El Heem أبُو الهِيم	Town of St Katherine; Tarfa, Wadi Feiran	founded by two brothers
		El Darawsha (Abu Mdarwash) الدَراوْشة (أبُو مْدَرْوَش)	Wadi Esba^{c}eia, El Zeituna	
		Abu Muqbel أبُو مُقْبِل	Town of St Katherine; Wadi Esba^{c}eia	founded by two brothers
		Abu Mes^{c}aed أبُو مِسْعِد	Town of St Katherine; Wadi Esba^{c}eia	
		El ^{c}Oreir (El ^{C}Oreirat) العُورِير (العُورِيرات)	Bir Haroun (El Kharazein)	founded by two brothers
		El Aqra^{c} الأقْرَع	Bir Haroun (El Kharazein)	
	Awlad Gendi أوْلاد جنْدِى (Wadi Tinya, Abu Seila, Wadi ItlaH, some in Wadi Feiran)	Abu Mas^{c}oud (or Msa^{c}da) أبُو مَسْعُود (مْساعْدة)	Town of St Katherine (El Shameia): this clan came from Egypt rather than Wallachia	
		Le^{c}faali لِعْفالِى	Abu Seila	
		Abu G^{c}eS أبُو جْعِيص	Abu Seila	
		Duquny دُقُونِى	Abu Seila: ‘the bearded ones’, after the long beards they used to grow, like the monks	
		Abu ^{c}Elwan أبُو عِلْوان	Abu Seila	
		Abu Kershan أبُو كِرْشان	Abu Seila	

The gardens of St Katherine are owned by Bedouin from the Gebaliya and the Awlad Sa^{c}id: the Muzeina have some gardens too, but they only own the gardens, not the land, and they have no right to establish any new gardens.

Some Gebaliya trace their descent from a man called Bekhit and his brother Al Gendi (from whom are descended the Awlad Gendi); one of Bekhit's sons, Hamayda (from whom are descended the El Hamayda) had two sons, Weheebaat and Seliim, who were the progenitors of the Awlad Selim and Al Weheebaat clan respectively. Another Gebaliya said that just three familes established the Gebaliya from Europe, brought as servants for the Monastery: Abu Heib, Al Hamayda and Awlad Seliim. Then one family of the Awlad Gendi came from Egypt to protect the Monastery, and the Gebaliya gave it a large area of land. No-one can establish any garden in this area without paying for permission to build from the Awlad Gendi. Eventually the Awlad Gendi became one of the four clans of the Gebaliya: actually it owns more land than the other clans put together. In former times, the land was neatly divided among the Gebaliya clans; however, it is now possible to build a house or a garden on land belonging to another clan, with permission. Over time, this has led to a fragmentation in the holdings of most of the lineages and clans.

The Awlad Sa^{c}id form a large tribe of Bedouin who have been in the region for much longer than the Gebaliya. They are the major landowners from Wadi Razana to Wadi El Sig, and also Lamserdi, a rocky gorge running from Wadi TofaHa. They also own old houses and lands in the town itself, and some of the families still live there peacefully with the Gebaliya. After the Israeli withdrawal from Sinai in 1979, the Egyptian Government took over regulation of land ownership in the town by decree, while in the mountains it is still regulated by the Bedouin. Although not agreeing with the principle of losing control over the land in St Katherine, the Bedouin appreciate that there is a lot of pressure on this land from Bedouin and Egyptians wanting to settle there, and it is practical to have a secure system of recognising ownership.

When the Gebaliya first came, there were scattered gardens everywhere, especially in Wadi Gebal. The people already living there were Byzantine Christians, mostly monks, and the land was transferred to the Gebaliya either by being sold directly by the owners, or shared with the owners to start with, and gradually bought by Gebaliya descendants. The selling of the land happened collectively: it was a group decision on both sides. Then the gardens were divided between the lineages initially without any allocation

to individual families, but later on families started to establish their own gardens. The produce of the original gardens is still shared among the lineage descendants. For example, the garden of El Zeiri dominated by olive trees near Gebal ᶜAbbas Pasha belongs to the entire Al Hashash lineage, and all its members share in the care and produce of this garden.

The importance of the gardens to the economy of the Gebaliya through their history is not entirely clear. Dan Rabinowitz studied 19th-century pilgrim accounts of visits to the Monastery, looking for evidence of the basis for the pattern of subsistence of the Bedouin. Following Perevolotsky, he considered that the 19th-century Bedouin diet was based largely on imported staples such as sugar, rice, wheat and coffee, none of which could be produced in the mountains. A rough calculation indicates that each family used about 1200 gallons of wheat every year, costing them £6 sterling in 1850 prices. Other imported goods resulted in a total bill for a family of six of £20 per year. How did they obtain this relatively large sum of money ? The Cambridge linguist, Professor Edward Palmer spent six weeks near the Monastery in 1868, and listed the sources of Bedouin livelihood that he gleaned from talking to them: guiding pilgrims, trade with Cairo (charcoal, ibex horns and gum-arabic), tobacco, dates, goat-hair and sheep-wool. Overall there were only two methods of obtaining money to pay for imported goods: sale of natural resources or sale of services. Let us consider each of these in turn.

Did the Gebaliya live mainly on livestock herding, as did Bedouin in other parts of the Arab world ? Interestingly, pilgrim accounts rarely mention Bedouin livestock apart from their camels and sometimes a few sheep. The Gebaliya have never been as nomadic as other Bedouin, but merely move between their summer and winter houses; only truly nomadic peoples rely on herding for subsistence. Palmer noted explicitly that the Bedouin rarely slaughtered livestock for meat except for sacrifice (which today involves only 3-4 young male goats per year per family). Rabinowitz took this information to imply that there had been only a limited reliance on herding by the Gebaliya over at least the last two hundred years. Hunting is also a possible source of food and money. However, although wildlife was obviously more abundant in the past, only a single Bedouin was mentioned in pilgrim accounts as relying on hunting as his main occupation (and he hunted mainly on the Gebal Serbal massif). Occasional hunting must have been more common: Palmer relates a story of a Bedouin man shooting an ibex for his Christmas meal ! Thus, Rabinowitz concluded, neither livestock

and herding nor hunting could have formed any major part of the subsistence economy of the Gebaliya, monetary or otherwise.

In striking contrast, many 19th-century pilgrims mention charcoal production as the main staple of the Bedouin economy, produced from acacia or tamarisk wood. A single camel load of charcoal could be sold for enough money to feed a family for two months, and only 125 kg of charcoal would supply cash for a whole year's purchases. Arthur Stanley in 1853 stated that charcoal was the chief or perhaps the only trade of the peninsula, and constantly met camel trains on the way between Cairo and Suez.

Rabinowitz also noted that, apart from Palmer, 19th-century pilgrim accounts do not mention the fruits of the gardens at all, an amazing omission in the light of their importance today. In 1868 Palmer described the gardens (such as those in Wadi ItlaH) as completely derelict and unused: the only ones actively being cultivated and producing fruit belonged to the Monastery. This is intriguing, since it paints a completely different picture of the life of the Gebaliya from that of gardeners and herders current today.

Turning now to the sale of their services, the main ones that the Gebaliya could (and still do) provide are associated with pilgrims coming to visit the Monastery: guiding, transport and protection. Given the level of wages cited by several of the 19th-century pilgrims, a Bedouin guide would have to work for about 30-50% of the year to earn the £20 required to pay for their imported staple goods.

There was, of course, a further source of money: the Bedouin could extort money as protection money, or steal it from pilgrims. Before the gradual exploration and pacification by Muhammed Ali in the early 19th century, Sinai was truly a wild region and the Bedouin had a bad reputation for robbery, extortion and murder. Most pilgrims were afraid of their Bedouin guides and emphasized very clearly the wisdom of being vigilant and careful. Even fluency in Arabic and being well-versed in Arab customs failed to save Edward Palmer, who was murdered in the Sinai in 1882. This notorious murder shocked Victorian Britain, and the history of its investigation ordered by the British Parliament is a fascinating document, providing insight into the behaviour of both the British officials and Sinai Bedouin. In retaliation the British put an end to the 600-year-old land route across Sinai of the annual pilgrimage to Mecca, with devastating consequences for the Bedouin economy.

The picture that emerges is one of flexibility by the Bedouin in response to external changes happening in the wider world. Rabinowitz thought there were basically two ways of making one's living as a Bedouin in Sinai: either living off the land (in herding and agriculture), or exploiting the outside world (through charcoal trading and attending to travellers' needs). The latter became dominant in the 19th century as opportunities for trading and visiting arose, causing the gardens to fall into neglect and disuse. Doing both was not possible because each option occupied so much time. Rabinowitz does not think that the acacia trees used for making charcoal became exhausted as the trees were chopped down, but his thesis seems difficult to apply to the Gebaliya since (at least nowadays) acacia is a lowland tree, rare or absent from most of the Gebaliya lands, and there is little evidence of the materials and equipment of charcoal burning. He thinks the end of charcoal trading was caused by the Turkish invasion of Sinai during World War I, and that oil and gas had already begun to replace charcoal by the time the war was over so that the market for charcoal was never re-established. Similarly, religious tourism petered out at the same time, and by the time it began again, motor vehicles were replacing the camel for transport.

Thus, Rabinowitz believes, orchard agriculture and herding became prominent again during the interwar years and afterwards, as they had been before the 19th century. In the post-WW2 period, the average annual yield of a garden could reach LE 110 in value, an amount enough to keep a Bedouin family for at least six months since their subsistence expenses were only about LE 8 per month. Herd sizes were then relatively large at 50-60 per family, and herd products could provide enough cash for about four months subsistence. Such a herd represents a typical number for truly nomadic peoples relying completely on herding, but the high altitude meant excessive reliance on the hardier goats rather than sheep, and Sinai goats are small and relatively unproductive.

The Arab-Israeli war of 1967 caused the collapse of demand for Sinai fruit by cutting off traditional outlets: there was little demand from Israel since high-quality fruit was readily available there. Thus the importance of herding and agriculture declined in the 1970s just as paid manual labour for the Israeli occupiers became available. Although this gave many Bedouin relatively large amounts of money each year, subsistence costs also rose substantially by between 5 and 10 times. Thus the income from the gardens became hardly sufficient for one month's subsistence, resulting in their abandonment. The more distant and remote gardens suffered the most from

neglect. However, the Bedouin used their new relative wealth to invest in new gardens, mostly constructed conveniently near the main roads and pathways. After the Egyptians took over Sinai again, the availability of paid manual labour declined, revitalizing the orchard economy once again. Thus Rabinowitz and some other Israeli social historians regard orchard agriculture as representing only a fall-back for the Gebaliya, an insurance system to be maintained and invested in during good times so that they are ready to provide continuity during hard times (see Figure 3).

all by Tim Hurst

Tending and harvesting in the gardens

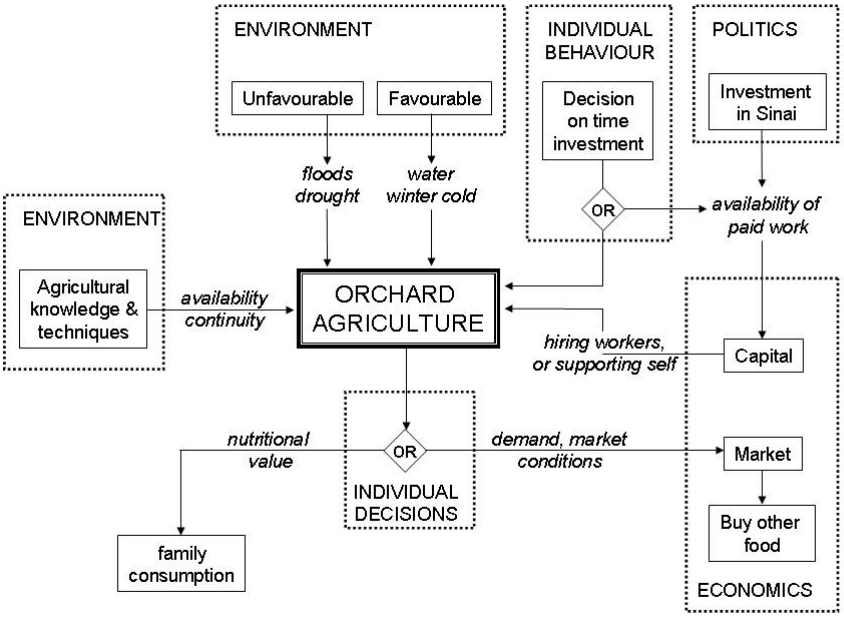


Figure 3: Perevolotsky's diagram of the way in which orchard agriculture fits into the Bedouin economy

Perevolotsky surveyed the state of the gardens of the Gebaliya in 1977. Only one-third of them were under full or partial active cultivation; another third had been abandoned (although still producing fruit); a quarter were in ruins. Only 30-40 families continued with the traditional seasonal migration, apparently a decline from the 100 families who used to spend the summer in the high wadis. There were three main reasons why families abandoned their gardens: obtaining paid labour elsewhere, getting old with no-one to take over, and the disastrous flood damage of the 1968-69 winter.

Recently a new source of income has appeared for garden owners: some gardens have been converted or newly established as camp sites for tourists. At the moment this has only happened in Wadi Gebal, the main hiking site for visitors (see Zalat & Gilbert 1998). Such gardens form part of a tourist agreement between the Bedouin owners and Sheikh Musa, the leader of the Gebaliya. They are still functioning gardens, but merely have part of their area set aside for camping.

The acme of such developments can be seen in Wadi Gharaba, where an old ruin and its associated garden has been converted into a magnificent

ecolodge, run by one of the Bedouin owners, Gamil Attiya. The ecolodge has been built to operate on the principle of minimal environmental impact, with waterless composting toilets, showers that are water efficient and solar heating.

Establishment and irrigation

Creating a garden involves great expense, said to be approximately the equivalent of ten-months subsistence costs for a family of six. The location of a source of water determines where a garden is built. It is difficult to establish exactly where the well should be dug. Some wadis are famous for their rich water sources, e.g. Wadi Gebal, Tall^{c}a, ItlaH. Only a few of the older Bedouin are experts in knowing exactly where to dig. In general if there is one, they follow the dark volcanic dyke in the granitic rock (they call this Muhammed's line) and dig the well either at its base or where it disappears.

Once a well has been dug that provides a reliable and adequate source of water, the dry-stone walls of the garden are constructed downstream of the well, so that irrigation is easy. A Bedouin man, the owner, digs the well either by himself, or by a shared effort between several men. This is a huge undertaking in the hard rocky ground, and if there is no sign of water seepage after about 2 metres depth, the well is abandoned. A typical successful well is 4 metres deep, but can be up to 25 metres and exceptionally 37 metres: to dig a well costs about LE 300 per metre in sandy soil and LE 500 in rocky land. In a garden of about ½ feddan (2100 m²) it will cost at 2003 prices about LE 30-50,000 for digging the well, building the wall, pipes for the water, seeds, etc: in 1977 this cost was only LE 500. Although salary inflation has also been large, the relative cost of making a garden has visibly increased. About 3 m^2 needs to be maintained between each tree: the number of trees in the garden depends on the garden area, the quality of the soil, and the richness of the water resources.

Wadi Feiran and Tarfa have very deep wells that now require electrical pumps to draw up the water. In St Katherine in the past the water used to be drawn up using a shaduf, the classic Egyptian method of a pole with a weight at one end and a bucket on the end of a rope at the other. In recent years the Bedouin have bought black plastic pipes from mainland Egypt, which bring water from springs at higher elevations to the garden by gravity feed. These pipes can go along the wadis for a long distance, making the position of a garden no longer so dependent on the location of a well.

However, this can create problems because too many pipes can empty natural water reservoirs and destroy the surrounding vegetation.

In the past and in some gardens still, the water thus drawn up was poured into channels which took it directly to the plants. Nowadays water is kept in a tank made from stone and cement, from which it is transferred to the channels as and when required. In spring and autumn the trees may need irrigation only once per week, but in summer at least twice per week is required to produce a good crop. Vegetables may need water every day.

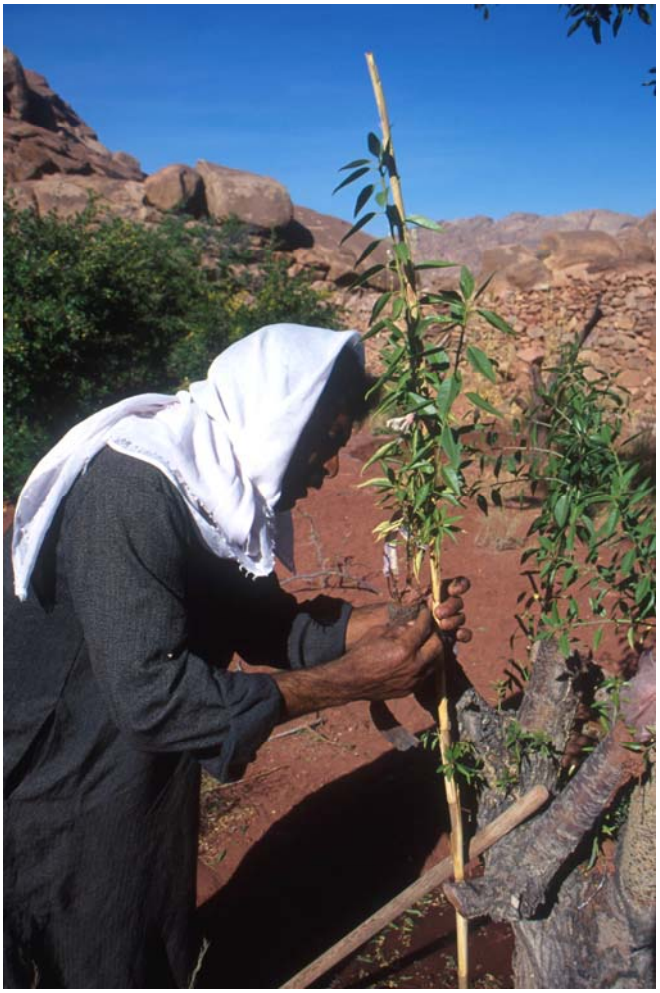
Tim Hurst

Watering the garden

Agricultural practices

All gardens contain fruit trees, and most have vegetable crops as well. The largest garden belongs to the Monastery and is at the end of Wadi El Arbae^{c}in. About 20 ha in area, it contains a large number (ca. 700) of ancient olive trees. When he visited in 1816, Burkhardt described this garden as a “pleasant place to rest” among its olives.

No artificial fertilisers are used in any gardens, as far as we know. Goat and camel dung is collected and soaked, and then put onto the soil surface. No chemical pesticides are used either, except in the case of copper sulphate



Mike James

Grafting

sprayed onto vegetables to control insect pests in some gardens in the town of St Katherine. Thus the produce of gardens from the wadis is completely organic. Since there is usually a surplus, this could possibly be marketed and sold to provide extra income. Recently, Mahmoud Duquny has resurrected traditional bedouin practice of solar drying to preserve fruit and vegetables, and is marketing the products.

Skilled grafting is practised in most gardens, usually taking place in March. For example, the wild fig is very much more resistant to the conditions of the environment than its edible counterpart: its roots and stems are very well adapted to the lack of water. The Bedouin therefore graft branches of the edible fig onto the wild rootstock. Similarly, different fruits are grafted onto the drought-resistant rootstock of the native Sinai hawthorn (*Crataegus sinaica*), or one variety of apricot onto another, or sometimes plums onto apple rootstock (which makes the plums taste quite different and much sweeter).

Some grafts are known to be less successful in the gardens: pear can be grafted onto an apple tree, but the graft will die after one year; apple can be grafted onto quince, but the fruit is salty.

In winter, the Bedouin live in their winter houses in St Katherine and only visit their gardens occasionally. The garden needs watering every week from February, and then twice per week in April and May, and every other day between June and September. The grapevines are pruned and the irrigation system cleaned in February, and by April the vegetable garden is laid out, planted and fertilized with goat manure. According to local custom, families return to their mountain gardens in June after the first apricots have ripened in the town. The men may return regularly for work in St Katherine, but the family does not abandon the high mountains until November, completing the cycle of the year. This seasonal migration is familiar to farmers and pastoralists in many mountain regions of the world.

Bedouin forms of pest control

In the high mountain area the frequency of fruit-tree pests is low, and therefore pest control is usually not necessary in most years. The exceptions to this generalisation are pomegranate, and to some extent almond trees. Immediately outside the high mountains at lower elevations the gardens have significant pest problems on their trees, and both areas suffer from vegetable pests. Since all the produce is organic, the key feature of any pest control method is that it should not be chemical, but rather be based on cultural or biological methods. The Bedouin themselves have invented many ways of reducing the impact of pests on their crops using simple and environmentally safe techniques. For example, they observed that the caterpillar pest (possibly the larva of the Pomegranate Playboy butterfly, *Deudorix livia*, or a moth) of pomegranate attacks and spoils the young fruits. Therefore they enclose the fruits in paper bags during the critical

period when adult females are laying their eggs, which protects the fruits very effectively from infestation. Another recently invading caterpillar pest attacks courgettes, probably coming in with a new large courgette variety. Using the scientific approach of experimentally testing his ideas, Hussein Saleh established that the soil type had no effect on infestation, but a simple barrier to the pest made from an open carton prevented it crawling from one plant to another, and abolished the infestation completely.

The gardens and Bedouin law

There are very few problems among the Bedouin concerning land or water resources, because the older generation respects traditions, and the younger generation respect their elders. Since the elders act as judges, there are hardly any disputes. Nevertheless there are documents that establish the exact borders of each individual garden and its ownership, and hence there is little doubt about these matters. Bedouin law states that if you live on your land, you can establish a garden by placing stones on the borders of the land; if you do this, no-one can use the land unless it is neglected for a whole year. If this happens, then any member of the Gebaliya has the right to take over this land. If you have established a well, even if only one metre deep and lacking any water, this confirms lifetime ownership of the land. Wells are of course particularly important in the arid environment, and are a good example of the value that the Bedouin place on effort expended in developing the land.

Some fruit trees have been planted in the wadis and are not enclosed within a garden. As with all gardens and the crops within the gardens, these trees belong to a particular family or man. The Bedouin always respect these trees and do not eat the produce unless they know that the tree has no owner, or that the tree was deliberately planted as a resource for everyone. The trees concerned in the latter case are usually figs or mulberries. Even in villages in the Egyptian Delta, the produce of mulberry trees is traditionally for everyone and anyone to collect and eat, although why this is the case is not clear. It is possible that the mulberry fruiting time was an indicator of the Helf period.

Ownership is taken very seriously indeed by the Bedouin. If the owner of the garden is not there, entry is not allowed, for two reasons: great respect is shown to ownership itself; and secondly, the garden in summer is the family home, and just as a visitor would not normally be allowed to meet the family in the house itself, the same is true of the garden. It is interesting that

women are never owners of gardens, since their wealth is held in the form of gold and goats. Indeed, Hobbs drew a parallel in the attitude of men to both gardens, trees and women. Entering gardens without permission or causing damage to the trees are regarded in a similar light to insulting or violating the privacy of their family and women. Because of this attitude, there are rarely any problems of theft or trespass in the gardens, and therefore little is said about the rules and involvement of the law. However, if this law is broken, there are serious consequences. As is normal in Arabic culture, exceptions are made when a traveller needs water or food to survive; such a traveller needs to leave a sign that he was in the garden and took the fruit because of hunger, rather than theft.

Hobbs gives an interesting example of the consequences that would result from entering a garden and stealing some fruit. Every individual decision made in the process is regarded as deliberate and significant. Thus each step from the public trail to the wall is counted, and the move would cost him one camel as a fine. For mounting the wall, another camel is due. Entering the garden and walking to the tree each cost a further camel. Reaching for the fruit costs one more, and then leaving the garden yet another. Thus the total fine would be six camels: the judge would convert this into money, the equivalent of ten to forty thousand Egyptian pounds, a truly astronomical sum of money.

Even amongst Gebaliya who do not currently own a garden (10% according to Perevolotsky), all of them have owned one or had a share in one at some time of their lives. Garden ownership can be lost through economic necessity or by being surrended in payment of a fine under local law. To buy a garden is very expensive and represents a considerable investment, the equivalent of about a year's subsistence for a Bedouin family. Land can be sold to members of the same clan, but cross-clan transactions need the approval of the 'owning' clan.

Inheritance among the Gebaliya is unequal among the sexes, following the standard Islamic pattern. After the death of the parents, the estate is divided into shares according to the principle that a male child inherits two shares to every one share allocated to a female child. The reasoning behind this is that a man incurs the full cost of providing a home for his wife, whereas a woman is not expected to pay anything, but keeps her inheritance for herself. A Bedouin woman never gains a share of the land or houses, but only the trees and the fruits. This is because the Bedouin believe that if a woman inherits the land then this will transfer automatically after her death

to her husband's family. Since Muslim women retain the name of their father, this means that the land will then bear the name of her husband's father rather than her own, and hence after a while the land will then belong to a different family. Therefore the men keep the land and the house so that the family name (and their sons) will continue to be associated with them. In return, the maintenance and all the duties of the garden are the job of the man and his family, but he must split the products of the trees with his sisters so that they gain their share of their parents' inheritance.

Women can marry men from the same lineage, clan, tribe or other tribes, but inter-clan or inter-tribe marriages are frowned upon and normally require the approval of the elders. Men only rarely marry women from other tribes. The families are usually sensible about deviations from the normal arrangements: one woman married a man from the Delta region without telling her family, but returned after one year without any problem.

Blood feuds used to be a characteristic feature of Arabic societies, and still are in some regions; they can be a reason for loss of land and gardens. If a murder occurs for any reason, the family of the murdered man (and virtually always it is a man) has the right to murder any member of the murderer's family in return. They usually target either the murderer (if known) or any other important family member. Without an effective system of control, revenge inevitably occurs, usually another murder, and the resulting feud has no end. Within Bedouin tribes of Sinai these feuds are still extant, but the operation of certain rules regulate their impact, limiting the damage to particular degrees of relationship.

The lack of such rules can hamstring an entire society. In Upper Egypt, for instance, there is no community-level regulation apart from the police, and this allows large families to dominate; the down-side is that any member of such a family suffers disproportionately since they are vulnerable to revenge attacks from many different sources. In the Gebaliya, however, the implicit influence of the sheikh is strong, and once revenge has been taken, the issue is finished. Revenge can take many forms: the victim's family has the right to take the life of one of the murderer's family, a house, a garden, a camel, or indeed anything they choose. Particular rules restrict whom they can target.

One such limiting rule is that of El Khamsat. 'Khams' means 'five', and indicates that revenge can only be taken on family members for five generations. The calculation is complex. One counts living members of the

direct line of the murderer, with his oldest living male ancestor counting as generation 1. Revenge can be taken on any male member above the age of 16 (i.e. only those who are able to defend themselves) from the entire family, including all the descendants of all the brothers of the first generation. This extends until the fifth generation, but as soon as the sixth generation appears, some parts of the family then escape vulnerability. If the sixth generation is in the murderer's direct line, then the entire rest of the family except this direct line becomes invulnerable. If the sixth generation is elsewhere in the family, then just that particular line becomes invulnerable. Just as this rule delimits the set of people vulnerable to revenge, it also defines the group of relatives whom a Bedouin can expect and demand to come to his aid when in trouble or under attack. It is therefore a very important concept in Bedouin society.

To reiterate, in Sinai among the Gebaliya, once revenge has been taken, the matter is finished; as far as we understand, this is due to the influence of the local sheikhs and the community. The end result, and in fact the reason for the rule in the first place, is to prevent the community from being dominated by large families, and this benefits everyone. The law is interpreted compassionately, and exile or temporary exile rather than death is often the outcome.

The full name of this rule is El Regl bel Khamsat: 'regl' means 'legs', and refers to walking. The phrase means that if you are looking for revenge, you must count to the fifth generation.

***Gardens in Bedouin family life**: an example*

The garden ownership of the Abu-Meghanim family shows how complex the history is in the 20th century alone. As Perevolotsky details, the then patriarch Musa bought a garden in Wadi Gebal from a SawalHa Bedouin for LE 15-20 at the turn of the century. Musa had four sons, and the eldest, Saleh, worked at the Monastery for many years, saving up enough to build a garden on the slopes of the El RaHa plain on land given to him by the Monastery in recognition of his efforts. Later he was able to obtain the family's rundown gardens in Wadi Abu Waleya using his savings and by selling 40 goats and a camel, buying out the shares of the rest of the family. His brother Mubarak was a partner in this work, contributing funds from his work in the manganese mines of Um Bugma near the coast of the Gulf of Suez, and from carrying goods and selling a camel. Saleh was then able to build a large new garden in Wadi Abu Waleya. The two older brothers gave

up their shares in their father's land to their younger brothers Salama and Hussein, who eventually inherited their father's garden. Hussein and Mubarak earned a lot of money from paid employment, and abandoned their shares in the more remote gardens in the mountains, constructing new ones near the newly built roads. Saleh's son Hussein extended the gardens in Abu Waleya, constructing a new garden, digging two more wells, and establishing a camping site for trekkers.

Traditional drying of vegetables

Samy Zalat

Use of the garden produce

In the past there was a system of barter between the Bedouin of El Tur, El ᶜAqaba and St Katherine. Fish from El Tur or the Gulf of ᶜAqaba were exchanged for fruits. This exchange often took place at a 'mulid', a feast and fair, when people would collect together to celebrate (e.g. Muhammed's birthday, or the anniversary of renowned sheikhs). The main annual meeting was traditionally organised every year by the Muzeina tribe, and Bedouin from all over Sinai joined together with those from Jordan and Saudi Arabia to exchange goods, fruits and other produce. Each involved about 50 Bedouin goat-hair tents over three days, and the sacrifice of 5-7 camels. All the tribes have the same traditions of local meetings, and many (but not all) of these mulid still take place.

The Gebaliya gathering takes place near the tomb of Nabi Haroun (the prophet Aaron) in Wadi Sheikh. At the beginning of the celebration, Sheikh Musa comes in a gleaming white galabiya from a trip to Cairo to bring some special flower water obtained from shops near the Al Hussein mosque. The water is then sprinkled all the way up to the top of Gebal Musa. The act of fetching this sweet-smelling water and distributing it on holy ground is believed to confer good luck, especially an abundance of rain and fertility, on the land. After this, the celebrations and bartering begin, and many legal and family decisions are taken.

Tim Hurst

Cooking

A lot of Bedouin cooking involves the use of butter as an oil, because olives are no longer pressed for oil in any significant quantities. Butter comes from goat's milk, and is made using a goatskin bag. This bag (Qerba) is made from the skin of a young goat 6-8 months old, because the skin is soft and pliable. It is a woman's job to make the bag and the butter. To make the bag, the inner surface of the skin is first specially treated with a powder made from pulverized Handaqooq (*Globularia arabica*): this is because the Bedouin believe this powder has anti-bacterial properties. For a bag that is going to contain water, the Bedouin treat the inner surface with *Ephedra* (see below). They add some water and leave for one week, and after three days they repeat the process. The bag is then created from the skin, often with holes only where the neck, tail and feet were. The tail is left to provide a handle. The front legs and (if male) the testicles are sewn up and left as decorations, and the neck forms the mouth of the bag.

There are two kinds of bag used for processing milk, one (Marwabba) for making yoghurt and one (MakhaDa) for butter. To make yoghurt, they ferment the milk in the bag in a warm place for 24 hours, in winter near the fire and in summer outside in the shade. To make butter, they put milk into the bag and blow air into the opening over the milk. Then the woman gently shakes the milk for about 60-90 minutes depending on the quantity, with the bag on her lap held by the opening and the tail, until the sound of the milk diminishes. A cup of cool water is added, and the mixture shaken for about 10 minutes. She then scoops out the butter using a spoon, packing it in a clay pot. Iron containers are avoided because they react with the butter. The buttermilk is left to make milk Fatta (see below).

The best butter comes from goats during the month of Ingaas (ie July, the month when the pears are ripe), because they believe this particular butter has extra health benefits. Goat's milk is also used to make cheese, using fig leaves to help separate the curds and whey.

Some of the butter is further processed into ghee (clarified butter), called Sa^{c}oud. Special rock salt (Hafir) from caves in the hills near Abu Zneima is added to hot butter, plus a cup of wheat (or in the past, maize flour), and gently cooked until it turns clear. Then saffron (Korkum) is added and the mixture is removed from the heat; the surface liquid is poured off and cooled. Formerly they would have used leaves from MleiH (*Reaumuria hirtella*) instead of saffron. The solid material left behind can be eaten with bread, or thrown away. The surface liquid, or ghee, solidifies when it is cold, and can be stored for up to two years. Butter is used sparingly for Fatta and rice because there is not very much of it. It is also used as a medicine when people feel constantly tired and weak; three drops of the melted butter are placed in each nostril, once per year.

Mike James

The Bedouin daily diet consists mainly of tasty and filling vegetable stews and soups. For example:-

- Beans cooked with tomato, fried onion and courgettes, and served hot with salt.
- Molokhayia (Egyptian spinach) leaves, purslane, courgette, and courgette flowers (used instead of tomato) boiled together and served: this is a favourite dish.
- Molokhayia leaves boiled into a thick soup, and then mixed with beans, tomatoes and rice into a dish called Lebeykha.
- Purslane, lentils and molokhayia boiled up together in water produces a soup, used especially in Ramadan.
- Aubergines (and sometimes potato) cooked together with rice
- Pieces of unleavened bread, onion and butter, sometimes with tomato, gently steamed in a covered pan with a small amount of water, to produce what is called Fatta. This a quite different from the traditional Egyptian Fatta, which is made with meat broth, bread, rice, garlic and tomato sauce, and served together with the meat.
- Milk Fatta is bread soaked in fermented milk

Wheat is no longer grown locally as in the past, and hence the famous Bedouin flat unleavened bread (ᶜAish) is made from imported produce. They roll balls of dough and then flatten each one out while spinning the dough in the air using a skilful circular motion of the hand. The flat dough is then baked on a heated metal plate on the fire.

Baking bread

Making coffee

A stone grinding mill

Bedouin agricultural calendar

The names of the agriculturally important months of the year derive from the main produce, and the fruiting season is the main theme of these names:

- June = ‘apricot’ month
- July = ‘Ingaas pear’ month
- August = ‘grape and fig’ month
- September = ‘date’ month
- October = ‘Shitwi pear’ month
- December = ‘olive’ month

There is a sequence of fruiting in different areas that is noted by Bedouin. Thus, figs and apricots first ripen in Wadi NaSb, and then in the town of St Katherine, and then in Wadi Gebal.

The Milky Way in the night sky is called the 'KhaT el thamara', or the Line of Fruit. This is because in summer the line of the Milky Way is in the middle of the sky, visible together with the fruits on the trees, whereas in winter the Milky Way is marginal in the sky.

Years are marked by major incidents, such as 'locust' year when huge numbers of Desert Locusts migrate into the area. Floods are another obvious marker of particular years, or times of war.

Bedouin harvesting traditions

Harvesting and processing of fruits and vegetables are very social activities, usually accompanied by traditional songs. We have collected a few examples from the Gebaliya Bedouin here:

- during olive harvesting, the labour is divided between those who climb up the tree to hit the branches with a palm stick to dislodge the fruits, and those down below who collect them up. The chant calls for the climbers to come down:

إنْزِل وأرْمِي المَخْيـــــاط
العَدْس أسْتَوَىَ وطـــــاب
enzil wermi el makhyat
el ᶜats estowa weTab
come down; leave your sticks
the lentils are perfect now for eating

- another chant is sung while the olives are being destoned, or scored to allow the salt to penetrate, or pressed to extract the oil. It calls for Ali to come in and share in the work:

يا عَلِي ياجُوز ســـــارة
عِنْدَنا كَلْب المَضَّـــــرة
يأكُل اللِي ينام بَـــــرَّة
ya’ᶜali yagoz sara
ᶜindanna kalb el maDara
ye’akul ili yinam barra
Oh Ali who married Sara
we have a dangerous dog
who will eat anyone who stays outside

- a chant is sung by young girls tending the goats in summer if it is very dry with no rain. Water is obviously vital in the arid environment, but goat hair is too because it is used to make the covering of the tents of traditional Bedouin homes:

يا مْنَزِّل الغِـــــيث غَاثِينـــا
بالِسْعِـــين راعِينـــــــــــا
وشَعْر مِعـــزانا لِيطانابينـــا
ya’mnazil el gheath ghaathina
belisᶜain raᶜina
weshaᶜr maᶜzana liTanabina
Oh God, can you send rain,
for then my water container will be full
and in return I will give the hair of my goat to my neighbour

- a final chant is sung about a ploy while digging a new well to trick someone into helping with this huge task:

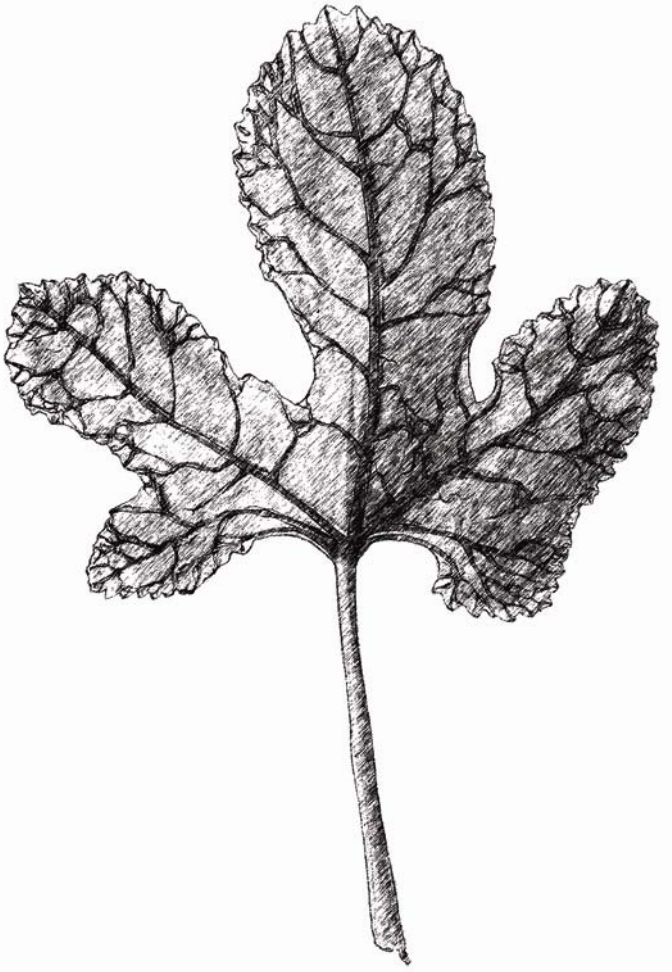
نادُونِـــى وجِـيت مُغِيـــر
أحْسِـبُه سَمْـــن وفِطِيـــر
لاهُـــو لِحْفِيـــر البيـــر
naduni wegeyt mughir
aH’sebuh samn wufetir
lahu leHfir el bir
They called me and I came very quickly
I thought of butter and bread
but it was to help in digging the well

Once harvested, preservation is by simple air-drying: Bedouin growers spread out the vegetables, herbs, tobacco and some fruit such as tomatoes on a cloth to dry in a sunny spot in the garden. The preserved fruits are usually rehydrated and made into drinks or sauces for cooking.

Ecological importance of the gardens

Although the Bedouin regularly irrigate the various cultivated vegetable and fruit crops in the gardens, the plants are hardly if ever grazed. Vegetables are planted in the spaces in between the fruit trees, and because they are regularly irrigated, the garden is automatically important for wild plants too. We give a list of the commonest wild plants of these gardens in Appendix III, in order of their abundance. Wild plants are weeded out from immediately around the crop plants in spring, but rarely elsewhere or at other times. Thus the gardens do not just contain crops: large numbers of wild plants also grow there, and the gardens form important components of the landscape for such plants and their associated animals. This aspect of the importance of the gardens in the ecological landscape is under active research.

For example, take the Common Blue butterfly, *Polyommatus icarus*, which in Egypt occurs only in northern Sinai along the coast, and in and around St Katherine. As a larva, it feeds on alfalfa, and its survival in the mountains is probably completely dependent on the distribution of Bedouin gardens, since that is the only place where the foodplant can be found. As long as the gardens that harbour alfalfa are not too far apart so that individual butterflies are able to disperse from one to another, then the butterfly can maintain itself in the long term. Patchy populations connected by dispersal in this way are called metapopulations, and the number and distribution of the gardens are vital elements in the metapopulation survival of the Common Blue in Sinai.



Vegetables , fruits and wildlife

الخضروات و الفاكهة و النباتات البرية

General overview

The main objective of having a garden is to produce fruit for family consumption; surpluses used to be sold to travellers who knew where they could be bought. In the 1980s the Bedouin used to send their surplus to the shops in the growing town of St Katherine, especially almonds. With the advent of Egyptian produce in these shops, this option has declined.

Almonds and apples are characteristic of the gardens of the high wadis of the Gebal system. Olives are grown only in a few scattered gardens (in Wadi El Zawateen and El Arbae^{c}in, for example), but in large numbers. There are a few walnut trees, especially in Wadi Tobouq and Tinya. Wild figs and pears are usually found in Wadi Gebal. Other fruit trees are even more localized. For example, there are only two old mulberry trees: one particularly large one is in Wadi ItlaH. In contrast, grapes and pomegranates are grown almost everywhere.

In order of abundance, the fruit trees grown in the gardens are: almond, olive, apple, apricot, pomegranate, fig, jujube, quince, plum, peach, walnut, carob, pear, lemon, orange, tangerine, and palm. The equivalent list of vegetables and other plants is: tobacco, tomato, bean, maize, grape, aubergine, clover, water melon, courgette, purslane, Egyptian spinach, clover, squash, hibiscus, prickly pear, rosehip, pistachio, fox grape and cucumber. It is interesting that the Bedouin have a much greater knowledge of the fruit trees in their gardens than of the vegetables they grow: the opposite is true of the farmers of the Delta, who know much more about their vegetables than their fruit trees. The reason for this difference probably lies both in the commercial value of vegetables in the Delta, and fruit in the Sinai, and in the nature of the soils: the gravelly soil of the Sinai is better for fruit crops than for vegetables.

Tim Hurst

The garden of ancient olive trees in Wadi El Arbae^{c}in

Perevolotsky gave the characteristics of an 'average' orchard in the 1970s as the following:

Species	**Number of trees**	**Age structure**			
		young	**middle**	**mature**	**old**
Almond	11	3	4	4	-
Apple	5	3	1.5	0.5	-
Apricot	4	1	1.5	1.5	-
Date	0.5	0.3	-	0.3	-
Fig	3.5	2.3	0.8	0.5	-
Grape	13	3	7	3	-
Peach	1	1	-	-	-
Pear: 'Ingaas'	2	1	0.5	0.5	-
Pear: 'Klabeya'	0.5	0.1	0.2	0.2	-
Pear: 'Shitwi'	2	0.5	0.5	0.5	0.5
Plum: 'Barquq'	0.5	0.3	0.3	-	-
Plum: 'QaraS'	0.3	-	0.3	-	-
Plum: 'Shalook'	2	0.5	1	0.5	-
Pomegranate	4	1	1	1	1
Quince	2	0.5	1	0.5	-
Total	51.3	17.5	19.6	13.0	1.5

Today there are rather fewer fruit trees per garden (25-30), but still the number of species remains high. This tremendous diversity contrasts starkly with the gardens of the Monastery (e.g. at the end of Wadi Arbae^{c}in), which are largely monocultures of olive trees to provide oil for the church lamps.

As Perevolotsky assumed, the diversity probably guards against poor yields of any one crop, and also provides a sequence of ripening crops during the year. Apricot, grape and apple produce enough fruit after 3-4 years of cultivation to provide a saleable surplus; fig, almond and pomegranate provide only low amounts of produce after 3 years, but this increases greatly after 8 years to give enough to be able to sell. Perevolotsky found out the average productivity of the various fruit trees, and the value of their produce, to which we have added the current value (1 LE = 100 piastres):-

Species	**Fruit production per tree (kg)**				**Value per kg**		
	Young	**Medium**	**Mature**	**Old**	**1960s (piastres)**	**1977 (piastres)**	**2003 (LE)**
Almond	3-4	10-25	40-60		20-60	42	10-15
Grape	5-7	10-20			4-10	20-28	4-5
Apricot	3-5	5-10	40-70		3-6	16	4-5
Pear: 'Shitwi'	10-15	50	100	400	15-20	32	
Pomegranate	5-7	10-20	30-50		7-20	12-16	
Quince	10	50	70-100		10-40	4	
Apple	5-7	10-20	30-70, occ. 300		10-15	24-28	5-6
Peach	4-6	5-15			10-12	16	
Pear: 'Klabi'	5-10	20-40	50-100	150	25	32	
Pear: 'Ingaas'	5-10	20-40	50-100		25	32	
Fig	5-10	10-15	20-400		5	24	3-5
Plum: 'Shalook'	5-10	20-30	30		5	16-20	

Currently there is very little fruit being sold. This is clearly very unlike the situation even in the 1970s, let alone in the more distant past. Previous market outlets included the Monastery, tourists and pilgrims, Bedouin of other tribes, and exports to El Tur and beyond to Suez and Cairo. Only the more valuable and non-perishable fruits used to be sent to the more distant markets: 'Shitwi' pears, almonds, pomegranates and quinces. Today however, these outlets are more or less non-existent.

Vegetables occupy on average about 60 m², 4-5% of the total area of the garden. Although they use wheat in making their characteristic bread, the Bedouin do not grow it in their gardens, probably because it takes too much space and is now too cheap to buy to make it worth their while. In the past wheat appears to have been grown in and around the gardens: Perevolotsky writes that local Bedouin told him that they grew wheat extensively in their gardens until the 1950s.

The following table gives some idea of the relative amounts of the different vegetables being grown in an average Bedouin garden:-

Species		**Average area (m^2)**
Tomato	*Lycopersicon esculentum*	14.5
Bean	*Vicia faba*	10.8
Tobacco	*Nicotiana* spp	10.7
Maize	*Zea mays*	9.5
Pumpkin	*Cucurbita* spp	2.0
Egyptian Spinach	*Corchorus olitorius*	1.9
Purslane	*Portulaca oleracea*	1.0
Watermelon	*Citrullus lanatus*	0.7
Onion	*Allium cepa*	0.5
Aubergine	*Solanum melongena*	0.3
Others		7.0
Total		58.9

Tim Hurst

Tim Hurst

Principal Crops
النبـــــــاتـــات

1	**Species**:	**Arabic name**:	**الأسم العربى:**
	Almond	Loz	لُـــــــــــوز
	Latin name:	**Bedouin name**:	**الأسم البدوى:**
	Prunus amygdalus	Loz	لُـــــــــــوز
	Family:	**Pharaonic name**:	**الأسم بالهيروغليفية:**
	Rosaceae	Naz, Naza	نـــاز أو نـــازا

History

Originally from Western Asia, Iraq, and Turkestan, the almond was one of the earliest nut trees to have been domesticated, probably during the 3rd millennium BC, and was grown along with dates, olives and grapes. It is a small tree, identified by its pink flowers, which appear before the large spear-shaped leaves, and characteristic large, green, felty fruit. The wild trees bear only small dry fruit with bitter kernels. In some countries, it is grown as an ornamental plant for its blossom, large leaves and the many-layered effect of the tree. It thrives in the light sandy yellow soils of Egypt and in both north and south Sinai. Dried nuts were found in some of the New Kingdom tombs from ancient Thebes (1580-1084 BC). Nuts from the Graeco-Roman period (640-30 BC) have also been found in buildings next to the Sphinx in Giza, and in Kom Osheim near Fayoum: these nuts are preserved in the Museum of Ancient Agriculture in Giza.

Almonds do not appear to have been cultivated in Pharaonic Egypt, since they were among the presents taken to Egypt by Jacob's sons. The fruit of the almond was the model for the ornaments on the candlesticks in the tabernacle; and to this day glass-drops used for ornamenting branched candlesticks are called 'almonds' by English artisans. The Hebrew word 'loz' (identical with its Arabic name) was originally mistranslated as 'hazel' in the King James' Bible (Genesis 30: 37), corrected in newer versions to 'almond'. Aaron's rod which miraculously bore flowers and fruit, was said to be of almond wood (Numbers 17: 8).

In South Sinai this is the commonest fruit tree in the gardens, and is grown everywhere: its fruits are normally produced in large surplus to subsistence requirements. Sinai is well-known throughout Egypt for its almonds, since they are not produced in the Delta at all: however, commercial almonds are produced in northern Sinai rather than in the mountains. The main commercial distinction is between hard thick-shelled, soft-shelled, and extra-thin paper-shelled varieties.

Bedouin information

The trees are planted in spring, and first bear fruit after three years. If there is water, the trees are irrigated every day, but in times of water shortage this can be reduced to once per week. In south Sinai there are two varieties:

- El Sal or Sol **(الصَل أو الصُل)** is the oldest variety, and is large, rounded, and more oily with a hard shell; these are preferred for storage by the Bedouin. There are two types, one called ᶜAqbi **(عَقْبى)**that contains two nuts inside the fruit, and another with only a single nut that tapers at both ends.

- Fark **(فَرْك)** is a smaller and more pointed variety, with a soft shell that can be broken easily by hand (like a peanut) or in the mouth; this type is sweeter and more tasty, but also more expensive.

A mature almond tree in St Katherine nowadays produces about 20-30 kg of almonds, but in former times such a tree used to produce about 50 kg because there used to be more water. The current price for the small variety (Fark) is LE 15 per kg, and for the large variety (El Sal) LE 10. In former times the Bedouin used to sell their surplus to the monastery, but nowadays the main consumers are the non-Bedouin inhabitants of St Katherine. Before the modern era, the Bedouin of St Katherine used to exchange their almonds for dates from Wadi Feiran, or flour from El Tur and Suez.

Rodents such as the Egyptian Spiny Mouse (*Acomys cahirinus*, Al Fa'r Al Showki) **الفأر الشُوْكِى** or *Dipodillus* eat the fallen nuts in the gardens, preferring the small soft variety, while dormice (*Eliomys*: Abu KoHla) **أبُو كُحْلة** can eat the nuts direct from the tree.

Nutritional and medicinal value

The nut kernel contains 40-60% unsaturated oils, mainly oleic acid, and about 20% protein. The sweetness of each nut depends on how much bitter-tasting glycoside (amygdalin) it contains, a chemical which under certain circumstances produces prussic acid (hydrogen cyanide). Almonds are rich in vitamins A & B, sugar, phosphorus, potassium and iron. In Egyptian and Bedouin folk medicine, the nut is used for a wide variety of ailments (see table below). Sweet almond oil is made from bitter almonds, but eliminates the amygdalin: it is used in cosmetics, confectionery and baking. The production of bitter almond oil (or almond 'essence') requires steeping in water for half a day, followed by distillation in order to eliminate the prussic acid; the oil is then used in the pharmaceutical industry in creams, and for almond flavouring.

Some Bedouin believe that in terms of nutritional value, seven almond nuts are the equivalent of a hen's egg.

Ailment	*Remedy*
headache	eating the nuts directly
flushing the kidney and urinary tract	a quarter of a cup of ground almonds in water, taken once a day for one week
refreshing the memory	six nuts per day
keeping the face smooth	one banana mashed in almond oil, used as a cream

brown skin spots	200gm of almond oil + 120gm wax are boiled, cooled, and then rose water is added and the mixture is used as a cream
acne	almond oil + onion + garlic, used as a cream

Historically the milky solution from cut branches was used as a local pain reliever, and in cases of inflammation of the bladder, urinary tract and lungs. Boiled peel helped to cure a dry rasping cough. Soaked almonds are bitter and are used for asthma and as cough medicine.

In Egypt almonds are available all year round, but are mainly used during Ramadan for sweet toppings or fillings. The Bedouin usually simply eat the nuts, sprinkle them on top of cake at feasts, or use them in the following ways:-

- they grind the almonds, then mix the paste with honey extracted from honeycomb or with molasses from sugar cane;
- they mix honey with ground almonds and walnuts, and consider the resulting drink improves fitness;
- they boil ground almonds with water and sugar, and drink the mixture as a hot 'milk';
- they grind almonds to obtain almond oil, which they mix with cold milk into a drink;
- they produce Al Shana by inserting an almond into a soft date (Gam^{c}ei, the highest quality date from the area, produced mainly in Wadi Feiran), keeping the mixture in the Qerba (a container made from goat's skin), and pressing them hard; these are kept and eaten during winter;
- the following mixture is said to be very useful for the elderly, and also for the nervous and reproductive systems: 1kg of almond + honey + *Eruca sativa* (Rocket, Gargeir) oil + *Nigella sativa* (Black Cumin, Habet El Baraka) + 3 nutmegs (*Myristica fragrans*: Goset El Teeb) + ¼ kg of buffalo butter;
- the soft husks of the fruit (El Gelf: **الجلف**) are separated and after drying in the sun, are used as fodder for livestock;
- the hard shells around the nuts are used as fuel.

Pests and diseases

Scale insects (Hemiptera, Coccidae) are the major insect pest, often found on trees in the town of St Katherine; gardens in the wadis have lower

infestation rates. Heavy infestations result in a coating of solid or semi-solid honeydew over the bark. Scale insects prevent the tree and its fruit from growing properly, leading to dwarf trees and stunted fruit. Washing the tree with water apparently protects the tree from scale insects and fungal infestations.

Almond roots are attacked by another insect pest, probably cicada nymphs (Hemiptera, Cicadidae) which suck the fluid from the roots, making the stem and the leaves turn yellow and finally causing loss of productivity. The tree is also sometimes attacked by an aphid (perhaps *Aphis gossypii* - a well-known pest): however, little damage appears to result, probably because environmental conditions are not favourable for aphids.

An obvious insect on almond trees is the leaf-cutter bee, *Megachile submucida*, which cuts circular holes into the margins of the leaves in spring. This bee uses the leaf discs to build its nest either in plant stems or crevices in the rock. The Bedouin do not believe that this bee has any impact on fruit production by cutting holes in the leaves. As a major visitor to and probable pollinator of many wild and cultivated plants, its beneficial role almost certainly far outweighs any damage that it does. It is one of the main visitors to wild herbs such as *Pulicaria* and *Mentha*.

Birds never eat almonds and are therefore not considered pests.

Importance in Bedouin life

Since this is the major fruit tree of the gardens, the impact of scale insects is a serious problem, especially in the town, and it needs to be researched properly. Scale insects are always difficult to control, since they are protected under their scale from applications of pesticides, and chemicals that dissolve the scale itself are very damaging to the environment. Developing an environmentally friendly control method might prove difficult.

Almonds are produced in a large surplus from Sinai. Properly marketed, it could produce a significant income.

2	**Species**	**Arabic name**	**الأسم العربى**
	Apple	TofaH	تُفّـــــــــاح
	Latin name	**Bedouin name**	**الأسم البدوى**
	Malus domestica	TofaH	تُفّـــــــــاح
	Family	**Pharaonic name**:	**الأسم بالهيروغليفية**
	Rosaceae	DabeH	دابـــــــح

History

Apples were one of the first fruits to be cultivated, originating from wild progenitors in the Caucasus. They were already grown in Egypt by the time of the Pharaohs of the 19th Dynasty; Rameses II cultivated them on land in the Delta, and Rameses III used to send baskets full of apples to the priests in Thebes as offerings to the gods, and specifically to the god Hapi, the God of the Nile and fertility. The significant use of apple is hardly mentioned in Ancient Egyptian folk medicine, probably because the tree was not common outside the Pharaoh's specially tended orchards. At some time during the classical period people discovered how to produce apples of a consistent variety, by grafting cuttings from a good tree onto a suitable rootstock: the process was described by Cato in the 2nd century BC. Apple cultivation in

Europe lapsed after the fall of the Roman Empire, but Arab farmers preserved many of the classical techniques, including grafting. In the Middle East and most of Asia the climate is unsuitable for apples except at high altitudes.

Bedouin information
In Sinai there are five varieties:

- Amricani ('American': **أمْريكانِى**) has large red fruits that ripen in mid-summer, and has been recently introduced to St Katherine;
- ᶜAsali (**عَسَلِى**) apples are small and sweet, and ripen in early summer; this one of the two is oldest of the varieties, and is the most productive;
- Shitwani or shitwi(**شِتْوانِى أو شِتْوى**) apples are small and very sweet, and ripen in late autumn or early winter (September-October) - the Bedouin prefer them since they keep well even if they are windfalls; this is also one of the two oldest varieties;
- BiDi (**بِيضِى** : 'white'); also an old variety;
- Qiyasi, (**قِيّاسِى**) which ripens in September and October; the least productive variety.

A further two varieties were mentioned by the wife of Mahmoud Duquny as being currently cultivated:

- Aspani (**أسْبانِى**: 'Spanish'), very rare in the gardens
- MalHey (**مالْحِى** : 'salty'), again very rare, restricted to Wadi Gebal. Its fruit usually tastes salty unless fully ripe.

The surplus is offered for sale in the town. Good trees might produce about 50-70 kg, and a small one about 10 kg: a good ᶜAsali tree can produce about 300 kg.

Nutrition and medicinal value
The Bedouin dry the fruit and preserve them for use in celebrations such as Ramadan. In Sinai all varieties are eaten fresh. In addition, some families boil them with water and sugar, and when cool, drink the juice.

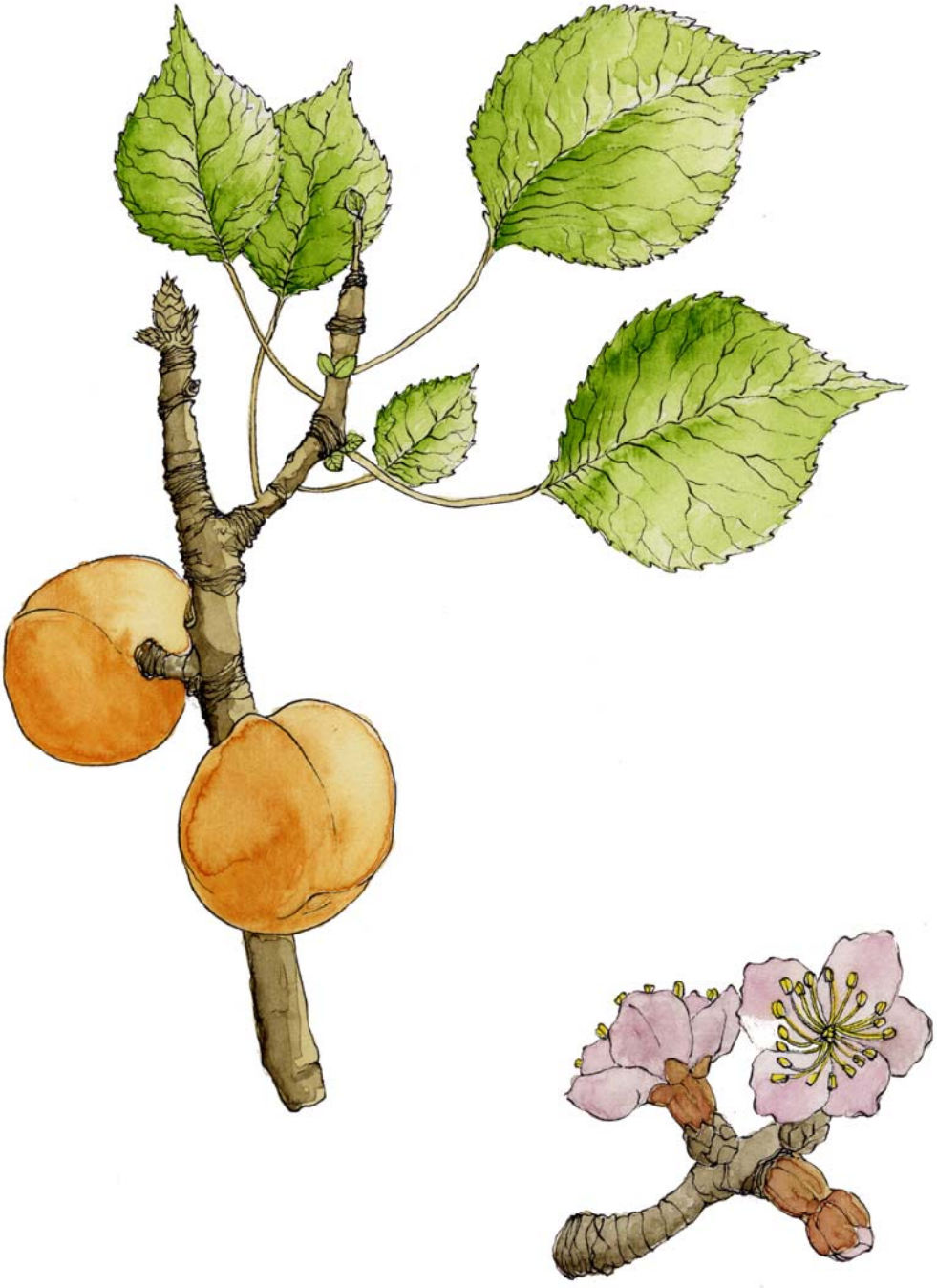
Pests and diseases

A resin-like solution may occur on the stem and branches; the Bedouin do not know the origin of this secretion, but the branches become weak and productivity is affected. This is probably a scale insect (Coccoidea). Often there are red spots of fungus on the leaves. The leaves can also display the circular holes around the margins characteristic of *Megachile*, the leaf-cutter bee. Birds, especially the Chukar, damage the fruit, making them susceptible to fungal attack. The American variety is more sensitive than others to attack by caterpillars, and the fruit usually contain pests.

3	**Species**	**Arabic name**	**الأسم العربى**
	Apricot	Mishmish	مِشْـمِـشْ
	Latin name	**Bedouin name**	**الأسم البدوى**
	Prunus armeniaca	Mishmish	مِشْـمِشْ
	Family: Rosaceae		

History

Despite its scientific name (*armeniaca*, 'from Armenia'), the apricot originated from Central Asia and China; it was the Chinese who first cultivated the fruit before 2000 BC, and it then was transported throughout the Old World. The word 'apricot' comes from the Latin adjective *praecox*, meaning precocious, so named from its early-ripening habit. The fresh fruit ripened on the tree is justly regarded as one of best of all fruits, but most apricots are destined to be preserved and eaten later. It is one of the best dried fruits, especially when sun-dried. It was introduced to Egypt during Greek and Roman times, and probably arrived in Sinai with the monks.



Bedouin information

There are six varieties:

- ᶜAdi **(عادِى** : normal) or Sagheir **(صَغِير**: small), whose fruits are small. Together with the next variety (Maawi), these have the best taste.
- Maawi, **(ماوى)** which means 'watery'. The fruits are soft and fleshy; although not particularly sweet, they decay very quickly and must therefore be eaten fresh from the tree.
- Lozi, **(لُوزى)** so called because you can eat the seeds as well as the flesh; lozi means 'like almond' - they can be eaten fresh or dry, and usually come from a 'wild' tree outside the gardens rather than a cultivated tree; this is probably the oldest variety.
- Khadari, **(خَضَرى)** meaning 'green' like an apple. The tree of this variety is very tall, and its branches tend to fall off (one per year, according to one informant).
- Amricani **(أمْريكانِى)** or Kabir **(كَبير)** a large peach-like variety recently introduced from Israel. The fruit is heavy and more fleshy, which is desireable for sales, but does not taste as good as other varieties.
- Hadiq or Hadig, **(حادِق أو حادِج)** which means 'salty'; the fruits are only eaten either dried, or dried and then soaked in sugary water.

Apricots mature in May (St Katherine) or June (in the mountains), and hence the 'apricot' month is June for the Gebaliya. Apricots from the town of St Katherine are better irrigated but the resulting fruits decay more quickly; those of Wadi Gebal are grown with less water and hence are less fleshy, but they last much longer before they decay.

A large tree can produce 70 kg, while a small one can only produce 15 kg: one Bedouin told us that a single tree in Farhan Zidan's garden produces 400 kg of apricots! Weather conditions are an important influence on the crop, as well as the location of the garden.

Nutritional and medicinal value

Apricots are amongst the most nutritious of fruits, and are particularly rich in carotene. The fruits are eaten fresh, or drunk as a fresh juice, or cut into pieces and dried in the sun before being stored in bags for the rest of the year. Dried fruits are soaked in cold water with sugar as a drink. The Chinese regard them as good for the heart, but we know of no Bedouin medicinal use for humans. However, the stones are browned in the oven or on a fire, and then ground up and the resulting dark powder is used instead of kohl as a medicine to protect the eyes of camels from inflammation. For

women, the stones are fried in oil, mixed with wild plants and then used as kohl to decorate the eyes.

Pests and diseases
The Field Cricket (*Gryllus bimaculatus*) is here called the Apricot Cricket (SarSoor El Mishmish: صَرْصُور المِشْمِشْ because it is the major pest of apricots; the nymphs and adults eat the leaves. The fruits are occasionally attacked by the maggots of tiny flies.

Importance to Bedouin life
There is always a large surplus of apricots, and furthermore many of them decay quickly: there is therefore a glut in the season, and a dearth later on. If better methods of drying them could be devised, then apricots would form a good cash crop.

4	**Species**: Carob	**Arabic name**: Kharob	**الأسم العربى:** خَـــــــرُوب
	Latin name: *Ceratonia siliqua*	**Bedouin name**: Kharob	**الأسم البدوى:** خَـــــــرُوب
	Family: Leguminosae	**Pharaonic name**: Notam, Garot	**الأسم بالهيروغليفية:** نُوتَم ، جارُوت

History
Carob is a medium-sized or large, long-lived evergreen tree that grows rather slowly. Its seeds are borne in large, brown, leathery pods often called locust beans, and are rich in sugar. They can be eaten fresh, or the flesh soaked in water and then homogenized with sugar to produce a cold drink in summer. This tree has been known in Egypt since at least Roman times, and the tree was cultivated by the Greeks. In classical times the seeds were used as weights by goldsmiths: the Greek word for the seed, *keration* ('little horn') gives the modern term for the mass of a jewel - 'carat'. The Egyptologist Flinders Petrie discovered its seeds and pods in tombs from the Middle Kingdom, perhaps traded from Asia Minor. The hard wood was valued by the ancient Egyptians for its red colour.

Bedouin information
There are two varieties in Sinai:

- Gamᶜei **(جَمْعِى)** has a hard skin with sweet, fleshy beans, eaten avidly by the Bedouin;
- Hadig or Hadiq **(حادِج أو حادِق)** is less sweet and less fleshy, and is not edible but is used as fodder for animals together with the seedpods of Gamᶜei.

The carob is only propagated by seed. The plant has separate sexes, and therefore each individual tree is either male or female. Male trees obviously set no seed. Pods start growing in spring, and are fully ripe in November.

The Bedouin collect Gamᶜei in large bags, bury them in moist soil, and leave them for 7-15 days, after which time the beans become soft and edible. The process called 'El ᶜaTan', which means 'decay'. Some Bedouin put the pods on the fire to soften the peel before eating. The seed coat is so hard that in former times, we were told, the Bedouin used them as bullets in their guns to shoot animals !

Carob trees are present in Wadi Arbaeᶜin, Gebal, ItlaH, and El Tallᶜa, and these trees are wild, not cultivated, even though they are surrounded by walls to protect the fruits. There is only a single tree in Wadi Gebal, but it is a male and therefore does not produce any fruit.

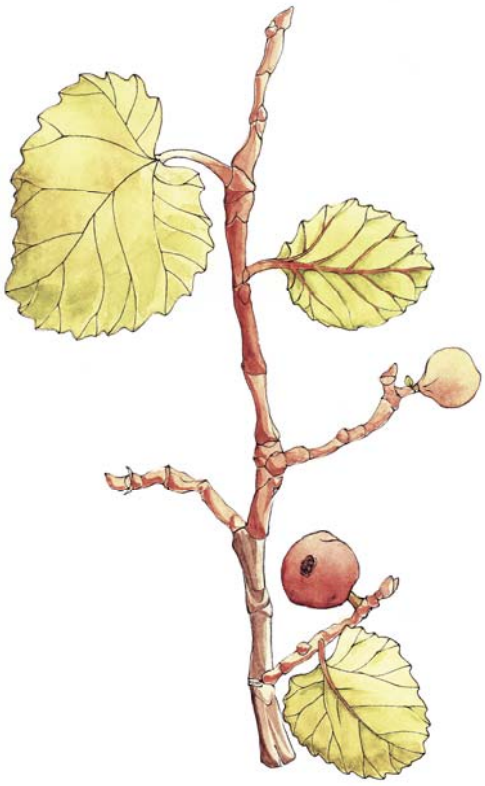
Nutritional and medicinal value
The seedpods are ground up and used against diarrhoea by the Bedouin. The Ancient Egyptians also used it as a remedy against stomach problems, because it was an ingredient of an anthelminthic medicine (i.e. a remedy for intestinal parasitic worms), together with wine, milk, honey, and chickpea roots (*Cicer arietinum*). The mixture was boiled and filtered, and the resulting liquid drunk for four days to clear out the digestive tract. The pods were also mixed with fermented honey into an antiseptic cream for wounds and eye infections, or homogenized into a deodorant.

Pests and diseases
No pests have been recorded.

Importance to Bedouin life
The tree is wild, and the Bedouin do not pay very much attention to it except to collect the beans. There are very few adult trees and these need to be preserved. Nothing is known about regeneration, and young seedlings and saplings are lacking. As with acacia there may be a problem with seed

production and seedling survival: the trees in the Sinai mountains may be a relict of a vanishing population that may be very difficult to conserve over the long term. Further study is needed into the antiseptic and anthelminthic properties of the beans, especially in the light of the lack of pests and diseases.

5	**Species**: Fig	**Arabic name**: Teen	**الأسم العربى: تِيـــــــن**
	Latin name: *Ficus carica*	**Bedouin name**: Teen	**الأسم البدوى: تِيـــــــن**
	Family: Moraceae	**Pharaonic name**: Toon, Nohi. The fruit is named 'Daab'	**الأسم بالهيروغليفية: تُـــــون - نُوهِى - الثمرة تسمى داب**



History

Figs were known to the Ancient Egyptians and may have been originally cultivated by them, or in the mountains of Yemen, some time between 4000 and 2700 BC. Although the trunk is very strong, the branches are not strong enough to support a person climbing the tree to collect the fruit, and therefore the Ancient Egyptians used to send a monkey to do the job. There are drawings of this on the walls of a tomb in Bani Hassan from the Middle Kingdom and also in another tomb in Thebes from the New Kingdom. The tree was grown in the garden of a Pharaoh from the Fourth Dynasty, and was widespread by the period of the Sixth Dynasty, when workers at the Pharaoh's palace used to eat the fruit every day.

The Ancient Egyptians used figs for the treatment of the heart disease, liver, bilharzia, colds, asthma, and throat inflammation; the milky latex from the stems was used to expel stomach worms. Two famous and early (9^{th}-10^{th} century) physicians discuss the

medicinal role of figs: Ibn Sina (called Avicenna by Europeans) mentioned the importance of fig fruit to pregnant and lactating women, while according to the Iranian-born Abu Bakr El Razi it was effective against poisons. It was also used as a laxative: figs, milk and sycomore figs were left overnight in a container, and then filtered and used as a syrup.

The fig tree is mentioned repeatedly in the Bible as well in the Quran. In the Quran, there is a special sura named after it: 'al teen'. Arabs used to call this plant the 'friend of philosophers' since it is easy to eat and offers a rich source of nutrients. The sycomore fig, the 'sycamore' of the Bible, *Ficus sycomorus*, has a hard skin on the fruit. It was very commonly painted on the walls of Pharaonic buildings. It is grown in the Delta, previously extensively but now rather rare. Some literature has recorded this from the Sinai mountains, but this is an error.

Biology

The fig trees form one of the largest of all plant genera, with more than 700 species. In order to reproduce, figs depend completely on highly specialized fig wasps (Hymenoptera: Agaonidae) for pollination. Each species of fig has its own species of fig wasp associated with it. What looks like the fruit of the fig is actually an inside-out mass of flowers (an inflorescence), with both male and female flowers, and then fruits, on the inside. A female wasp emerges from her pupa inside the fig, and mates with one of her brothers: often only a few males emerge from the eggs laid by their mother, and their job is to mate with all their sisters, and cut holes for them to emerge from the fig. Once mated, a female collects pollen from the mature male flowers inside the fig, and waits for the carbon dioxide concentration inside the fig to drop, indicating that a hole has been made to the outside. She then emerges to fly away to look for another fig at the correct (female) stage. Some species (but not the fig wasp *Blastophaga psenes*, the pollinator of *Ficus carica* in the Sinai) have special pockets for carrying the pollen. Having found another fig, she forces her way in via a tiny hole in the top protected by small scales, and systematically goes round 'deliberately' pollinating the flowers inside. Then she lays her eggs in the developing seeds. There are many seeds in each fig, some within the female's reach but many beyond her reach: the fig sacrifices some seeds to feed the offspring of the female, in return for the pollination service. If you eat wild figs, you can often see the grubs of these wasps when you open up the fig.

Bedouin information

There are two species in the mountains of Sinai: HamaaT (='sour': *Ficus palmata*) with small, rather sour, inedible fruits and a milky latex; and Teen bari ('wild fig': *Ficus carica*) with large, edible, and very tasty fruits that are valuable. The Bedouin graft wild fig onto sour fig rootstock, because the sour fig is highly tolerant of dry conditions, and has a strong and very efficient root system for extracting water from the soil. As the ancients discovered early on, the early cultivated varieties of fig will only fruit if there are wild fruits nearby to provide the fig wasps for pollination.

There are three varieties of *carica* figs in Sinai:

- BiDi **(بيضِى)** i.e. white, is an old variety;
- Sabᶜei **(سَبْعِى)** which is dark reddish or blackish with many seeds, very sweet, of a size that depends on how much water is available;
- Sheragi **(شِيرَجِى)** or KhaDari **(خَضَرِى)** i.e. green, a very rare variety occurring only as some very old trees more than 250 years old, in an old garden called El Zeiri in Wadi Gebal. El Zeiri is one of the oldest of all gardens in the St Katherine area, and belongs to a member of the El Hashash lineage; the younger generation has neglected this garden since they established a number of gardens elsewhere, and it is now delapidated.

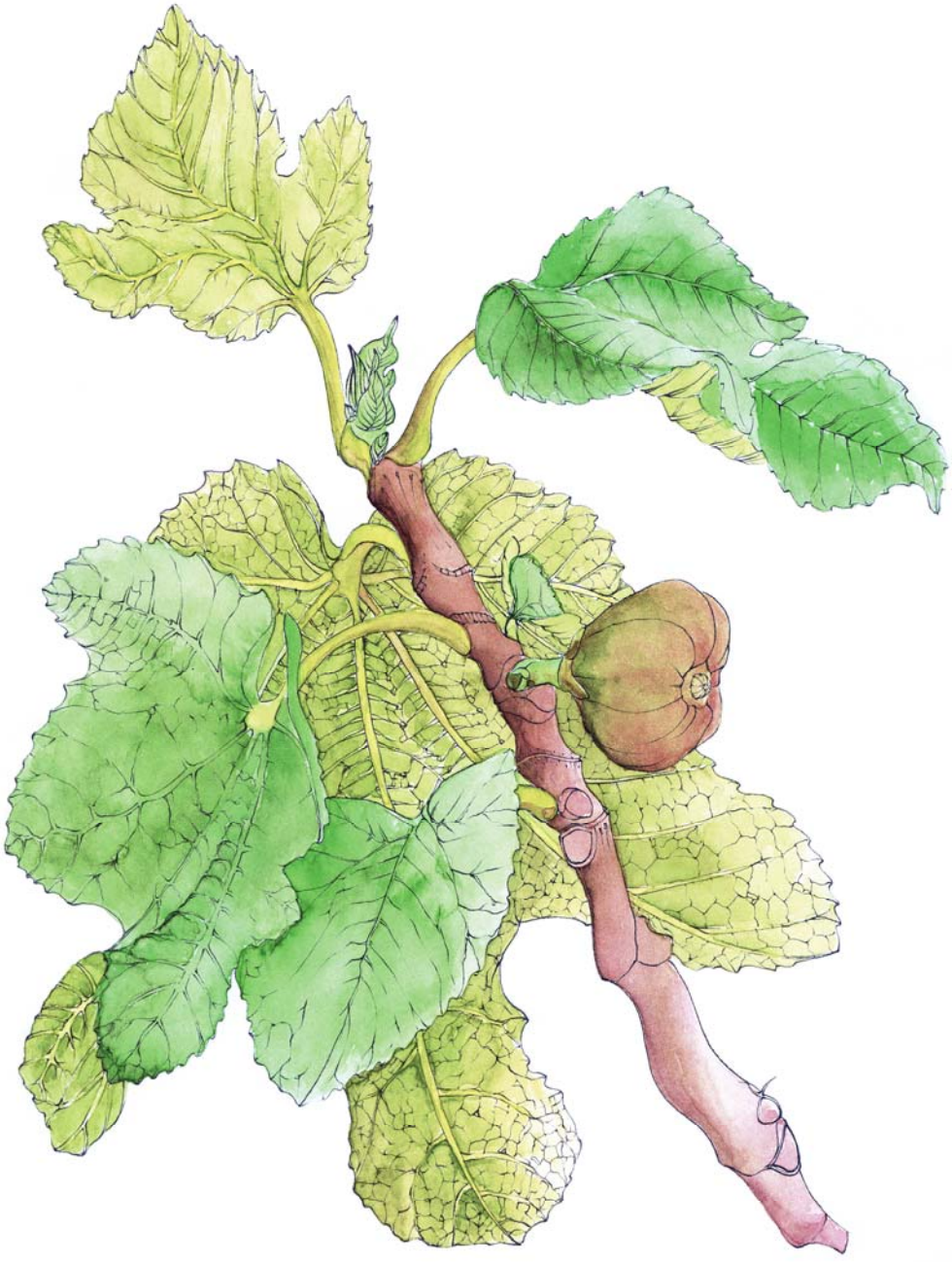
Nutritional and medicinal uses

Ficus palmata grows mainly wild in the wadis, and has small, sour, milky fruits. There are three trees in Wadi Arbaeᶜin, two each in Al Galt al Azraq and Tobouq, and one each in Shreyj and Gebal. Some Bedouin collect these fruits, wash them to get rid of the milky secretion and eat them fresh. The Bedouin say that this species is WaHashi, i.e. wild. This species can hybridise with *Ficus carica*. In former times, Bedouin women used to put two leaves of *palmata* in the goat milk to help in separating the curds and whey to produce cheese.

A good tree produces not one but a sequence of fruits, mainly in August-September, and can produce an average of 30 kg per week over three months, in total about 400 kg. The fruits are either eaten fresh, dried in the sun on the ground, or threaded into a circle using rushes (*Juncus* - Dees: **دِيس)** The leaves are used as fodder for goats.

The fruits contain a high percentage of carbohydrates, few proteins and less than 1% fats; they also contain minerals such as calcium, phosphorus and iron, and vitamins A, B, C and K which work as anti-

oxidants and as anti-coagulants. The milky latex of the fruits helps protect the lining of the stomach, and acts as a laxative.



Pests and diseases
There are often clusters of small round white galls on the leaves, whose cause is unknown. At the same time the leaves can be covered with leafhoppers (*Empoasca* sp). The leaves can be attacked by fungi, producing orange patches on some leaves, or black spots on the leaf margins. None of these seems to be a serious problem.

Figs are very sensitive to the irrigation regime, and careful attention is needed to produce good crops of fruit. Although many trees and leaves have galls, this cannot be a serious infection since apparently it has no impact on productivity.

Importance to Bedouin life
As noted above, the Bedouin graft the stems of *carica*, which has sweet fruits, onto the rootstock of *palmata*, which has strong roots able to extract water from the ground. In Wadi RaHaba there are three *carica* trees grafted onto *palmata* stems.

Water shortages have a serious impact on fig production, and many of the garden fig trees are very old and vulnerable. Around the town of St Katherine, recycling schemes would reduce water wastage substantially. Since there is a surplus of figs from the gardens, it would be useful to have a better and large-scale system of drying them so that they could be sold.

6 Species: Grape	**Arabic name**: ᶜAnab	**الأسم العربى:** عَنَـــــــب
Latin name: *Vitis vinifera*	**Bedouin name**: ᶜAnab	**الأسم البدوى:** عَنَـــــــب
Family: Vitaceae	**Pharaonic name**: Irat, Arory	**الأسم بالهيروغليفية:** إرات - أرُورى

History
Grapes were mentioned by the Pharaohs from the First Dynasty, and paintings on the walls of Fourth Dynasty show grape cultivation including obviously enlarged improved varieties. The plant's native range stretches from the southern Black Sea to Afghanistan. The Ancient Egyptians used to eat a lot of grapes, especially the red variety which is still cultivated in Upper Egypt. There are many wall drawings that show grape-picking and the process of pressing the fruit to extract the juice, especially in Thebes from the New Kingdom. Vine leaves are found in many graves, possibly filled with rice (maHshi) as Egyptians still do today. In Ancient Egypt,

grapes were used to produce wine, which was considered to be good for stomach problems, and useful for diseases of the liver, chest and womens' reproductive system. Cultivation of grapes flourished during Greek and Roman times. Grapes are mentioned in the Quran in eleven verses, and are referred to along with wine, their principal by-product, throughout the Bible.

Bedouin information

In Sinai, there are several varieties:

- Banati **(بَنَاتِى** : 'girl') is a small white variety with no seeds, the best for eating and therefore for selling. It has been introduced to Sinai from the Delta relatively recently.
- Estanboli **(إسْتَنْبُولِى** : 'from Greece') has big bunches of large, blackish grapes with large seeds; it is much more susceptible to disease than other varieties. This variety is a favourite food of wild mice and foxes. This variety may have been introduced by the monks.
- ᶜAnab eswed **(عَنَب إسْوَد)** is a black variety characterised by huge bunches of grapes (called ᶜanqood), each bunch up to 5 kg in weight.
- El Sharoei **(الشَرُوىْ)** is the first to ripen in St Katherine; the grapes are large and green with elongated seeds, and are very tasty.
- Baladi **(بَلَدِى** : 'local') is grown in both Egypt and Sinai; this is a white grape with grey seeds, good for eating and for vinegar production, but not for wine.

Nutritional and medicinal uses

Grapes contain sugar, protein, fats, organic acids, minerals (potassium, calcium, phosphorus) and vitamins such as vitamin A, B, C with anti-oxidant properties.

In Sinai, grapes are ripe by July and last until September. Some Bedouin keep the Banati grapes on the trees enclosed in cloth bags to protect them from birds and mice, and then harvest them in December: such fruits are dry but sugary, and are a good energy source in winter. Instead of eating them fresh, the grapes can be dried to produce sultanas, often by hanging the bunches from the ceiling of the Bedouin houses. A small plant of this variety can produce a huge crop (40-50 kg).

The Bedouin used to collect Estanboli grapes, press them and keep the liquid in sealed fired-clay containers (Zeir) for about 7 weeks to make red wine for the monks, mainly in Wadi Arbae^{c}in and Wadi El Tall^{c}a; it was kept longer to produce vinegar. This was a good use for grapes that had been damaged. The Monastery also used to produce its own wine and vinegar, and their apparatus for extracting the juice still exists in the monastery itself. In outlying districts the monastery established what is called 'Gaat', which is a hole made from stones with a cover: the grapes were kept here for long periods. There is one in Wadi Gebal near Al Galt Al Azraq, one on the mountain of Gebal Um Shomar and another one nearby at the ancient monastery of Deir Antoush.

Vinegar is also produced from fermenting the stems ('^{c}Armoosh'). The Bedouin usually give the leaves to goats as fodder, but in the Delta they are used in cooking: they are boiled and filled with rice, tomato juice and spices (maHshi).

Pests and diseases

Grapes are susceptible to water shortage, but the leaves and fruit can drop or split for no obvious reason. Sometimes the vine is infected by a disease which turns the stem and leaves yellow, and splits the fruit open. Grapes need a lot of water at the beginning of the year, but irrigation must stop with the appearance of the fruit otherwise they will crack open.

7	**Species**: Jujube	**Arabic name**: Nabq	**الأسم العربى:** نَبْـــــــق
	Latin name: *Ziziphus spina-christi*	**Bedouin name**: Sidr	**الأسم البدوى:** سِـــــدْر
	Family: Rhamnaceae	**Pharaonic name**: Nabs	**الأسم بالهيروغليفية:** نَبْـــــس

History

Jujube grows in the Mediterranean region. It was very commonly grown around Pharaonic houses for its shade. The Egyptians believed that it had special properties that would bring the benefit of mercy to the inhabitants. The dry fruits have been found in the tombs of the 3rd Dynasty, especially in Saqqara, and in Tutankhamun's tomb. In Thebes some baskets of the Eighteenth Dynasty were found to contain the fruits. The famous chair and major pieces of furniture of Tutankhamun are made from the wood of this tree. Jujube has provided the most useful wood for Egyptian use from Ancient Egypt right up to the present day.

Jujube was very popular with the Ancient Egyptians, and the fruits were very much preferred by the Pharaohs. Boiled leaves were used for skin diseases, and the fruits used in the synthesis of many medicines. Some literature mentioned that jujube was used by Egyptians as a local anaesthetic for pain relief, and in the treatment of breast cancer and liver diseases. The Ancient Egyptians believed that if you ate one jujube fruit, your mouth would be clean for forty days.

The Latin name '*spina-christi*' means 'thorns of Christ', so named because of the belief that the branches of this spiny tree formed Christ's crown of thorns. Some muslims believe that the tree is a Holy tree, known as Fatma. They believe that Fatma (Prophet Mohammed's daughter) cultivated it for its medicinal properties. In some Egyptian villages, people still try to grow them close to the graves of recognised muslim scholars.

Bedouin information

It grows naturally in Sinai and the Eastern Desert. There is a large wadi called Wadi Sidr running towards the western coast of southern Sinai, named for the jujube trees growing there. The tree is evergreen, and grows slowly. The trunk of the tree is yellow. The fruit is small, and yellow to orange in colour; it is still cultivated in Upper Egypt, but usually the fruits are collected from wild trees.

Nutritional and medicinal uses

The dry fruit can be ground to give a sweet flour, and some Bedouin tribes from the Eastern Desert still use them in this way. The dry fruit can also be used as a fodder for camels. In Sinai the dry fruits are also still ground and used as flour, mixed with sugar and butter to make sweet Besisa, a kind of cake.

Pests and diseases

The leaves suffer from fungal attack (black spots) and caterpillars.

8	**Species**: Olive	**Arabic name**: Zaitun	**الأسم العربى:** **زَيْتُـــــــون**
	Latin name: *Olea europaea*	**Bedouin name**: Zaitun	**الأسم البدوى:** **زَيْتُـــــــون**
	Family: Oleaceae	**Pharaonic name**:Zetno,Getno, Bag, Dagari, Qeb (oil)	**الأسم بالهيروغليفية:** **زيتْنُــو - جِيتْنُــو - بــاج - دَجــارى - والزيت يسمى قِــب**

History

The olive is the quintessential Mediterranean food, and the tree symbolizes the region in art, literature and the public imagination. It is still grown mainly in Mediterranean countries, but originated in Palestine. The wild tree is called the oleaster, and has a small, bitter fruit that is more stone than flesh. It was introduced to Ancient Egypt by the great Pharaoh Tuthmosis III (2870 BC). People carefully grew olives in Egypt during the 19th and 20th Dynasties, especially in Fayoum and east Cairo: one well-known part of east Cairo is called Zaitun. The Ancient Egyptians used olive branches with leaves to cover the heads of the dead, and some were found in Tutankhamun's tomb in Thebes. The Pharaohs used olive oil for treating liver diseases, killing stomach parasites, as a cream for their hair, and also for lightening the hair. Interestingly, the olive was rarely mentioned in records of the New Kingdom. In the Hares papyrus, Rameses III established a huge olive farm around the sun temple in Ayun (Heliopolis, East Cairo) to obtain enough oil for lighting the Temple of Ra. Masbro in 1885 found branches of olive, palm and Persea (*Mimusops*) all together in a tomb.

In the Bible, the dove released by the Noah came back with an olive branch in its beak. The olive has consistently been used since as a symbol of peace. To the Greeks and Romans, olive was a crop of prime importance, and to destroy an enemy's olive trees was a sacreligious act and a demonstration of ruthlessness in war: the same is true today in Palestine. During the Greek and Roman empires, the olive oil industry flourished greatly, especially in Fayoum, and was a great source of

income for the country. In Sinai, most olives were grown to provide oil for the lamps of the Monastery.

Bedouin information
There are three varieties in Sinai:

- Zlonbet **(زْلُونْبيط) ,** a large green variety, probably the oldest. The Bedouin say this is the male tree because the fruit is big. The olives can be left to ripen and turn black.
- ᶜAdi **(عادِى)** or Sagheir **(صَغِير) ,** the normal small light-green variety
- KhaDari **(خَضَرى)** with a large stone and more oil

The olive grows very slowly and lives for a very long time, still fruiting reliably after many hundreds of years. It is, however, very susceptible to severe cold, limiting its distribution. One person told us that in the past there were many varieties of olives in St Katherine, but the only ones that remain are the few able to tolerate the unfavourable conditions, a kind of Darwinian natural selection.

The Bedouin sometimes collect the green olives to pickle them: they cut the fruits with a knife and leave them in water, changing the water many times. Then they add salt, wild oregano, garlic and (if available) lemon, and store it for use all year round.

Alternatively they leave the olives on the tree to ripen before collection, and then put them in cloth bags in the ground for 15 days to dessicate them. Then they wash them with water, put them in a container with some oil, salt, wild oregano and a small amount of water. The fruits can also be left on the tree until they are completely ripened (by turning black), and then they are collected and pounded on a stone under cloth. The pulped olives are put in a covered container, heated gently and stirred to extract the oil.

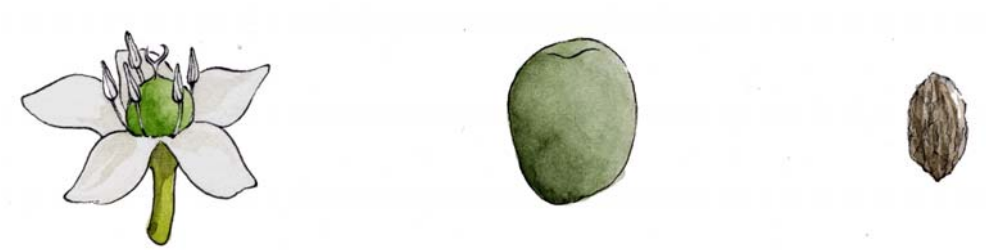
After cooling, the remnants are pressed in cloth to extract the oil dregs; the residue is either given to livestock, or used as fuel for cooking. If in a hurry, the Bedouin put the olives in plastic bags and leave them in the sun for a long time, and then make a hole in the bag to collect the oil. Some

Bedouin have a special press to extract the oil. These processes are quite different from olive-oil production elsewhere in the Mediterranean, where the initial dessication period and the heating stage are regarded as detrimental to the quality of the oil and its taste.

They use the oil for dressing salads, lighting (with a wick in a clay cup), and as hair oil to make the hair black and shining. They drink it as an antivenom against snake and scorpion bites.

Formerly the Bedouin used to spend three months collecting olives, mainly for the Monastery where they were mixed with boiling water and pressed for oil. Afterwards if any Bedouin needed oil, they could obtain some from the Monastery.

The oil from Wadi Gebal is judged better than from Wadi El Tall^{c}a, which is in turn better than oil from Wadi Arbae^{c}in. The trees at Tarfa produce more olives than in St Katherine (up to 400 kg per tree, as opposed to 50-60 kg). The Monastery has a large olive press, which in the past had to process 100 sacks of olives from the surrounding gardens.



Nutritional and medicinal value

The olive is an evergreen tree with fleshy fruits containing 7-8% oil. Olive oil has the great virtue of being made up of predominantly mono-unsaturated fats, and containing no cholesterol. It is considered today to be the main element of the 'Mediterranean diet', with significant health benefits.

Pests and diseases

No information was offered about olive pests or measures to prevent them.

9	**Species**: Peach	**Arabic name**: Khokh	**الأسم العربى:** خُـــــــوخ
	Latin name: *Prunus persica*	**Bedouin name**: Khokh	**الأسم البدوى:** خُـــــــوخ
	Family: Rosaceae		

History

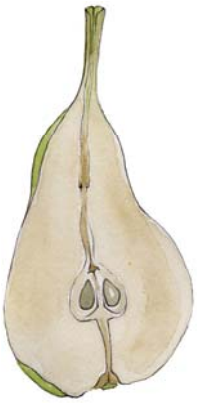
The peach is perhaps the most celebrated fruit in literature, in the Orient as well as in the West. It still grows wild in Central Asia and China, and was cultivated and improved well before the 10th century BC. Cultivation spread very successfully westwards, especially in Persia (hence the

scientific name). All peaches require a period of chilling during growth, which means they do well at higher altitudes. The fruit was introduced to Egypt during the Graeco-Roman period, and the fruits and seeds have been found in graves in Hoara, Kom Osheim and Saqqara.

Bedouin information
There is one small variety grown only for eating, called Baladi ('local'): it is an old variety. The trees tend to die after two years either from shortage of water or insect attack, which accounts for the rarity of the trees in the gardens, and of their use in Bedouin tradition.

Pests and diseases
The leaf margins are attacked by fungi in the form of red and black spots. Some leaves are skeletonized by the feeding on insects, but these are uncommon.

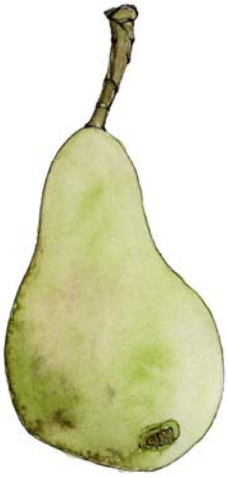
10 Species: Pear	**Arabic name**: Komethra' or Kometra'	**الأسم العربى:** كُمَّثْـــــــرَىَ كُمَّثْـــــــرَىَ
Latin name: *Pyrus communis*	**Bedouin name**: Shitwi	**الأسم البدوى:** شِثْـــــــوى
Family: Rosaceae		



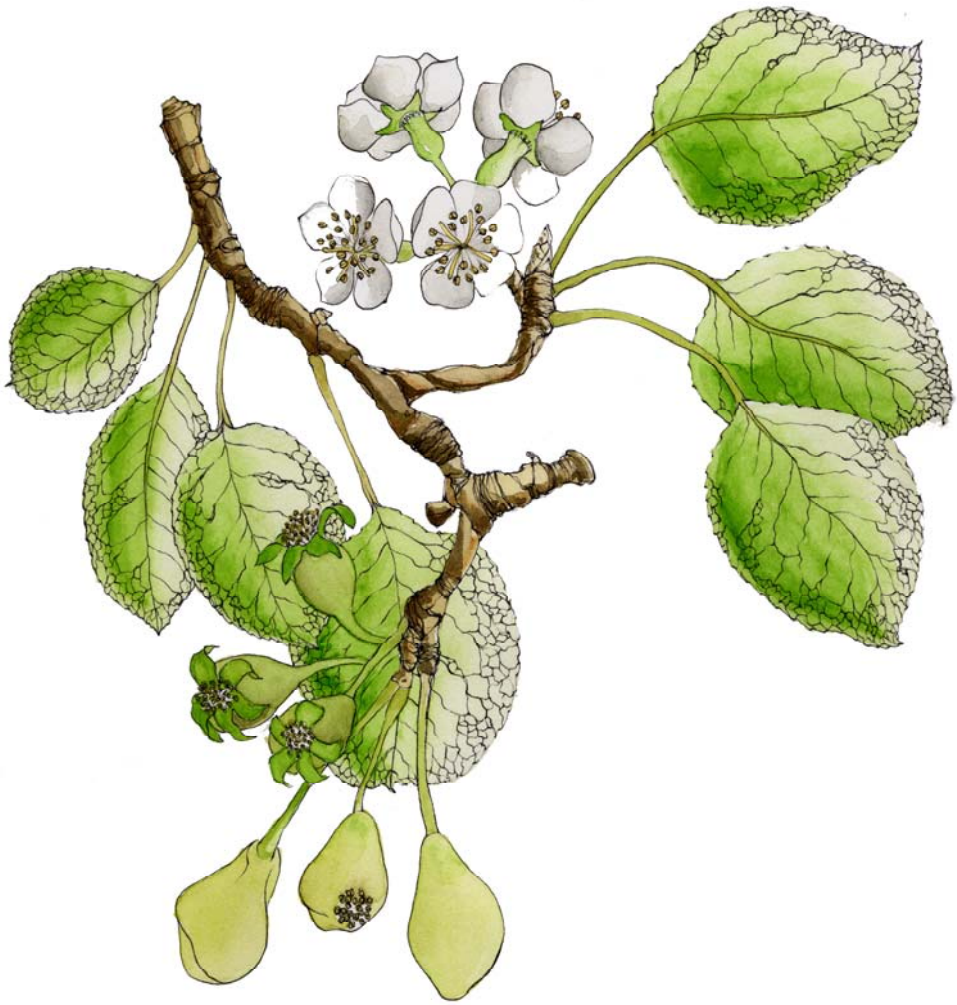
History
Like apples, the pear originated in the Caucasus. In ancient times it was considered a better fruit than the apple, and gave rise to many more varieties in the classical world, where it was very widespread. The fruit can be picked before it is fully ripe, which is a particularly beneficial characteristic in this case because it passes through the period of perfect ripeness in a matter of hours, and after that quickly spoils. Many of the varieties in Sinai have probably been grown there for centuries.

Bedouin information

There are a number of varieties in St Katherine:

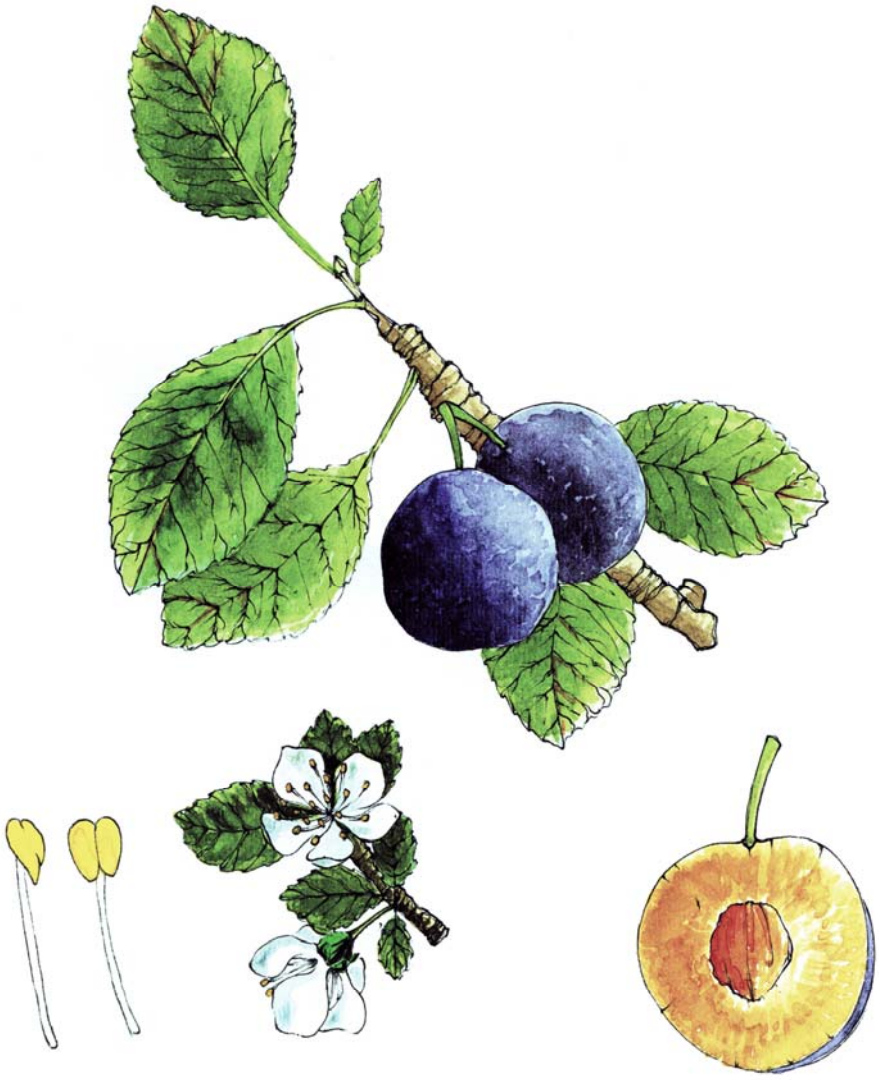


- Klabeya or Klabi (كِلابى أو **كِلابية**), produce small fruits in September
- Sakakreya is an old variety producing small sweet pears; it seems to be gradually disappearing from the gardens.
- FaTemi **(فاطِمِى)** named after a women called FaTma; one of the two oldest varieties.
- Shitwi **(شِتْوى)** the other of the oldest varieties: it produces its fruits in winter (October-December). This is the best variety, and can remain on the tree and still be edible for a long period (4-5 months). This variety does not breed true, and is therefore probably a hybrid, since seed obtained from Shitwi gives rise to trees of the Falta variety. One tree can produce about 7000 fruit.
- Falta **(فلته)** is a pure variety grown from seed. It often has branches of the Shitwi variety grafted onto it.
- Ingaas **(إنْجاس)** fruits appear early (in July) and finish early in the year.
- Khashaabei **(خَشَّابى)** is a hard variety, very common throughout Egypt.
- Maᶜnaqi **(مَعْنَقِى)**



Pear trees are very resistant to unfavourable conditions, and hence are good for the gardens. The trees live for a long time, and the fruits can be both eaten and sold. They can be grafted onto hawthorn rootstocks.

11 Species: Plum	**Arabic name**: Barquq	**الأسم العربى:** **بَرْقُـــــــــوق**
Latin name: *Prunus domestica*	**Bedouin name**: Shalook, Barquq	**الأسم البدوى:** **شَـــــــــلُوك** **بَرْقُـــــــــوق**
Family: Rosaceae		



History
Plums have been found in graves from the Fayoum area dating from Roman times.

Bedouin information
Three varieties are grown in Sinai:

- ᶜArabi **(عَرَبى)** was introduced from Greece during the Israeli occupation, and has large fruits and a better taste than other varieties;
- Ghara **(غارا) .**
- QaraS **(قَرَص)** which has small fruits and is less sweet; these are only eaten fresh; this is an old variety;
- Shalook or Shalooka **(شلُّوك أو شلَّوكة)** is similar to the normal plum but the leaves are slightly smaller. The fruits are elongated like dates, and are less watery and less sweet. They are usually green, turning dark during ripening. They are eaten fresh, but sometimes can be dried. This is an old variety as well.

Many other varieties appeared during the Israeli occupation: there are some hybrid trees in Wadi Shreyj involving different varieties. The leaves are used as fodder for goats.

Plums are not very popular with most Bedouin because fruiting occurs over only a short period of time, only once per year, and normally they cannot be stored and hence must be eaten fresh.

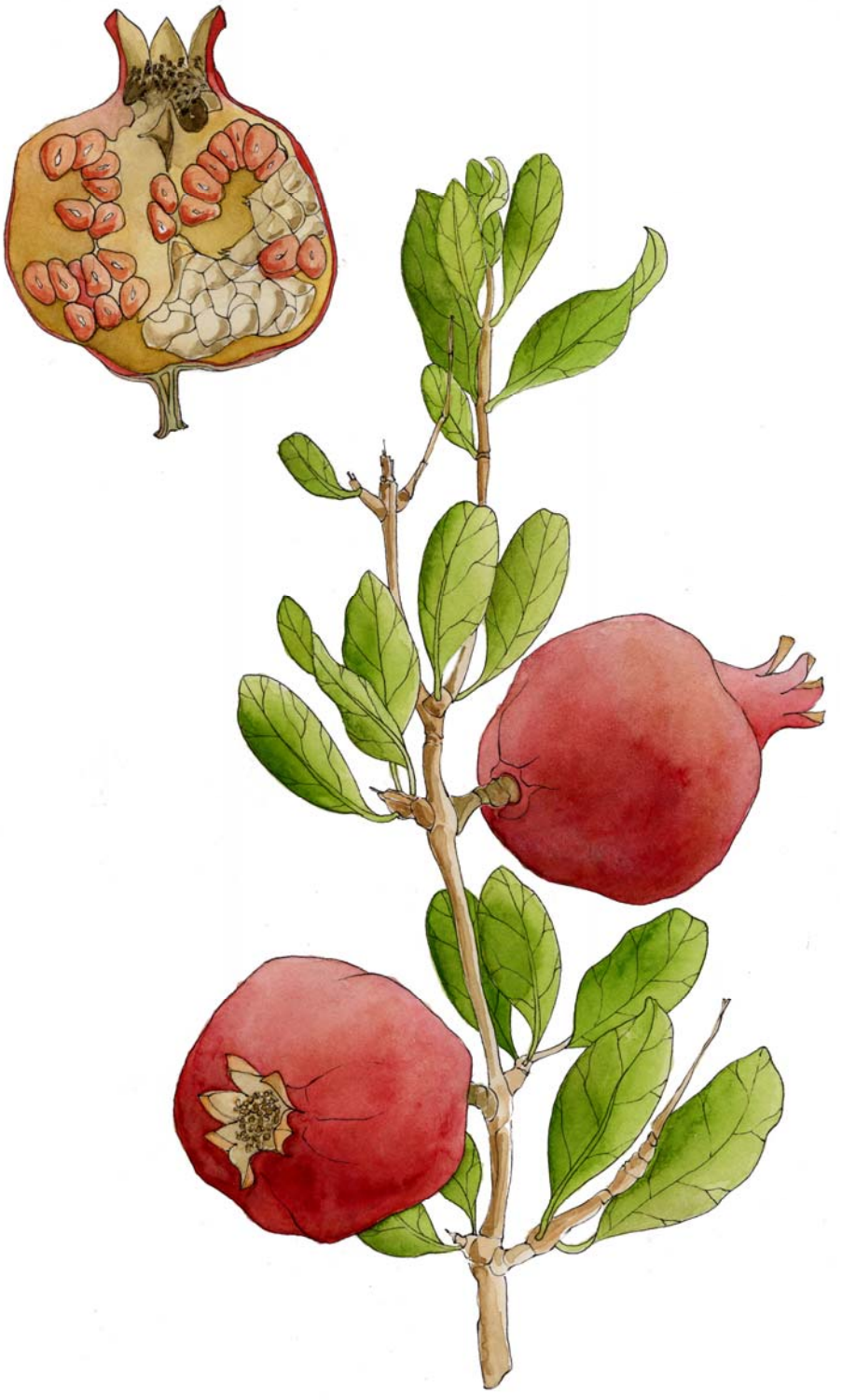
Pests and diseases
There is apparently no insect damage.

12 Species: Pomegranate	**Arabic name**: Romaan	**الأسم العربى:** رُمَّـــــــان
Latin name: *Punica granatum*	**Bedouin name**: Romaan	**الأسم البدوى:** رُمَّـــــــان
Family: Punicaceae	**Pharaonic name**: Ormani, Hormani	**الأسم بالهيروغليفية:** أورمـــانِى - هُورمـــانِى

Samy Zalat

History

Originally from Iran in Asia Minor, the Pomegranate was introduced to Ancient Egypt by Tuthmosis III (2780 BC), and it was cultivated on a large scale during the reign of Rameses IV (2720 BC). One of the most popular fruits to the Ancient Egyptians, it was mentioned in the first ever medical treatise, the Ebers papyrus of 3600 years ago, as a cure for some diseases: a drink made from boiled dry peel would help expel stomach worms, and ameliorate skin itching. The fruits shown in wall drawings of the temple of Karnak in Luxor were small ones similar to those cultivated in Sinai. The Ancient Egyptians used to drink pomegranate seeds mixed with cold water. When in the desert in Sinai during the Exodus, the Bible records that the Israelites regretted leaving the refreshing Egyptian pomegranates behind, so much so that Moses had to assure them that they would find them again in the Promised Land (Deuteronomy 8: 8). The Romans knew it as *mala punica*, the Carthaginian apple, hence the scientific name. It is most popular in the Mediterranean and Middle East, eastwards to India, but has been largely ignored in the English-speaking world.



The seedy nature of the fruit, which makes it laborious to eat, has held back the pomegranate from universal popularity. Although the seeds are edible, the eater has to decide whether to consume them or spit them out. This perennial problem was familiar even to the Ancient Greeks in the legend of Persephone, who, despite vowing not to eat again when she was carried off to the underworld by Hades to be his bride, succumbed to eating a pomegranate. She spat out all but six seeds, which doomed her to be kept there for six months every year, causing the alternation of winter and summer.

The fruit varies considerably in size and quality from tree to tree, and does not breed true from seed. Thus pomegranates are usually propagated from cuttings. There are seedless varieties, and one found in Palestine in 1860 was propagated from cuttings and distributed widely in the USA.

Bedouin information

In St Katherine, there are two common varieties, and several others:

- MalHey (salty) **(مالْحِى)** or HameDei **(حَامِضِى)** (acidic) is large with red and white seeds; it ripens in winter and is used as a drink with sugar. The seeds can be squeezed on salad like lemon because of its acidity, or left in the sun to turn to vinegar. The peel boiled in water can be drunk as an anti-emetic.
- Msakar **(مْسَكَّر** : sugary) or Gam^{c}ei has small fruits and large sweet red seeds that can be eaten fresh. This is the original variety grown in St Katherine.
- Some Bedouin have a third variety called Khashaabei **(خَشّابى** : woody) that has dry seeds, and is not sweet.
- Three other varieties are common in particular gardens: these are Sha^{c}ari **(شَعَرى)** (intermediate in size between Msakar and MaleH, probably the oldest variety), Israeli (with large fruits), and AbiaD **(أبْيَض** : white) which is not sweet. Msakar, AbiaD and Sha^{c}ari are the oldest varieties in the region.

Nutritional and medicinal uses

The peel of the MaleH and Msakar pomegranates are dried in the sun, ground up, and mixed with honey and milk: one spoon of this mixture taken in the evening and morning is useful for treating skin diseases and inflamations. One small spoonful of ground dry peel mixed with molasses is useful for heartburn and asthma. The powder of ground dry peel is applied

to ulcers on the skin of camels. In former times the Bedouin used to leave the fresh peel with salt in a goat-skin waterbag (Qerba) to sterilize the inside of the soft skin and prevent microorganism growth.

For an energy boost, *Ephedra* (ᶜAldaq) is mixed with pomegranate peel and left for one week, and then another week in water, and then the syrup is drunk. This is interesting because one of the constituents of *Ephedra* is ephedrine, a powerful stimulant sold by herbalists for asthma, as an energizer, and for promoting weight loss. The ground dry peel can also be mixed with oil and held in the hand for a while: this is thought to toughen delicate skin so that it can cope better with the harsh environment.

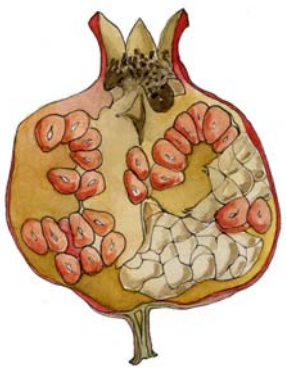
Pests and diseases

Pomegranate is the most heavily damaged fruit in the gardens, with at least 90% of the fruits made useless by insect attacks. The main pest is an insect larva that creates large holes in the fruit. As we have seen, this is probably a moth or the Pomegranate Playboy butterfly. The damaged fruit is then attacked by birds, which peck it open, and then finally a black fungus enters and completes the destruction. Even if not attacked, it is very common for the fruit to split during development, probably because of water shortage and the irrigation regime.

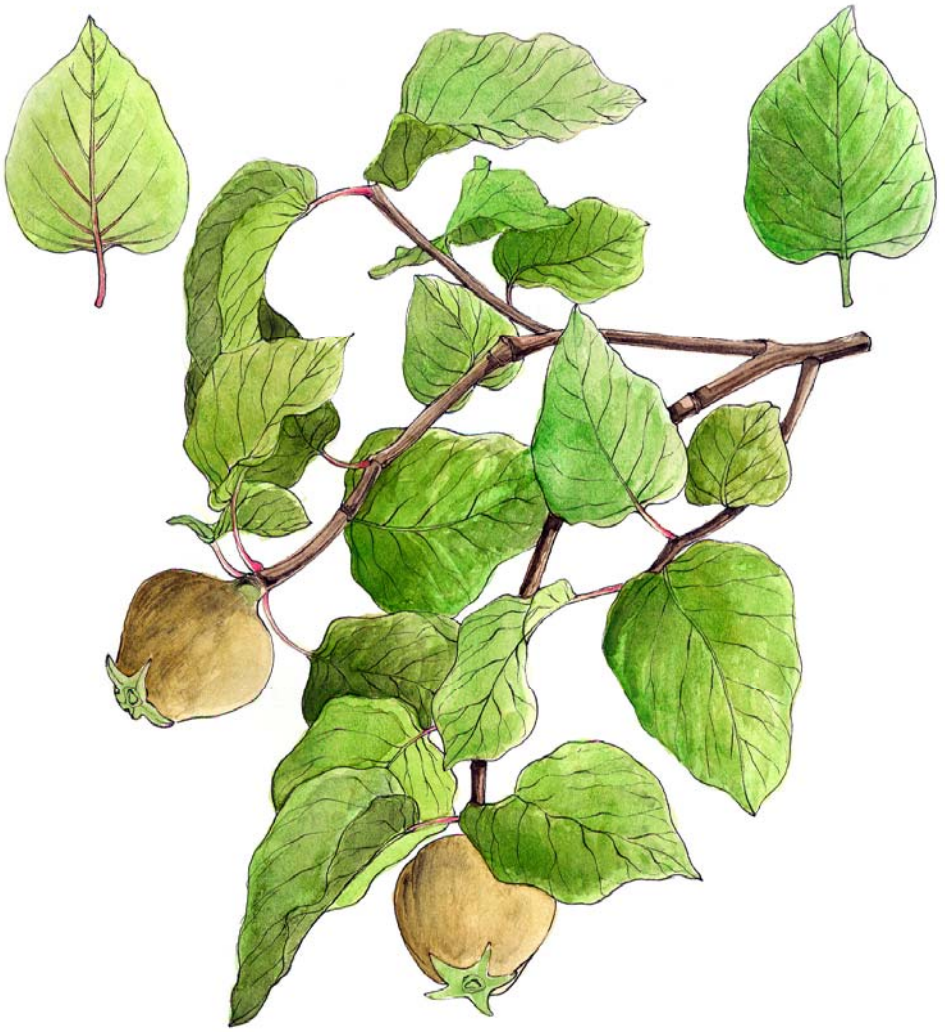
Some Bedouin in Wadi El Zawateen use a small paper bag to surround each fruit in its early stage of maturation to protect it from insect attack. This method is very efficient, and could be used on a large scale; its environmentally friendly nature makes it very suitable for the region.

Importance to Bedouin life

Bedouin love cultivating this tree because of its sweet seeds, and its use in folk medicine. They are very keen to find a solution to pest attack since the proportion of the fruits that are damaged is very high. A small pilot project should be instituted using the technique of paper bags to protect the fruit.



13 Species: Quince	**Arabic name**: Safargal	**الأسم العربى:** سَفَرْجَـــــــل
Latin name: *Cydonia oblonga*	**Bedouin name**: Safargal	**الأسم البدوى:** سَفَرْجَـــــــل
Family: Rosaceae		



History

Quinces originated in the Caucasus along with apples and pears. The fruit has hard flesh and many pips, and is too sour and astringent to eat raw. However, it has a delicious fragrance that has been much appreciated for millennia: the fruit was known in Palestine about 3000 years ago. The ancient Greeks held the quince sacred to Aphrodite, the Goddess of Love. The Romans preserved the fruits in honey, the beginnings of our jams and marmalades: in contrast the Persians cooked them with meat, part of a long tradition of appreciating meats cooked with sour fruits.

Bedouin information

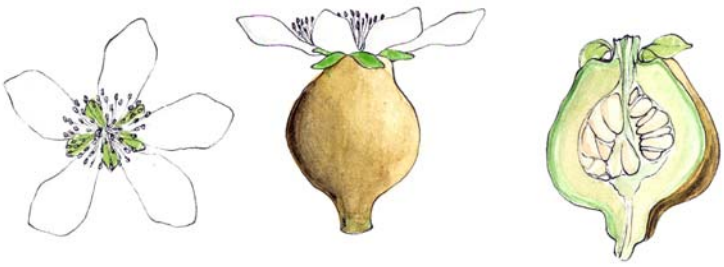
There are two varieties with small fruits and leaves, recently introduced from the Delta. Another variety with large fruits was introduced a long time ago; its fruits can be eaten fresh if they are completely ripe. Our expert informants were unable to name these varieties. Quince is not a very common tree in Sinai, but Bedouin believe their fruits have the best smell in the house. Chukar partridges especially love to eat them. A good tree can produce about 70-100 kg of fruit in October-November. The monks of the Monastery used to ask the Bedouin to bring the quince fruits to them.

Nutritional and medicinal uses

Bedouin cut quince into small pieces and add the same amount of sugar. They then boil the mixture with cloves (Qoronfel) and cinnamon (Qerfa) and leave it to cool before bottling it as jam. They also bury the fruits in hot sand for a few hours, and then add sugar and eat them. Quince fruits are very marketable.

Pests and diseases

Shrinkage of the fruits is common, probably due to a shortage of water for irrigation. Sometimes there are black spots on the leaves, presumably a fungus. As with almond trees, circles are cut out of the leaves by *Megachile* leafcutter bees.



14 Species: Aubergine	**Arabic name**: BaZengan, Badengan	**الأسم العربى:** **باذِنْجـــــــان-** **بادِنْجـــــــان**
Latin name: *Solanum melongena*	**Bedouin name**: BaZengan, Billingaan	**الأسم البدوى:** **باذِنْجـــــــان -** **بيلِينجان**
Family: Solanaceae		

History

Aubergines came from India originally, and the history of the name is tortuous, calculated to "fill with joy the souls of those philologists whose innocent mania is to claim that every term in the language derives from Sanskrit". The Sanskrit name is *vatin gana*, which produced the Persian *badingen* and then the Arabic *albadingen*; the Spanish changed this to *albadingena*, and hence *aubergine*. The modern Italian name is *melanzana*, derived from the Latin *mala insana*, or "apple of madness". In Egypt calling someone 'badingaan' means that they are mad, and is used to call someone 'completely mad' (badingaan khaleS).

Introduced by the Arabs to Spain, for a long time the Europeans considered it inedible, growing it for ornament only. Gradually during the 15th century it became acceptable as a food plant. The most famous dish all over the Arab world is called Imam bayildi, "the priest fainted": the name is supposed to record the priest's response when he heard how much oil his wife had used in cooking the dish.

There are many varieties with different shapes, sizes and colours; the common one in Sinai has large round black fruits, but others can be small, elongated and white - hence the American name of 'eggplant'.
This great variety is used as an Egyptian metaphor for human difference: "everyone has his own badingaan'. There is also a saying that Egyptian mothers use when their children are doing something outlandish (and therefore wrong): "the pot was half-full, but now it is overfull with an aubergine". This means that she is fed up with their foolish behaviour, and it's over now since her heart is filled with large black marks (the aubergine) against them.

Nutritional and medical value
Among the Bedouin, aubergines are not fried in oil since they absorb extravagant quantities of this expensive commodity. Instead the fruit is cut into pieces, boiled, and served with tomato sauce.

Aubergine contains a large amount of water, protein, fats, sugar, fibres, vitamins A and C, and minerals. Older varieties had the bitter taste of alkaloids, and had to be treated with salt before cooking. Egyptians believe that aubergine can regulate the heartbeat and reduce cholesterol, and is also useful against headaches and as a diuretic. The Bedouin believe that it reduces body odour.

Pests and diseases
According to our informants, aubergines grown by the Bedouin are resistant to disease.

15 Species: Bean	**Arabic name**: Ful, FaSoulia	**الأسم العربى: فـــــــول ـ فاصُولْيـــا**
Latin name: *Vicia faba*, *Phaseolus vulgaris*	**Bedouin name**: Ful, FaSoulia	**الأسم البدوى: فـــــــول ـ فاصُولْيـــا**
Family: Leguminosae		

History

The original bean grown in Egypt was the broad or faba bean, *Vicia faba*: drawings have been found on the walls of a 12th Dynasty tomb. The Ancient Egyptians did not like beans, but the Greeks did (although the followers of Pythagoras were forbidden them). There was a general belief that the souls of the dead migrated into beans, and the black dot on the bean itself was thought to be a sign of the devil from hell. The origins of these negative associations of beans could have arisen because of their tendency to cause wind (*anemos* means both wind and soul in Greek), or because of the occurrence of favism among Mediterranean peoples, i.e. susceptibility to the alkaloid poisons of beans leading to jaundice and anaemia. The Egyptian national dish is 'Ful medames', a breakfast dish of beans cooked very slowly overnight. A very common saying for someone who cannot keep a secret is: 'He cannot keep even a single bean wet in his mouth'. Another saying describes a small person with a loud voice: "The size is like one bean but the voice is like a ghost".

Haricot beans (*Phaseolus vulgaris*) are from Central America, and were introduced into Egypt much later. They are now the most popular beans grown in south Sinai, whereas broad beans are still dominant in northern Sinai.

Bedouin information

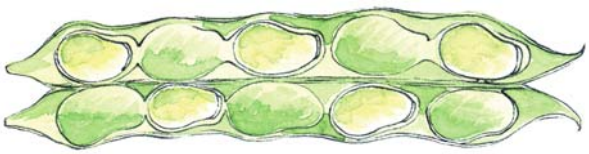
There are two varieties of faba beans in south Sinai:

- one with small green pods
- one with long red pods; this variety is probably very old.

Similarly there are two types of *Phaseolus* beans:

- Unani, which means "originally from Greece", with large pods;
- ᶜAdi, which is a common Egyptian bean grown everywhere.

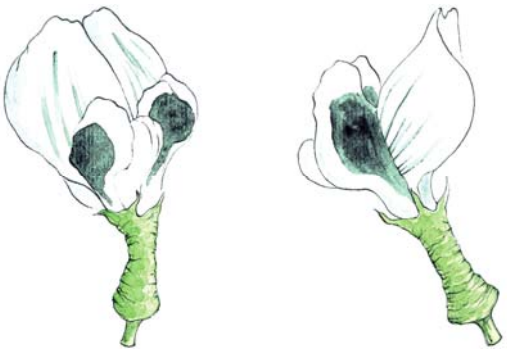
Bean plants are cultivated in summer (June, July & August), and produce beans after about forty days.



Nutritional and medical value
Since they are legumes, beans contain high protein levels, and also carbohydrates; they also are good sources of lipids and fibre. Egyptians believe that eating beans all the time is not healthy because they lack particular amino acids; therefore Egyptians add oil or butter, or sometimes cheese to remedy the shortage. Beans are difficult to digest and remain in the stomach for a long time: although this causes difficulties for those with sensitive digestive systems, it also means that Ful is the most popular dish to eat in the early morning during Ramadan, when people - including the Bedouin - need to last the whole day without eating anything more. Egyptian mothers feed their small babies with mashed beans to protect them from constipation. In folk medicine, the flowers can be used against kidney inflammations, and powdered beans with milk can be used as a sun cream.

Pests and diseases
Both bean types are regularly attacked by caterpillars, mites or aphids. In hot years the rate of attack by moth caterpillars increases, destroying the plant.

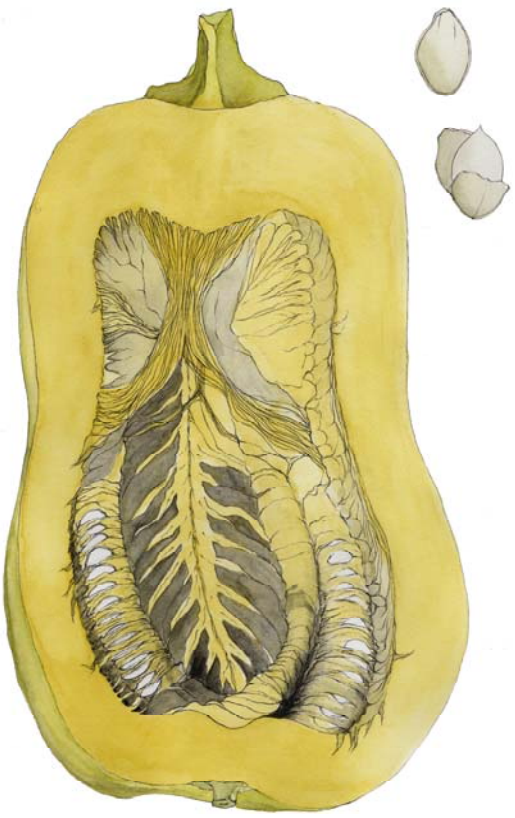
Importance to Bedouin life
In the past, large quantities of beans were produced by the gardens, but this is much reduced today by caterpillars and other pests causing severe losses of productivity.



16 Species: Squashes	**Arabic name**: Qithaa', Koasa	**الأسم العربى: قيثـــاء - كُوسَـــــــة**
Latin name: *Cucurbita pepo*	**Bedouin name**: Koasa, Qar^{c}	**الأسم العربى: كُوسَـــــــة - قـــــرْع**
Family: Cucurbitaceae		

History

In Egypt there is a confusion between squashes and cucumbers, because the name for cucumbers, Qar^{c}, is a generic term that includes all the squashes as well. 'Squash' is an American (originally Algonquin) term for numerous members of cucurbit vegetables of the genus *Cucurbita*. They are, however, very different from one another, and therefore go under a number of different names (squash, marrow, courgette/zucchini). Courgettes are merely young marrows, or varieties that never grow large. They became prominent only in the 20th century in the Europe and America. The genus *Cucurbita* is of New World origin, and therefore was not present in ancient Egypt. In contrast, cucumbers are one of the oldest of cultivated vegetables, perhaps originating in southern India. The proper Arabic name for cucumbers is Daba, whereas that for courgette is Qithaa'.



Most historical information refers to cucumbers, drawings of which have been found on tomb walls from the 12th Dynasty. The companions of the Prophet Mohammed mentioned that he liked to eat 'Daba' (=cucumber). The Quran mentioned that the Jews during the time of Moses preferred to eat it with others together with honey and meat. A common

Egyptian saying about these plants refers to differentiating among individuals: if you want to say that everyone is the same, then you say: “no difference between cucumber or courgette”.

Bedouin information

Two varieties are known in St Katherine, both courgettes rather than squashes, and both known just as Koasa **(كُوسَة):**

- a relatively old, common, small variety, also widely distributed in Egyptian markets
- another very large variety, introduced from Israel.

In Egypt, there are two main types of squashes, a small green one and a large sweet yellow one. The Bedouin do grow the large yellow variety, but usually for decorating their houses rather than for food.

Squashes are cultivated in early summer In former times it was used against thirst, to treat urinary bladder pains, and was also considered useful against dog bite. In Egypt at least it is also used to help improve oily skin in beauty treatments by washing the face with water boiled with courgette, or by putting courgette slices on the face. The Bedouin call them Qarᶜ Um Maᶜin, **(قرْع أم مَعِين)** which refers to squash that they can use to put things in. In Wadi Feiran they call them Raqabeia, **(رَقيبة)** meaning ‘with a neck’, and they paint them and use them for decorations or (recently) as lampshades.

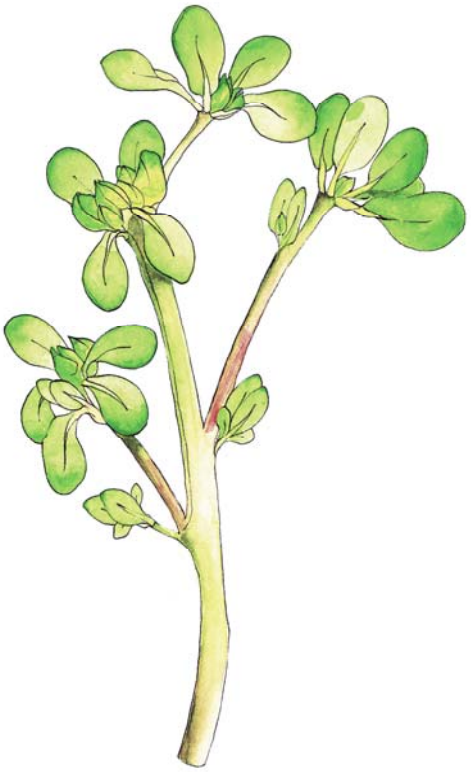
Pests and diseases

Severe damage occurs to both varieties, especially the Israeli import that brought with it a serious caterpillar pest that now attacks both varieties and destroys many plants. The Bedouin are asking for help in controlling the moth pest

concerned, which attacks the fruits in their early stages. In hot years, the rate of attack by moth caterpillars increases, destroying the plants.

17 Species: Purslane	**Arabic name**: Rigla	**الأسم العربى:** رجْلَـــــــــة
Latin name: *Portulaca oleracea*	**Bedouin name**: Rigla	**الأسم البدوى:** رجْلَـــــــــة
Family: Portulacaceae		

History



Originally this was an Indian plant, used against scurvy by sailors because it is rich in vitamin C. In former times, poor Egyptians used to collect this plant as it grew wild, and ate it mixed with fermented milk. The seeds are so small that they are included by mistake in all sorts of seed collections, and regularly appear wherever clover and other fodder crops are grown. Eating Rigla is still in some ways a mark of poverty. The fleshy leaves and the tops are mixed with rice, fried garlic and herbs and boiled, and served with bread and pickled vegetables. There is a saying in Arabic: "During the day you show yourself as a wealthy man, but in the evening your dinner is Rigla".

In Egypt it was historically used for eye inflammations: the stem juice is mixed with samgh (a secretion from the bark of *Acacia nilotica*), and left it in the shade for a while, and then used as a cream. The plant was also mixed with an egg and some oil, and used by nursing mothers as a remedy for cracked nipples. It has anthelminthic properties too.

Bedouin information

The Bedouin believe Rigla has been grown for centuries in Sinai . However, this is essentially a wild plant rather than deliberately cultivated, coming in particularly with clover seed. The Bedouin use the fresh leaves in salads.

18 Species: Tomato	**Arabic name**: TamaTem, AooTa	**الأسم العربى:** **طمَاطِـــــــم-أوطـــــــة**
Latin name: *Lycopersicon esculentum*	**Bedouin name**: TamaTem	**الأسم البدوى:** **طمَاطِـــــــم**
Family: Solanaceae		

History

Originally from the Neotropics, the tomato is now familiar worldwide. It was brought to Spain from the New World in the early 16th century, and according to Davidson is now as close to being as ubiquitous in the kitchen as any plant food. The Aztecs domesticated it, but they called it *xitomatl*, while the term *tomatl* meant merely 'plump fruit'. The earliest known printed recipe involving the tomato in 1692 called for 'tomato sauce, Spanish style', but it had already been the subject of paintings of kitchens some 50 years beforehand.

Bedouin information

Cultivation starts in early summer (June), and fruiting occurs after about 50 days. Traditionally the Bedouin preserve them by drying in the sun on a plastic sheet for about 4-5 days and keeping them for the rest of the year. They use the fresh fruits for eating raw in salads and in cooking.

Pests and diseases

The fruits suffer from cracking, probably caused by a shortage of water or irregular irrigation. The fruits are often attacked by caterpillars, especially during the development period in summer, after which they are attacked by a fungus which destroys them.

Samy Zalat

Importance to Bedouin life

In the past, large quantities of tomatoes were produced by the gardens, but today they are much reduced. Recent droughts and the intensive care needed to husband this fruit are probably the reason for the decline.

19 Species: Egyptian spinach	**Arabic name**: Molokhayia	**الأسم العربى:** **مُلوخِيـــــــــة**
Latin name: *Corchorus olitorius*	**Bedouin name**: Molokhayia	**الأسم البدوى:** **مُلوخِيـــــــــة**
Family: Tiliaceae	**Pharaonic name**: Molokh, MnoaH, ManH	**الأسم بالهيروغليفية:** **مُلـــــــوخ -** **مْنوح - مَنْح**

History

Corchorus is originally from North Africa and India. It was never mentioned in Pharaonic times, nor has it been found in Ancient Egyptian archaeology. However, the seeds were found in a tomb in Kom Osheim dating from Roman times. The suggested Pharaonic name for Molokhayia is 'MnoaH' or 'ManH', which is mentioned in many Greek and Roman sources. This is a common, very cheap vegetable in Egypt, but is unknown or poorly known elsewhere. In Egyptian history, one of the Caliphs, El Haakim Bamr El Allah, forbade the people to eat Molokhayia. The ancient word for the plant was Molokh, but after this incident it was called jokingly Molo*kh*ayia because it sounded like 'Molo*k*ayia', meaning 'belonging to the king'.

Bedouin information

In Sinai the Bedouin seem to have special varieties with either white or purple stems and large leaves.

Nutritional and medical value

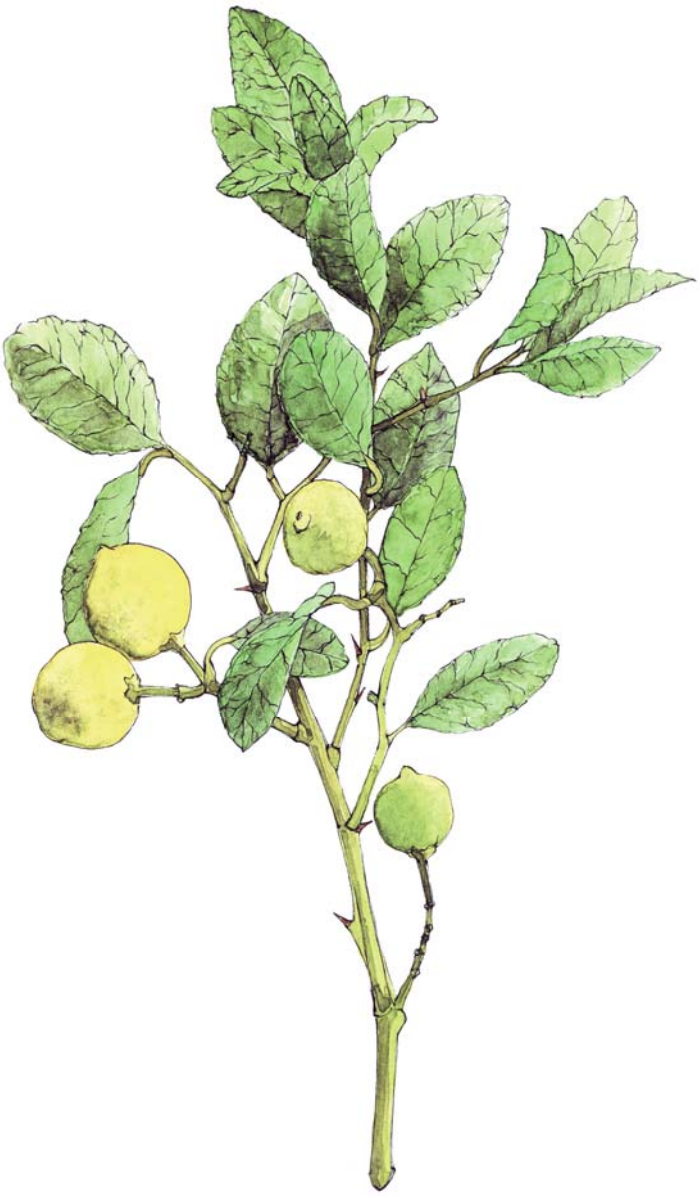
Molokhayia contains protein, vitamin A and minerals. Ibn Sina in the 11th century mentioned that it is a lubricant that can be used to eliminate kidney stones from the bladder. It is also useful for chest problems and dry coughs. The Bedouin cook the plant fresh in a soup with bread, rather than using the dried leaves as in the rest of Egypt. While in Egypt the serving of Molokhayia with rabbit is a sign of special hospitality to a guest, in Sinai it has no such significance.

Pests and diseases

The plant appears not to be attacked by insects.

Other plants of culinary interest

20 Species: Lemon	**Arabic name**: Laimoon, Lamoon	**الأسم العربى:** **لَيْمُـــــون - لَمُـــون**
Latin name: *Citrus limon*	**Bedouin name**: Lamoon	**الأسم البدوى:** **لَمُـــــــون**
Family: Rutaceae		



Originating in northern India, lemons reached the West in the 1st century AD. They did not become commonly used until much later, when the Arabs spread it to Europe, but lemons are still used principally in Mediterranean cuisine.

There are only a few lemon trees in Sinai, representing two varieties, small and large. Unlike other Egyptians, the Bedouin do not use lemons very much in cooking, except as a dressing for salad. In Egypt lemon juice is heavily used as a refreshing drink, and is very cheap. Pickled lemons are used extensively, either on their own or in combination with other vegetables such as pepper, onion, olive, cucumber, etc. Their high vitamin C content makes them useful for colds and influenza. They are used as a remedy for fevers and stomach problems too.

To encourage tolerance in the face of unreasonable behaviour, Egyptians will say, “Squash a lemon in your mouth”; if you can tolerate this, then you can tolerate the behaviour as well.

21 Species: Orange	**Arabic name**: Bortuqaal, Bortu'aan	**الأسم العربى:** **بُرْتُقـــال - بُرْتُنـــــان**
Latin name: *Citrus sinensis*	**Bedouin name**: Bortu'aan	**الأسم البدوى:** **بُرْتُنـــــــان**
Family: Rutaceae		

Oranges came from China and India, first produced for their fragrance and flavouring of the rind. The sour orange *Citrus aurantium* travelled westwards first (what the British call the 'Seville' orange), with the sweet orange following 500 years later, imported from China by the Portuguese to Portugal first, and then to the rest of Europe. Thus the name 'Bortuqaal' (and 'portokali' in Greece) means 'derived from Portugal'.

In Egypt there are three main types: sour (ie Seville oranges), sweet and navel oranges. During the 19th century in Muhammed Ali's time, a new variety was introduced, the satsuma, known as Yusufi after the student who brought it back from Spain. Orange peel is used for pickling by farmers and poor families, and also for making 'old cheese' (Gibna adima), a typical lunchtime meal. This is a curd cheese made from buffalo or cow's milk, placed in a closed container with orange and/or quince peel, green and/or red pepper, salt, a bit of milk and a starter culture of yeast; it ferments for up to six months, after which it has turned a brown colour and is ready to eat.

However, as with lemons, there are very few orange trees in the gardens of St Katherine and the Bedouin do not use them much (citrus fruits in general seem not to be much used).

22 Species: Mulberry	**Arabic name**: El Tut or Tut	**الأسم العربى:** **التُـــــــوت - تُـــوت**
Latin name: *Morus nigra*	**Bedouin name**: El Tut	**الأسم البدوى:** **التُـــــــوت**
Family: Moraceae		

The mulberry originated in Nepal or the Caucasus. Its Chinese relative, the white mulberry *Morus alba*, has been cultivated there for at least 5000 years as the only food of silkworms, the caterpillars of the silk moth.

Mulberry trees are sometimes found in the Bedouin gardens: there is a particularly large and beautiful old tree in the middle of Wadi ItlaH, which stains the rocks all around red with its juice. Most trees seem to grow wild in St Katherine, but some have been planted deliberately as an act of generosity for travellers or others to share the fruits.

The tree takes a long time to mature and bear fruit, and the Bedouin say, "ya bard moot lama iTlaᶜ el tut" **(يابَرْد مُوت لمّا يطْلَع التَّوت)** which means "cold will die when the mulberry tree bears fruits", illustrating how difficult it is to obtain fruits from this tree.

23 Species: Palm	**Arabic name**: BalaH, Tamr	**الأسم العربى:** **بَلـــــح - تَمْـــــر**
Latin name: *Phoenix dactylifera*	**Bedouin name**: Tamr	**الأسم البدوى:** **تَمْـــــر**
Family: Palmae		

Dates are the universal provider of the Arabic world, a tree said to have more than 800 distinct uses. It is used as a metaphor for the vicissitudes of life: “Some people eat the sweet flesh, other have the stones rain their heads”. The tree grows a new section with leaves each year, but each leaf lasts for about five years. Thus the tree consists of about five leafy sections on top of a stack of old sections whose leaves have died. The tree is very long-lived, eventually growing to be more than 30 metres high. Trees are either male or female, and only females produce fruit. Although natural wind pollination may occur, cultivated trees are pollinated artificially. They have been cultivated since prehistory, and are shown from the earliest period of Egyptian and Mesopotamian history. If someone is kind to a child, the appreciative Egyptian mother will say: “If you give a date to my child, the sweet will be in my stomach”.

There are just a few palm trees growing in gardens in Wadi Gebal, of the red date variety. Unlike other Sinai Bedouin, the Gebaliya are not very interested in dates. This may be because their dates are not as good as those of Wadi Feiran or elsewhere in Sinai, and they only use them as fodder for livestock. They grind up the ‘bad’ (i.e. unpollinated) dates and eat them as a treatment for diarrhoea.

24 Species: Walnut	**Arabic name**: Ain El Gamal	**الأسم العربى: عَيْــن الجَمَـــــــل**
Latin name: *Juglans regia*	**Bedouin name**: Shobak	**الأسم البدوى: شُـــوبَـــــك**
Family: Juglandaceae		

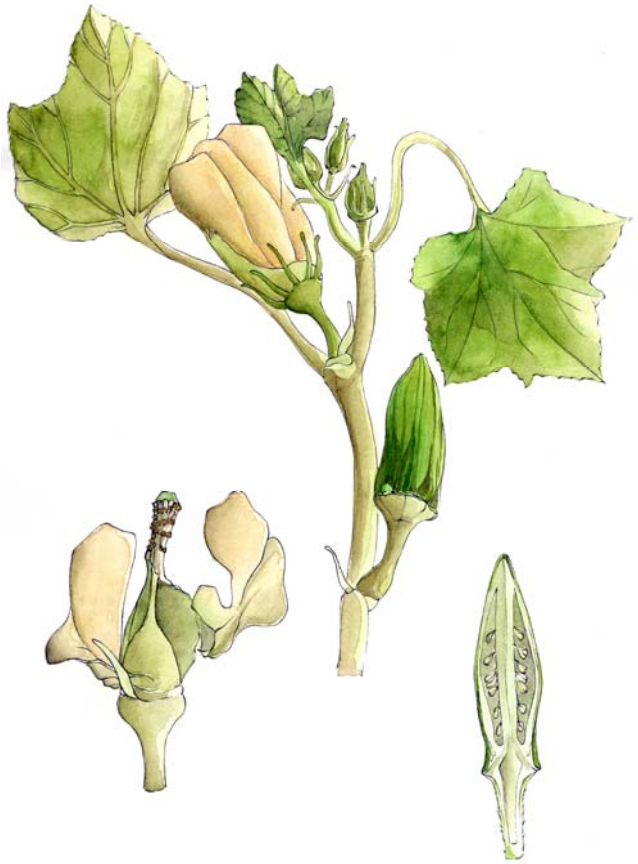
Walnut trees are found from SE Europe to temperate Asia, and have been prized for their nuts for millennia. The half-kernels are convoluted like brains, and have fascinated artists from the earliest times. Walnuts were cultivated in ancient Greece. The nuts are either eaten, or pressed for oil or for use as a dark-brown dye. The tree does not grow wild in Egypt, and was unknown to the ancient Egyptians. In the Gebaliya territory there are only four large trees in Wadi Gebal and about ten young ones. The Bedouin do not use the nuts except to eat fresh. Perhaps these trees were brought by the monks from Greece in the Byzantine period.

25 Species: Alfalfa, Lucerne, Clover	**Arabic name**: Barseem	**الأسم العربى:** بَرْسِيـــــــــم
Latin name: *Medicago sativa, Trifolium*	**Bedouin name**: Barseem	**الأسم البدوى:** بَرْسِيـــــــــم
Family: Leguminosae		

Clover (*Trifolium* spp) and alfalfa are grown throughout the world, usually as a very important animal fodder crop. Because of their ability to fix atmospheric nitrogen, legumes such as these provide a vital protein source, and can restore soil fertility when ploughed into the soil. In many areas of Egypt, especially the Delta and Upper Egypt on the banks of the Nile, this is the main crop.

Alfalfa is present in many gardens in Sinai, but the Bedouin do not seem to use it as fodder in any systematic way. It does provide an important foodplant for some of Sinai's butterflies.

26 Species: Okra	**Arabic name**: Bamia	**الأسم العربى:** بـامْيـــــــــــة
Latin name: *Hibiscus esculentus*	**Bedouin name**: Bamia	**الأسم البدوى:** بـامْيـــــــــــة
Family: Malvaceae		



Native to sub-Saharan Africa, okra was probably first cultivated in Ethiopia and spread to the Mediterranean and India. There is no trace of it at all in ancient Egyptian tombs, the first Egyptian record being in the 13th century. However, its Arabic name in use at that time may indicate that it was brought into Egypt by the Arabs in the 7th century. Possibly it went from Ethiopia into Arabia, and then with the Muslim invasions into the rest of the Arab world, but its true history is still very uncertain. A few gardens grow it in Sinai, but it is not part of traditional Bedouin cookery except in the great mixture of available vegetables called Lebeykha (see above). In Egypt okra and molokhayia are staple summer dishes.

27 Species: Lettuce	**Arabic name**: Khas	**الأسم العربى:** خَـــــــس
Latin name: *Lactuca sativum*	**Bedouin name**: Khas	**الأسم البدوى:** خَـــــــس
Family: Compositae		

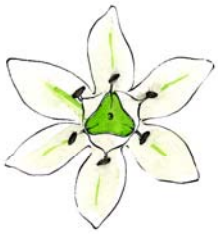
Lettuce is the most popular of the salad vegetables, native to Europe and Asia. It was probably originally cultivated for medicinal use for its mildly soporific quality. Ancient Egyptian tombstones of 4500 BC show a plant that resembles lettuce, and probably this was one of the more significant plants in Egyptian history. The lettuce was the symbol of Min, the god of fertility and reproduction, because the white fluid of the leaves was similar to semen: priests at Philae were forbidden to eat lettuce, possibly because of its connection with fertility. The Romans ate a lot of lettuce, usually at the end of the meal to calm the diner and induce sleep, but also at the beginning to stimulate the appetite. In Sinai it is uncommon, and only a few Bedouin grow lettuce for salads.

28 Species: Maize	**Arabic name**: Zora, Dora	**الأسم العربى: دُرة - دُرة**
Latin name: *Zea mays*	**Bedouin name**: Zora	**الأسم البدوى: دُرة**
Family: Graminae		

There is some confusion in terminology between North America and the UK, since in North America they use the term ‘corn’ for this plant (as in ‘sweetcorn’, ‘corn on the cob’). In the rest of the English-speaking world, ‘corn’ usually means ‘wheat’ (*Triticum*). Maize comes from the New World, and cannot propagate itself: wherever it grows it is grown by man. In Egypt, maize is grown in the Delta and throughout the south, and dried seeds are used as fodder for livestock; the stripped dried cobs are made into a kind of coal used for burning in hookah pipes. Roasted cobs are sold on the streets of Egypt as a snack, but it is not common to include maize in cooking because it is regarded as animal fodder. Traditionally murderers hide in maize fields, and therefore when someone does something unexpected, Egyptians say: “He has hidden in the maize field”.

Maize is grown in a few Bedouin gardens. The cobs are collected and dried, and the seeds ground to make Bedouin FeTeer (bread). The maize kernels are ground coarsely, mixed with water, and put onto a hot plate until it cools. They then put the dough into hot ashes to cook, and serve it hot. Maize cobs are also eaten raw or roasted. No problems of insect attack have been mentioned.

29 Species: Onion	**Arabic name**: BaSal	**الأسم العربى:** بَصَـــــــل
Latin name: *Allium cepa*	**Bedouin name**: BaSal	**الأسم البدوى:** بَصَـــــــل
Family: Alliaceae		



Venerated by the ancient Egyptians and Greeks, the onion is one of the oldest and best-known food plants in Egypt, cultivated even before the ancient Egyptians, in Sumeria. The best onions come from Upper Egypt. Herodotus wondered why the ancient Egyptians had any diseases at all, since they had both lemons and onions under cultivation: he believed that both were good for the health. Lentils and onions were the staple food of the builders of the pyramids, as they are of builders today.

Annual consumption per individual in Egypt is almost 20 kg per year. Egyptians ancient and modern believe that onion juice is a remedy for eye problems and weak vision, and villagers still put it onto babies' eyes to make their vision strong. Onions feature in many Egyptian proverbs. Egyptians say: "An onion from the one you love is equal to a sheep", meaning that if you love someone, any trifle (the onion) from them is very valuable (i.e. like a sheep: in traditional Arabic culture, wealth is counted in livestock). A wife will say to her husband: "My memories of you, my onion: every bite comes with tears". And to illustrate the changeable nature of life they say: "One day honey, the next day onions".

Onions are added to food in Bedouin cooking, but they do not eat them raw. Compared to Egypt, onions play only a minor role in Bedouin cooking. They are grown in only a few gardens.

30 Species: Parsley	**Arabic name**: Baqdounis , Ba'dounis	**الأسم العربى:** **بَقْـدُونِـــس -** **بـأدُونِيـــس**
Latin name: *Petroselinum crispum*	**Bedouin name**: Ba'dounis	**الأسم البدوى:** **بـأدُونِيـــس**
Family: Umbelliferae		

Parsley is native to the eastern Mediterranean, and is used extensively in Middle Eastern cookery. The flat-leaved variety (var. *neapolitanum*) is the only one used in Egypt. It is not used very much by the Bedouin, but is grown in a few gardens and used in salads: they tend to grow Caraway (*Carum carvi*) instead.

31 Species: Pea	**Arabic name**: Bsilla	**الأســـــم العربـــــى:** بْسِـــــــــلة
Latin name: *Pisum sativum*	**Bedouin name**: Bsilla	**الأسم البدوى:** بْسِـــــــــلة
Family: Leguminosae		

Peas have been cultivated since the Bronze Age, and were known in Egypt from time of the Middle Kingdom. Very few Bedouin grow peas in their gardens, but when they do they are pest-free, unlike beans.

32 Species: Pepper	**Arabic name**: Filfil	**الأسم العربى:** فِلْفِـــــــــل
Latin name: *Capsicum* sp.	**Bedouin name**: Filfil	**الأسم البدوى:** فِلْفِـــــــــل
Family: Solanaceae		

Capsicum peppers were originally cultivated in the Americas; they are rich in vitamins A and C and in carotenoids. A few Bedouin grow sweet peppers and eat them fresh, and sometimes as pickles.

33 Species: Cress	**Arabic name**: Rashaad, Harf	**الأسم العربى:** رَشـــــاد - حَـــرْف
Latin name: *Lepidium sativum*	**Bedouin name**: Rashaad	**الأسم البدوى:** رَشـــــاد
Family: Cruciferae		

This plant was used as a medicinal plant in Pharaonic times, and the seeds have been found in tombs. It is spicy tasting, like Rocket. The seeds can be used as a diuretic, and mixed with honey for respiratory problems. Coptic Egyptians used it to treat headaches. The Bedouin eat the seeds to treat both their own chest problems or those of their camels. A mixture of the seeds with seven eggs is given to a camel twice a week for general health improvement.

34 Species: Rocket	**Arabic name**: Gargeir	**الأسم العربى:** جَرْجِـــــــــير
Latin name: *Eruca sativa*	**Bedouin name**: Roaka	**الأسم البدوى:** رُوكـــــــا
Family: Cruciferae		

Rocket grows wild in the Mediterranean region, but is cultivated throughout Egypt as a very cheap vegetable for peppery salads. Boiling the leaves produces a diuretic liquid. Some people believe that the leaves have aphrodisiac properties, giving rise to a phrase amongst women: “If you know the benefit of Rocket, you will grow it under your husband’s bed”.

In St Katherine the plant is cultivated at any time of the year, but August is the best month. The leaves are ready to harvest after 20 days, and the plant starts producing seeds after only four days, when irrigated every day. The Bedouin use the leaves in green salads.

The plant is also used to produce an oil for the hair, by grinding the leaves in plastic and then in cloth bags to obtain a fluid: this is then put on the hair after washing. Bedouin women believe that this oil helps weak hair to become strong.

35 Species: Spinach	**Arabic name**: Sabaanikh	**الأسم العربى:** سَـبانِـــــــــخ
Latin name: *Spinachia oleracea*	**Bedouin name**: Sabaanikh	**الأسم البدوى:** سَـبانِـــــــــخ
Family: Chenopodiaceae		

Spinach originated in Persia, and became widespread in the Arab empire. Its high iron content makes it nutritionally useful, and its mildly laxative properties are also well known. Spinach juice is the strongest green colouring, and it is often used purely for this property. The Bedouin use it raw in salads, or they boil the leaves and stems and serve them with other vegetables.

36 Species: Water melon	**Arabic name**: BaTiikh	**الأسم العربى:** بَطّـــــيخ
Latin name: *Citrullus lanatus*	**Bedouin name**: BaTiikh	**الأسم البدوى:** بَطّـــــيخ
Family: Cucurbitaceae		

Water melons were cultivated in ancient Egypt well before 2000 BC; they are native to Africa, and are valuable in that they can provide drinkable water in places where the water supply is polluted. In St Katherine the plant is very uncommonly grown because the fruits are not very popular with the Bedouin, unlike other Egyptians. Egyptians eat a lot of water melons, especially in summer; they are very cheap to buy.

Egyptians eat water melon as a fruit, but it also can be a main dish at dinner, especially for farmers and poor families (whose meal often consists of cheese, bread and water melon). Egyptians think this is a very useful fruit since one can eat the sweet watery flesh, roast the seeds in salt and eat them in the evening as nuts, and use the peel as a fodder for animals (especially donkeys). If you ask somebody to do a difficult or impossible job, Egyptians will say: “What are you asking me to do: strike the ground and produce a melon ?”. They will also say: “Put a summer melon in your stomach”, meaning “don’t worry, all will be well” (because there will always be enough melons in summer to go round).

37 Species: Tobacco	**Arabic name**: Tabgh, Dokhan	**الأسم العربى:** تَبْـــــــغ - دُخّـــــان
Latin name: *Nicotiana* sp	**Bedouin name**: Khodrei, Shaami	**الأسم البدوى:** خُضْــرى - شـــــامِى
Family: Solanaceae		

Tobacco comes from the New World, and therefore is a relatively recent import to Egypt. It grows in some gardens, mainly the Wadi ItlaH, Tallᶜa and Gharaba, down to Feiran. Many Bedouin smoke, but Perevolotsky considered this to be one of the crops that needed to be bought in from outside, rather than grown locally. Individual Bedouin grow it for their own consumption, and tend to smoke it green rather than dried. This increases the strength of the nicotine 'hit', and invites comparison with cannabis (which is also grown in remote wadis, but is of course illegal). In former times, women started smoking during childhood (at about 10 years old), but this habit has recently declined noticeably.

Useful wild plants

38 Species: Acacia	**Arabic name**: sunT	**الأسم العربى:** سُـــــنْط
Latin name: *Acacia* spp	**Bedouin name**: seyaal	**الأسم البدوى:** سِـــــيال
Family: Leguminosae		

Although acacia is one of the most abundant, widespread and valuable trees in Sinai, it grows predominantly at lower elevations and the Gebaliya are probably the only Bedouin in Egypt or Sinai for whom acacia plays very little role in their culture. As detailed above, Rabinowitz thought that charcoal production and trade was the main source of revenue for the Bedouin throughout the 19th century. However, this cannot have been true for the Gebaliya unless they have wiped out the native population during this period; it seems likely that the high mountains are relatively unsuitable for acacia and that it has never grown there in any numbers. We know of only a few trees growing within Gebaliya territory, near Sheikh ᶜAwaad at the bottom of the pass (Naqb Al Hawa) leading to the Plain of El RaHa. Acacia is a very important resource for flower-visiting and pollinating insects. Regeneration has been problematic in recent decades, possibly because of grazing pressure (by camels on the branches, and goats on the seeds and seedlings) and seed predation by bruchid beetles. Ensuring the long-term health of acacia stands is important for the St Katherine Protectorate, and the Protectorate has established a programme of systematic planting of new trees.

39 Species: Bitter apple, colocynth	**Arabic name**: HanZal, hanDal	**الأسم العربى: حَنْـــظل ـ حَنْضَـــــل**
Latin name: *Citrullus colocynthis*	**Bedouin name**: HanZal	**الأسم البدوى: حَنْـــظل**
Family: Cucurbitaceae		

This is a wild plant, not cultivated because it is very poisonous: it is abundant in coastal areas of Sinai rather than in the high mountains, although it does grow in many of the Bedouin gardens. In Egypt and in Saudi Arabia it is used medicinally for the relief of rheumatic pains, and the fruits and seeds are avidly collected. Arabian Bedouin remove the bitterness via boiling before eating the fruits. The Prophet Muhammed warned of people who appeared to be supporters, but actually were not believers, by comparing them to this fruit: the outside looks good but there is no fragrance, and a bitter taste. In Shakespeare's phrase: "Oh what a goodly outside falsehood hath!".

In contrast to the strong traditions of Arabian Bedouin with respect to this plant, the Gebaliya pay it little attention, perhaps evidence of their different origins. The top of the plant is homogenized and mixed with oil into a cream for use against piles and boils on the skin.

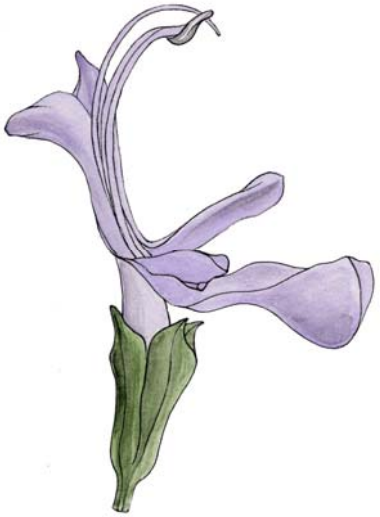
40 Species: Mint	**Arabic name**: Ne^{c}na^{c}	**الأسم العربى:** نِعْنـــــــاع
Latin name: *Mentha* spp	**Bedouin name**: Habaq, Habak	**الأسم البدوى:** حَبَـــــق - حَبَـــك
Family: Labiatae		

Habaq, the wild mint of the Sinai mountains, is *Mentha longifolia*, sometimes called Horsemint. The cultivated mint used to make tea throughout Egypt, Ne^{c}na^{c}, is Spearmint, *Mentha spicata*. The Bedouin grow spearmint in their gardens for the leaves to make tea, but they still call it Habaq; often the mint seeds come in by accident with other seeds and therefore are not deliberately cultivated. Wild mint is one of the most characteristic plants of the wadis of the Ring Dyke, its heady smell filling the air with a beautiful scent. An abundance of mint is a good indicator of the presence of water; its flowers are a very important resource for insect flower visitors, and therefore support large populations of wild pollinators. There is a serious problem of over-collection of wild mint for pharmaceutical investigations.

41 Species: Oreganum	**Arabic name**: Za^{c}tar	**الأسم العربى:** زَعْتَـــــــــر
Latin name: *Origanum syriacum*	**Bedouin name**: Za^{c}tar	**الأسم البدوى:** زَعْتَـــــــــر
Family: Labiatae		

The term ‘oreganum’ or ‘oregano’ strictly refers to just a few species of the genus *Origanum* (mostly *O.vulgare*): many cultivated forms are commonly called marjoram. Marjoram is a major herb in Mediterranean cooking. Palestinians and Syrians eat marjoram with olive oil on bread, but the Bedouin of Sinai and most Egyptians never do this. The Bedouin grow the plants for medicinal use, making a tea from the leaves as a remedy for stomach pains. As with mint, the plants do not seem to be grown deliberately, but appear in the gardens naturally because they are so common in the wadis. The plant is always dry, and the flowering season is very short (late summer).

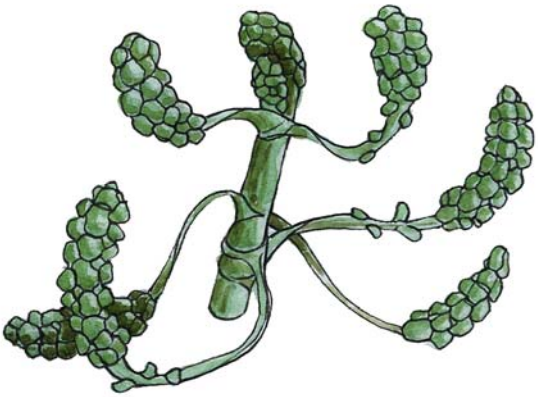
42 Species: Rosemary	**Arabic name**:HaSa Lban	**الأسم العربى:** حَصَـــىَ لِبـــــان
Latin name: *Rosmarinus officinalis*	**Bedouin name**: Zanzabeil	**الأسم البدوى:** زَنْـــزَبِيـــــل
Family: Labiatae		

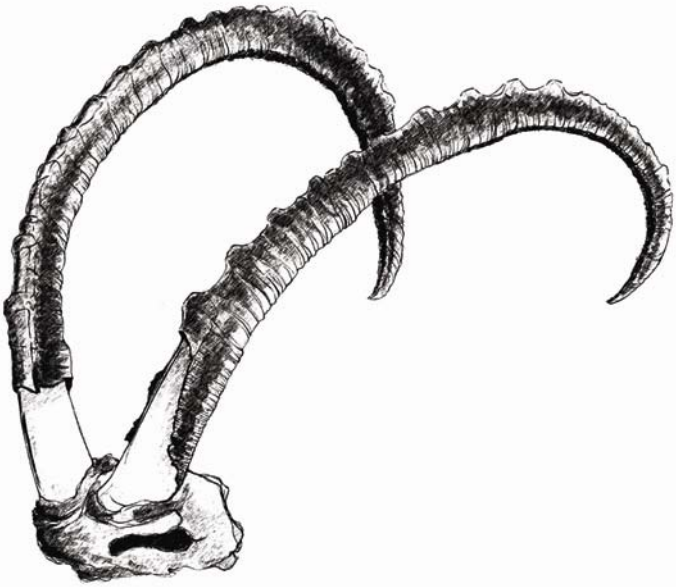


Rosemary was grown and lauded in classical Greece and Rome, but it is still not clear whether it was known in ancient Egypt. It is easily grown from cuttings, and can be seen growing in some of the gardens. The Bedouin put it in tea as a remedy for chest complaints. Sometimes it is boiled in water without sugar, and drunk as a tea, also for chest complaints.

43 Species: Wormwood	**Arabic name**: SheiH	**الأسم العربى:** شِيـــــح
Latin name: *Artemisia* spp	**Bedouin name**: SheiH	**الأسم البدوى:** شِيـــــح
Family: Compositae		

There are two very common species, *Artemisia herba-alba* (recently separated into the genus *Seriphidium*) and *A. judaica*. They are both used by the Bedouin for coughs, chest problems or stomach pains by mixing them with goat milk. Many plants in the wadis have insect galls on them that look like balls of cotton wool. The Bedouin collect these galls and burn them to ash; they then place this ash on wrist and ankle sprains, bound to the joint with wool.





Mammals
الثديـــــات

Animals of the gardens

We have concentrated on the plants of the gardens and their relationship to Bedouin life, but of course the gardens are inhabited by a wide range of animals as well. As one might expect, the Bedouin pay more attention to the plants because they are more vital to their well-being. Even so, there is a rich Bedouin lore about the animals too. The richest by far, of course, concerns their domestic animals upon which they depend: camels, goats and sheep. An account of these will have to await another book, for here we concentrate only on wild animals.

In this section we discuss the animals seen in and around the gardens, with notes on their impact on the gardens themselves. The gardens represent an important refuge for the animals in this harsh environment. Furthermore, we have included a number of species (mainly birds) for their natural history interest.

Some animals are symbolic: owls are considered bad omens, Sand Partridges are symbols of patience because they can remain motionless for a long time; donkeys symbolize stupidity, as they do the world over; gazelles embody beauty. However, as one informant told us: “the God who created you and the donkey is the same God”, meaning that one must respect the whole of Nature.

The order of the species is in terms of the frequency with which the Bedouin mentioned each species.

photos by Jennifer Johnson, Tim Hurst & Fred Manata

Mammals
الثدييـــــات

44 Species: Fox	**Arabic**: Tha^{c}lab, Ta^{c}lab	**الأسم العربى:** **ثَعْلَـــب - ثَعْلَـــب**
Latin name: *Vulpes* spp	**Bedouin**: Abu El HuSain, Abu Risha	**الأسم البدوى:** **أبُـــو الحُصَيْـــن** **أبُـــو ريشـــة**
Family: Canidae		

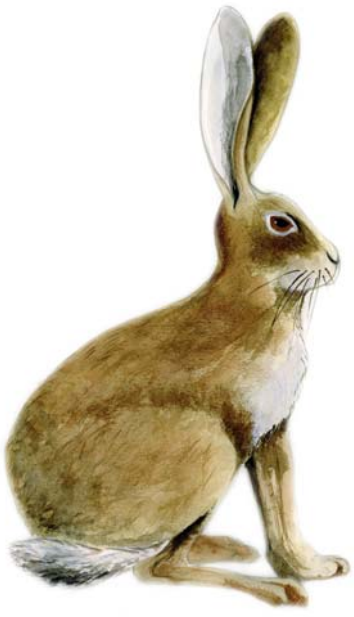
Jennifer Johnson

Foxes are now much more abundant than they used to be, according to Bedouin informants. Their droppings are everywhere on the rocks and paths, and the animals themselves are commonly seen in the early morning or late evening. They are the main predators of livestock, especially chickens. Foxes rarely live inside the gardens, but enter them freely at night. According to the Bedouin, the original species is Rüppell's Sand Fox (*Vulpes rueppelli*: Abu Risha: **أبُـو ريشـة**), and the Red Fox (*Vulpes vulpes*: Abu El HuSain: **أبُـو الحُصَيْـن**) is a recent invader. Blandford's Fox (*Vulpes cana*) does occur, but is extremely rare.

45 Species: Hyrax	**Arabic name**: Wabar	**الأسم العربى:** وَبَـــــــــر
Latin name: *Procavia capensis*	**Bedouin name**: Wabar	**الأسم البدوى:** وَبَـــــــــر
Family: Procaviidae		

Hyrax are quite common in the Sinai mountains, but not very obvious; you need patience and care to be able to see them in the wild. A captive colony can be viewed at Ramadan Ibrahim's house at the end of Wadi Arbae^{c}in. The Bedouin place the hyrax in a special category close to human beings, and different from other animals, because its feet are rather human-like and it has no tail. Scientifically it was always thought to be related to elephants, something treated with scepticism by everyone including the Bedouin (and now also by science!). Although Hobbs says that hunting and eating hyrax are taboo in Bedouin society, several mentioned eating them, commenting that the Saudi Bedouin believe that the meat and the blood have aphrodisiac qualities.

46 Species: Hare	**Arabic name**: Arnab	**الأسم العربى:** أرْنَـــــــب
Latin name: *Lepus capensis*	**Bedouin name**: Arnab	**الأسم البدوى:** أرْنَـــــــب
Family: Leporidae		



The usual translation of this animal's name is 'rabbit', but it is actually a species of hare. Hares used to be very common in the open lowland areas of Wadi Feiran and as far south as El Tur, but now they are much rarer. The high mountains do not seem to provide an ideal habitat, and we have not seen a single hare during 20 years of working there. Nevertheless many Bedouin mentioned having seen them in their gardens - they love hare meat because it is so lean. The bone of the front leg is used to treat sprained wrists and ankles: a piece of wool is threaded through the hole in the bone, and wrapped around the affected joint.

47 Species: Hyaena	**Arabic name**: Dab^{c} Dab^{c}a	**الأسم العربى:** **ضَبْـــــــع - ضَبُعة**
Latin name: *Hyaena hyaena*	**Bedouin name**: Dab^{c}	**الأسم البدوى:** **ضَبْـــــــع**
Family: Hyaenidae		

Hyaena are now very rare, and their best-known locality is in the mountains near the coast of the Gulf of Suez. According to the Bedouin, they used to occur in the St Katherine mountains, coming into the gardens at night to attack livestock. Using automatic camera traps, hyaena have been recently photographed in the Protectorate. The Bedouin believe that hyaenas eat one another from their own stupidity, and keep themselves hidden from the eyes of other animals to hide their shame.

There is a myth among the Bedouin that a man lost in the desert for about 40 days returned in very good health, and he remained very strong and able to walk easily in the mountains. They said he hunted hyaena and ate the meat and the fat, and this was the source of his powers. Because of this myth, many Bedouin search for hyaena to hunt. Gamil Attia (the Protectorate community guard in Tarfa) said that a man from El Tih plateau asked him where he could find a hyaena, and was willing to pay LE 500. They believe that if any part of the body is in pain, if you eat the equivalent part of a hyaena you will recover. These curative properties are believed to extend to animals too. If a goat has stomach trouble then it is placed on its back, and a man who has eaten hyaena should bite its navel to make it better.

48 Species: Ibex	**Arabic name**: Teytal	**الأسم العربى:** تِيتَـــــــل
Latin name: *Capra ibex*	**Bedouin name**: El Seid, Badana (male)	**الأسم البدوى:** صِيـــــد - بَدَنـــــة
Family: Bovidae		

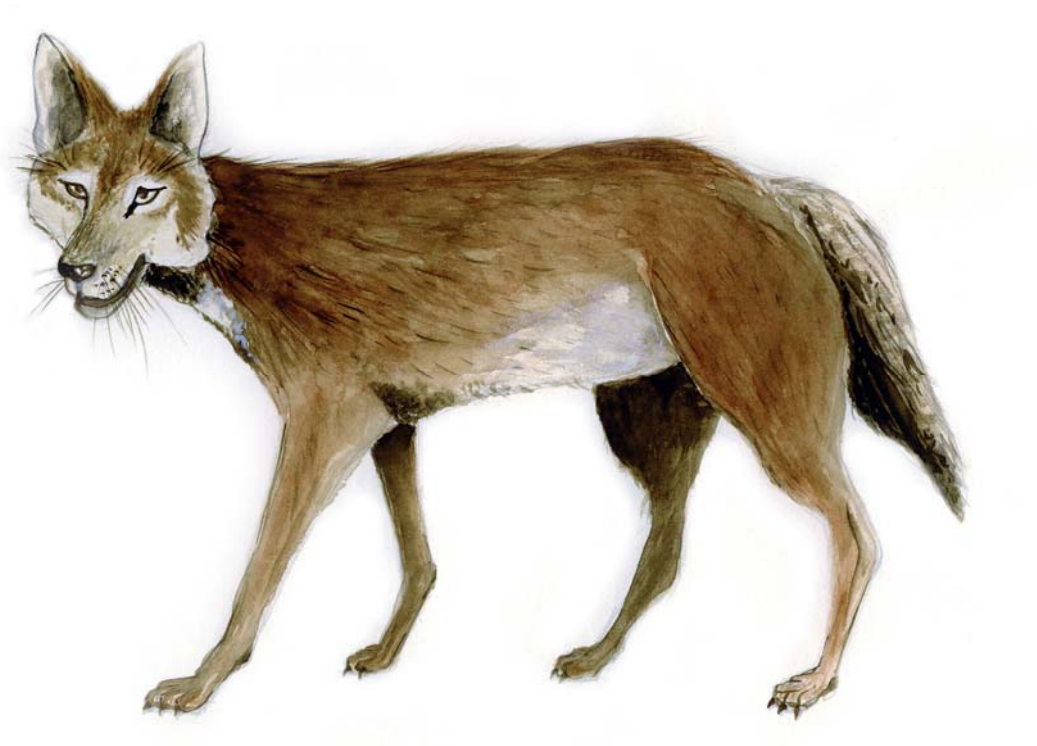
Jennifer Johnson

The ibex has always been the favourite game animal of the Bedouin. In former times they sold the meat in El Tur. It was very cheap but they preferred it to goat meat. Now the animal is rare, with only one small family herd living in the Gebal Musa area, and scattered others elsewhere in the southern massif. The Bedouin admit that their hunting has been the cause of this decline. They believe the ibex follow flushes of vegetation and now concentrate in remote wadis towards the Gulf of ᶜAqaba that have better water. Only the older generation of Bedouin report seeing ibex in their gardens. They measure the age of an ibex by the length of its horns in handspans (Shebr) and fingerwidths (Fitr). The rut is in early February, and the Bedouin say that the beard of the male grows at this time.

49 Species: Cat	**Arabic name**: QiT bari	**الأسم العربى:** **قِـــــط بَـــــرِّى**
Latin name: *Felis* sp	**Bedouin name**: QiT bari, oT bari	**الأسم البدوى: قِـــــط** **بَرِّى - أط بَـــــرِّى**
Family: Felidae		

The recent influx of Egyptians has brought in large numbers of domestic cats (*Felis domesticus*), which have run wild in the town of St Katherine as in the rest of Egypt. Before this invasion of feral cats, the Bedouin term oT bari ('wild cat') probably referred either to the Wild Cat (*Felis sylvestris*), Sand Cat (*Felis margarita*) or possibly the Caracal (*Felis caracal*), although the usual term for caracal is Labwa (confusingly, this is the Egyptian arabic word for a female leopard). Feral cats are clearly seen regularly in the gardens, and the problem is to distinguish these from their wild relatives, especially the Wild Cat. Bedouin stories are always about large black cats with fiery eyes, probably largely mythological. Following the example of the Prophet Muhammed, the Egyptians have a fondness for cats. However, the Bedouin generally scorn them for their timidity and their dependence on man.

50 Species: Wolf	**Arabic name**: Ze'b, Deeb	**الأسم العربى:** ذِئـــــب - دِيـــــب
Latin name: *Canis lupus*	**Bedouin name**: Deeb	**الأسم البدوى:** دِيـــــب
Family: Canidae		



Although wolves have not yet been officially recorded in the area, there is a deep folk memory of them among the Gebaliya. They are the main reason why the Gebaliya keep dogs in their gardens, to warn them of wolves at night. Wolves are extremely wary, making their existence difficult to confirm (a resident population was only recently confirmed in Israel). Only the advent of camera traps has shown that wolves do indeed occur in the high mountains of Sinai.

Wolves loom large in the Bedouin imagination, and there are many stories about how dangerous they are: the same is true in Europe, where people are still very afraid of them even though the risk of encountering one

is vanishingly small. In Bedouin poetry wolves are a symbol of everything that a Bedouin admires: they are intrepid, fearless and self-sufficient.

51 Species: Egyptian Spiny Mouse	**Arabic name**: Fa'r, Far	**الأسم العربى: فـــــأر ـ فـــــار**
Latin name: *Acomys cahirinus*	**Bedouin name**: Far	**الأسم البدوى: فـــــار**
Family: Muridae		

Sean Dunkin

In the gardens are found various species of small rodents, mainly Egyptian Spiny Mice (*Acomys cahirinus*), which are much more abundant in and near the gardens. The Sinai form of this species is very pale, and is considered to be either a separate subspecies or a different species altogether (called *Acomys dimidiatus*). Other small rodents are more common outside the gardens, but sometimes they can be found within them: Dormouse (*Eliomys*: Abu KoHla), species of Dipodil (*Dipodillus*, *Sekeetamys*), Silky Jird (*Meriones*) and Golden Spiny Mouse (*Acomys russatus*). Spiny mice feed on fruits and nuts, especially dry ones such as almonds, and the Bedouin

also find them inside their houses trying to get at stored food. They also shred camel dung to find undigested seeds. House mice (*Mus domestica*) only occur in St Katherine because they are recent imports by Egyptians, and probably compete with *Acomys* for resources. House mice live at higher densities and feed much more on stored food, and therefore constitute a major new pest for the Bedouin near the town. Rats may also have invaded together with House Mice.

52	**Species**: Hedgehog	**Arabic name**: QonfeZ, Qonfed	**الأسم العربى:** قُنْفِـــــذ - قُنْفِـــــد
	Latin name: *Paraechinus dorsalis*	**Bedouin name**: QonfeZ	**الأسم البدوى:** قُنْفِـــــذ
	Family: Erinaceidae		

Generally widely distributed in the Middle East, the Desert Hedgehog is common around St Katherine, but is nocturnal, and hence rarely seen. It lives in gardens as well as rocky areas in the wadis, but as with the European hedgehog it is attracted by rubbish dumps, where it is easily caught by foxes and its other predators. The Bedouin believe that if you grind the spines into a powder and put this on the fire, inhaling the resulting fumes can cure fever.

53 Species: Leopard	**Arabic name**: Nimr sinawy	**الأسم العربى:** نِمْـــــر سِينـــــاوى
Latin name: *Panthera pardus*	**Bedouin name**: Nimr	**الأسم البدوى:** نِمْـــــر
Family: Felidae		

Leopards are almost certainly either already extinct, or very close to extinction. As with wolves, it is very hard to be sure since leopards are incredibly wary and difficult to confirm.

Although there is a record of a Bedouin killing one near Sharm El Sheikh a few years ago when it attacked his livestock, there was no proof since he apparently burned the carcass. They clearly were frequent in the past within the Ring Dyke since there are at least two leopard traps (Nosret el nimr) region, in Wadi Gebal alone (Abu Geefa and Gebal AHmar).

In former times, wolves and leopards were the main threat to livestock, and sheep and goats were a major source of sustenance. In Clinton Bailey's book there is a lovely poem by Tuᶜemi Musa Al Duquny, who had lost 17 goats to a leopard because his daughters had urged the men to return to Gebal Sirbal where they wanted to meet some young men.

54 Species: Bat	**Arabic name**: Khofash	**الأسم العربى:** خُفّـــــاش
Latin name: *Rousettus aegyptiacus* *Rhinolophus hipposideros* *Plecotus christii* *Barbastella leucomelas*	**Bedouin name**: Khofash	**الأسم البدوى:** خُفّـــــاش
Family:**Pteropodidae** (*Rousettus, Rhinolophus)* **Vespertilionidae** *(Plecotus, Barbastella)*		

In the St Katherine Protectorate at least 12 and possibly 15 of the 22 species found in Egypt were recorded by Dr Christian Dietz in 2005. Two species were especially important. The Sinai Barbastelle (*Barbastella leucomelas*) is one of the rarest of all the Palaearctic bats, with only a handful of records. It was found by Cretschmar in 1824 in "Sinai" (probably St Katherine) and described in 1826, but has never been seen again in Egypt (the few other records come from Palestine in the mid-20th century).

Christian Dietz

Sinai Barbastelle

Desert Long-eared Bat, *Plecotus christii*

Christian Dietz

At least 20 individuals were recorded at the Environmental Research Centre within the St Katherine Protectorate. The Lesser Horseshoe Bat (*Rhinolophus hipposideros*) was found only once in Egypt (in 1953 by Hoogstraal) prior to 2005, when it was recorded from three localities within the Protectorate. Since two young babies were noticed, the species certainly reproduces in Sinai.

Christian Dietz

Desert Long-eared Bat, *Plecotus christii*

Birds
الطيور

Birds
الطيـــــــــور

The most striking observation made by the Bedouin concerns the decline of large birds of prey in the area. They recall a great diversity and abundance of large predatory species such as vultures that used to soar high above the mountains only a few years beforehand. The decline of these species has been dramatic: only single individuals of three large predatory species (Marsh Harrier, Common Buzzard and Lesser Kestrel) were seen during a recent survey. As is clearly recognised by the Bedouin, over-hunting is at least partly responsible for this and other wildlife declines within the Protectorate, but the apparent degradation of the entire ecosystem, perhaps related to a period of low rainfall and overgrazing, has clearly also taken its toll on the top predators. There can be special causes for particular cases as well. For example, the Bedouin suggest that the decline in abundance of the Brown-necked Raven, stated in the literature as being abundant, can be attributed to the fact that the establishment of the St Katherine Protectorate stopped household waste being dumped at Abu Seila, thus reducing the amount of food available to these scavengers.

The relatively high diversity and abundance of birds found in the gardens compared to the open wadis suggests that the gardens provide important sources of food, water and shelter for many bird species. The Bedouin confirm that the area of irrigated gardens has been reduced over the last decade as water has become scarce; a reduction in bird populations may have accompanied this change. If the present trend of long-term drought and the reduction of the groundwater levels continues, there may be more severe reductions in the total area of gardens, and a consequential fall in bird and overall biodiversity in the area.

It is interesting that some birds are termed ‘birds of happiness’ (Al Tiur Al MufreHa **الطِيُور المُفْرحة**) by the Bedouin: examples of these are Chukar, Hoopoe, Pigeon and the White-crowned Black Wheatear (except forms without the white cap). Others such as owls and ravens are bad omens, and to hear or see these is a portent signifying a bad day ahead; if such birds fly above you, then something serious will happen.

The following information was derived from our own research teams and from reports by the Egyptian experts Sherif and Mindy Baha El Din. We also showed colour pictures from field guides to many individual Bedouin,

and asked them whether they recognised particular species. Information from the ensuing discussions is summarised below.

The Bedouin are interested primarily in birds that alight inside their gardens. Sometimes these are accidental migrants, such as the Green Sandpiper (*Tringo ochropus*: TeTewi akhDar: طِيطِـــوى أخْضَـــر), but we list here only the species regularly seen. The sequence is ordered in general by the frequency with which birds were mentioned by the Bedouin.

Species seen inside the gardens

55 Species: Sinai Rosefinch	**Arabic**: ᶜAsfour Sinaa' El Wardi	**الأسم العربى: عَصْفُـــور سَيْنَـــاء الـوَرْدِى**
Latin name: *Carpodacus synoicus*	**Bedouin**: Gazama	**الأسم البدوى: جَـــــزَمـــــة**
Family: Fringillidae		Length: 10-15 cm

Despite having a very restricted world distribution (Sinai, Jordan and southern Israel), Sinai Rosefinches are common in the Protectorate. They are found in all the wadis that contain grapes and figs, both in the gardens and on rocky cliffs, occurring in mixed-sex groups. They build their nests of twigs among the red granite rocks. They are present in March, but are more abundant from June to October until the temperature decreases; they then seem to disappear and hence are called migratory by the Bedouin, but in fact they link up into winter flocks. They eat mulberry, and some Bedouin believe that their beautiful red colour comes from this food. Others are aware that the red colour is restricted to the male (the female lacks the male's bright pink colouring, and is rather drab).

56 Species: Yellow-vented Bulbul	**Arabic**: Bulbul [C]Arabi	**الأسم العربى:** بُلْبُـــل عَرَبَـــي
Latin name: *Pycnonotus xanthopygos*	**Bedouin**: Bulbul	**الأسم البدوى:** بـُلْبُـــل
Family: Pycnonotidae		Length: 19-24 cm

These are common birds, and are fairly widespread in Sinai, predominantly in gardens and especially those of [C]Ain El KhoDra. They are present in the gardens throughout the year, foraging in trees and building nests in palms.
They feed on fruits, berries and seeds, including beans, and are seen on caper (*Capparis*) bushes.

57 Species: White-crowned Black Wheatear	**Arabic**: Ablaq Eswed AbiaD el Ra's	**الأسم العربى:** أبْلَـــق إسْـــود – أبْيَـــض الـــرأس
Latin name: *Oenanthe leucopyga*	**Bedouin**: Baga[c]a', Baqa[c]a'	**الأسم البدوى:** بَجَعـــاء - بَقعـــاء
Family: Turdidae		Length: 17-20 cm

Very common and widespread, these birds are found throughout the wadis and in the town of St Katherine itself. They exist in two forms: one with the white cap for which the species is named, and one with a uniformly black head. There is disagreement among different Bedouin as to whether these correspond to juveniles and adults (the white cap developing gradually over three years), females and males, or different genetic forms involving both sexes. Similar confusion occurs in field guides: the consensus seems to be that the black-headed forms are juveniles, but that some females may also retain the black head throughout their lives.

White-crowned Black Wheatears build their nests in three stages. Small smooth rocks are placed in front of the nest to prevent snakes from entering (or, according to one informant, to warn of a snake's presence by the noise of their displacement). The nest is then covered with small stones, and finally the nest is layered with twigs. The birds are present all year long in wadis and around houses, feeding on insects (including ants and spiders); one Bedouin told us that in summer they also feed on black grapes. They often become very tame, and are welcomed by Bedouin as one of the 'birds of happiness'.

58 Species: Other Wheatears	**Arabic**: Ablaq	**الأسم العربى: أبْلَــق**
Latin name: *Oenanthe* spp	**Bedouin**: Abu El ᶜAla	**الأسم البدوى: أبُـــو العَـــلا**
Family: Turdidae		Length: 17-23 cm

The Hooded Wheatear (*Oenanthe monacha*: Ablaq abu Taqeia: **أبْلَــق أبُــو طاقِيـــة**) is rather uncommon, found in and around St Katherine. It can be very tame and friendly, and hence is associated with human habitation. Its friendliness is much appreciated by children and adults alike. It arrives in the garden in early morning each day from its rock-crevice home nearby, returning there in the late evening. When White-crowned Black Wheatears are found in the same place they compete together in fights. It feeds on insects, especially around camels because the birds clean the skin of ectoparasites. Other wheatears (such as the Mourning Wheatear, *O. lugens*) are even more uncommon.

59 Species: Laughing or Palm Dove	**Arabic**: Yamam	**الأسم العربى:** يَمـــــــام
Latin name: *Streptopelia senegalensis*	**Bedouin**: Gamam	**الأسم البدوى:** جَمـــــــام
Family: Columbidae		Length: 20-26 cm

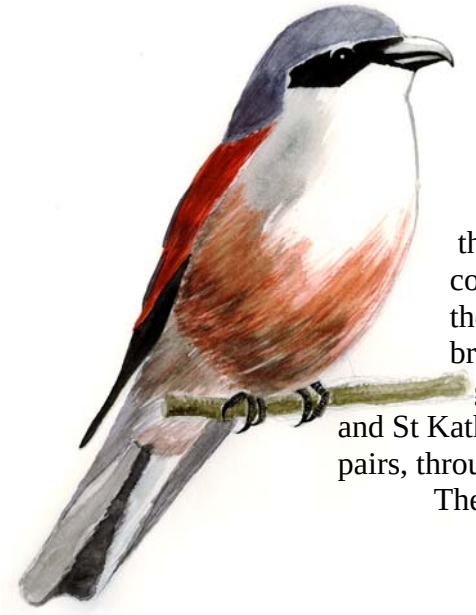
These are very common residents, usually to be found in gardens in small groups (2-4 individuals). They are abundant in Wadi ᶜAin El KhoDra, where many date palms are cultivated, but are found in all wadis throughout the year, especially Wadi El Tallᶜa and St Katherine. They make their nests in carob and olive trees, or inside houses. They feed on the ground on olives and pomegranate seeds. Their cooing call ("half a bottle of beer, half a piece of pie") is one of the first sounds to be heard at dawn in the gardens and wadis.

60 Species: *Sylvia* warblers	**Arabic**: Dakhla	**الأسم العربى: دَخْلـــة**
Latin name: *Sylvia* spp	**Bedouin**: Gazguz	**الأسم البدوى: جَـزْجُـــــوز**
Family: Sylviidae		Length: 15-20 cm

The Bedouin seem not to differentiate among warblers, calling virtually all of them by the same name, Gazguz (**جَـزْجُـــــوز**). There are a few exceptions. Lesser Whitethroats (*Sylvia curruca*: Dakhla ferani Sagheira: **دَخْلـــة فِيرانِـــى صَغِيـــرة**) are fairly common, and have a similar distribution to the Orphean Warbler (S*ylvia hortensis*: Dakhla meghania: **دَخْلـــــة مِغْنِيـــــة**). These are the two commonest species of warbler in the area, and are often found foraging in gardens in groups of mixed warbler species. The Bedouin say that they used to be abundant, but have been unaccountably rare or absent for 3-4 years. Most warblers and Lesser Whitethroats are present in summer, feeding on figs, pomegranates, olives and grapes. The Orphean warbler is said to be present throughout the year, building their nests among branches. Arabian Warblers (*Sylvia leucomelaena*: Dakhlet al baHr El AHmar: **دَخْلـــة البَحْـــر الأحْمَـــر**) are rather uncommon; they are found in gardens as solitary individuals or in small groups. According to the Bedouin, they eat figs, grapes and pomegranates, and live in Wadi Gebal, Arbae^{c}in and St Katherine. Blackcaps (*Sylvia atricapilla*: Abu qolensawa: **أبُـــو قِلْسَـــــــوة**) are uncommon, but have been recorded from Wadi Gebal.Interestingly, they can occur in vast numbers on migration along the coast, but do not penetrate into the mountains. Desert Warblers (*Sylvia nana*: Dakhlat Al SaHara': **دَخْـــلة الصَحَـــراء**) are found in Wadi Gebal, feeding on pomegranates. Spectacled Warblers (*Sylvia conspicillata*: Dakhlat um naZara: **دَخْـــلة أمْ نَظْـــارة**) are now very rare and much depleted in numbers. They are said to be present from April to November, building their nests from plant material and feeding on insects. They are found in Wadi Tinya and Al Galt Al Azraq.

Menetries's Warbler (*Sylvia mystacea*: Dakhla asiaweya: دَخْـــلة آسيــآويـــة) is present on passage in the autumn.

61 Species: Shrikes	**Arabic**:Deqnash akHal	**الأسم العربى:** دِقْنـــــاش أكْحَـــل
Latin name: *Lanius* spp.	**Bedouin**: Saqr Sagheir	**الأسم البدوى:** صَقْـــــر صَغِيـــــــر
Family: Laniidae		Length: 15-20 cm



Red-backed Shrikes (*L. collurio*) are fairly common in the wadis; they are found in the gardens generally perched on the outer branches of trees, and are concentrated in Wadi Gebal. According to the Bedouin, they build nests from small branches of plants, and are found in the gardens of Wadi Gebal, Tall^{c}a, Arba^{c}ein and St Katherine. They occur singly or in pairs, throughout the year, feeding on insects. They seem weak in flight.

Only solitary individuals of the Great Grey Shrike (*Lanius excubitor*) have been seen on migration in late summer and autumn; the species feeds on insects and pomegranates (perhaps actually on the caterpillar pests of this fruit). The Woodchat Shrike (*Lanius senator*: Deqnash oropei: دِقْناش أورُوبى) is again seen as solitary individuals in autumn. The beautiful Masked Shrike (*Lanius nubius* Deqnash qebtei: دِقْناش قِبْطِى) has been seen occasionally in Wadi Arbae^{c}in, singly or in pairs.

62	**Species**: Scrub Warbler	**Arabic**: Namnamet el shagar	**الأسم العربى:** **نَمْنَمِـــة الشَجَـــر**
	Latin name: *Scotocerca inquieta*	**Bedouin**: Abu LefSay	**الأسم البدوى: أبُـــو لِفْصَـــىْ**
	Family: Sylviidae		Length: 10-15 cm

Jennifer Johnson

Scrub warblers are fairly common, and are found on rocks at ground level throughout the wadi system. They are easily identified due to their habit of cocking their elongated tail, and their noisy, chattering call. They are present throughout the year, and feed on insects. These birds are very active, and the Bedouin say they warn other birds and animals about people or snakes by giving a special kind of alarm call. The name 'LefSay' means a "tell-tale tit" from whom nothing can be kept hidden. It is a perjorative name, implying that the Bedouin are annoyed by the fact that this bird draws attention to everything, including things that they want to keep secret.

63	**Species**: Spotted Flycatcher	**Arabic**: KhaTef El Zobab Al AnqaT	**الأسم العربى:** **خاطِـــف الذُبـــاب الأنْقَـــط**
	Latin name: *Muscicapa striata*		
	Family:Muscicapidae		Length: 10-14 cm

Spotted Flycatchers are fairly common, with solitary individuals being seen perched on the bare outer branches of trees in the gardens.

64 Species: Blackstart	**Arabic**: Qeli^{c}ei Aswad Al Zanab	**الأسم العربى:** قِلِيعِـــى أسْـــوَد الذَنَـب
Latin name: *Cercomela melanura*		
Family: Turdidae		Length: 10-14 cm

This species is locally common and fairly wide-spread. It is present throughout the year in Wadi Tall^{c}a, ItlaH, Gharaba, Gebal and ^{c}Ain El KhoDra. It occurs as solitary individuals or in pairs, feeding on fruits, especially figs and grapes. Its nondescript appearance can cause confusion at first, even with fairly experienced birdwatchers.

65 Species: Trumpeter Finch	**Arabic**: Qatoom or Zameir	**الأسم العربى:** قطـــوم أو زَمِيـــــر
Latin name: *Bucanetes githagineus*		
Family: Fringillidae		Length: 10-15 cm

This species is uncommon, and is seen occasionally in gardens in small numbers on the ground. The Bedouin say that they build nests of twigs in red granite rocks, and that they live in all wadis that contain grapes and figs. They are present in March, but are more abundant in June to September and October until the temperature decreases. They are migratory. One informant stated that they occur on Gebal Somra.

66 Species: Hoopoe	**Arabic**:Hodhod	**الأسم العربى: هُـــدْهُـــدْ**
Latin name: *Upupa epops*	**Bedouin**: Gabaar umuh wa abuh	**الأسم البدوى: جَبّـــار أمُـــه وأبُـــوه**
Family: Upupidae		Length: 21-26 cm

Solitary and rather uncommon, this species occurs at ground level mainly in gardens, more commonly at lower elevations in Wadi Feiran than elsewhere. It is classified as a 'bird of happiness' because it is beautiful and because it feeds on harmful insects; in addition, the bird played a major and positive role in the story of King Solomon and Bilqis, the Queen of Sheba (as detailed in the Holy Quran). Superstitious Egyptians believe that hoopoes should act as totems in cleansing practices for women suffering from persistent unsolved problems: thus one can find numerous stuffed hoopoes for sale in the souq markets and shops in Old Cairo. The Bedouin name means 'power of mother and father', and derives from the distinctive crest and long beak, like a king. One informant said that the name means the 'grave-digger of his mother and father', so called because if a young bird's parent dies, it will not leave until it has buried the dead bird in a special place. They live in all wadis throughout the year, and their calls can be heard in the very early morning before dawn. They feed on earthworms and insects, and build nests from twigs.

67 Species: *Phylloscopus* warblers	**Arabic**: various names	**الأسم العربى: متنوع الأسماء**
Latin name: *Phylloscopus* spp	**Bedouin**: Gazguz	**الأسم البدوى: جَـزْجُـــوز**
Family: Sylviidae		

Green Warblers (*Phylloscopus nitidus*: Dakhlet el basateen: **دَخْلـــة البَساتِيـــن**) are uncommon, but may be seen foraging in small trees in gardens. According to the Bedouin, they are present from springtime, and later on feed on grapes. In contrast, Wood Warblers (*Phylloscopus sibilatrix:* Naqsharet al shagar**: نَقْشـــارة الشَجَـــر**) and Chiffchaffs (*Phylloscopus collybita*: Saksaka: **سَكْسَكـــة**, Harami al romaan: **حَرامِـــى الرُمّـــان**) are late-summer migrants, seen in the gardens (according to the Bedouin) feeding on pomegranates (one of the Chiffchaff's names means 'pomegranate pest'). They are found in Wadi Tinya, Arba^{c}ein and St Katherine, and have apparently become more prevalent in recent years.

68 Species: *Hippolais* warblers	**Arabic**: Khansha^{c}	**الأسم العربى: خَنْشَـــع**
Latin name: *Hippolais* spp	**Bedouin**: Gazguz	**الأسم البدوى: جَـزْجُـــوز**
Family: Sylviidae		

Olivaceous Warblers (*Hippolais pallida*: Khansha^{c} zaituni: **خَنْشَـــع زَيْتُـــونِى**) are uncommon, and are normally seen in the autumn during migration, foraging on trees in the gardens. The Icterine Warbler (*Hippolais icterina*: Khansha^{c} laimooni:**خَنْشَـــع لَيْمُـــونِـــى**) is an uncommon migratory species present in late summer, and found in the gardens feeding on ants and other insects.

69 Species: Falcons	**Arabic**: Saqr	**الأسم العربى: صَقْـــر**
Latin name: *Falco* spp	**Bedouin:** Saqr	**الأسم البدوى:صَقْر**
Family: Falconidae		Length: 50-60 cm

The Sooty Falcon (*Falco concolor*: Saqr al ghoroub: **صَقْـــر الغُـرُوب**) is migratory, present between April and November in Wadi Gebal. In the past juveniles used to be seen, implying local breeding, but apparently not now. It feeds on Sand Partridges and Chukars in gardens. The Lanner Falcon (*Falco biarmicus*: Saqr Hor: **صَقْـــر حُـــر**) is also migratory, recorded in May and June; it is found near water, and feeds on small birds. The Bedouin call Lesser Kestrels (*Falco naumanni*: ᶜawsaq Sagheir: **عَوْسَـــق صَغِـــير**) by the name of the 'locust' falcon, Saqr al garaad (**صَقْـــر الجَـــراد**), from its feeding habits. The Bedouin have no tradition of training falcons for hunting, unlike in Saudi Arabia.

70 Species: Buzzards	**Arabic**: Saqr Hawaam	**الأسم العربى:** صَقْـــر حَـــوّام
Latin name: *Buteo* spp	**Bedouin**: Saqr Hawaam	**الأسم البدوى:** صَقْـــر حَـــوّام
Family: Accipitridae		Length: 50-55 cm

Buzzards (*Buteo buteo*: Saqr Hawaam: صَقْـــر حَـــوّام) are mainly spring migrants through South Sinai, but they can rest in gardens: one was seen recently in a garden Wadi Sa^{c}al). Long-legged Buzzards (*Buteo rufinus*: Saqr GareH: صَقْـــر جَـــارح) are known purely as Saqr (صَقْـــر) to the Bedouin, and are known to breed in South Sinai. They were recently recorded in Wadi RemHan and Wadi Isla, and on Gebal Katrin itself.

71 Species: Collared Flycatcher	**Arabic**: KhaTef Al Zobab Al MeTaoaq	**الأسم العربى:** **خاطِـف الذُبـاب المِطـوَق**
Latin name: *Ficedula albicollis*		
Family: Muscicapidae		Length: 12-15 cm

Collared Flycatchers build nests from twigs, and feed on seeds, grapes and citrus in the gardens, according to the Bedouin. They live in pairs, or in groups of 4-10 individuals. They can be found in Wadi Ensheil on black rocks and Wadi Arbae^{c}in.

72 Species: Wagtails	**Arabic**: Abu faSada	**الأسم العربى:** **أبُـــو فصـــادة**
Latin name: *Motacilla* spp	**Bedouin**: Ra^{c}aei	**الأسم البدوى:** **رَعايِـــــــى**
Family: Motacillidae		Length: 15-18 cm

Both the Pied (*Motacilla alba*) and the Grey Wagtail (*Motacilla cinerea*) are migratory, present only in winter: both feed on insects. All wagtails are called Abu faSada (**أبُـــو فصـــادة**) in Arabic, and Ra^{c}aei (**رَعايِـــــــى**) by the Bedouin. The English names are rather confusing,

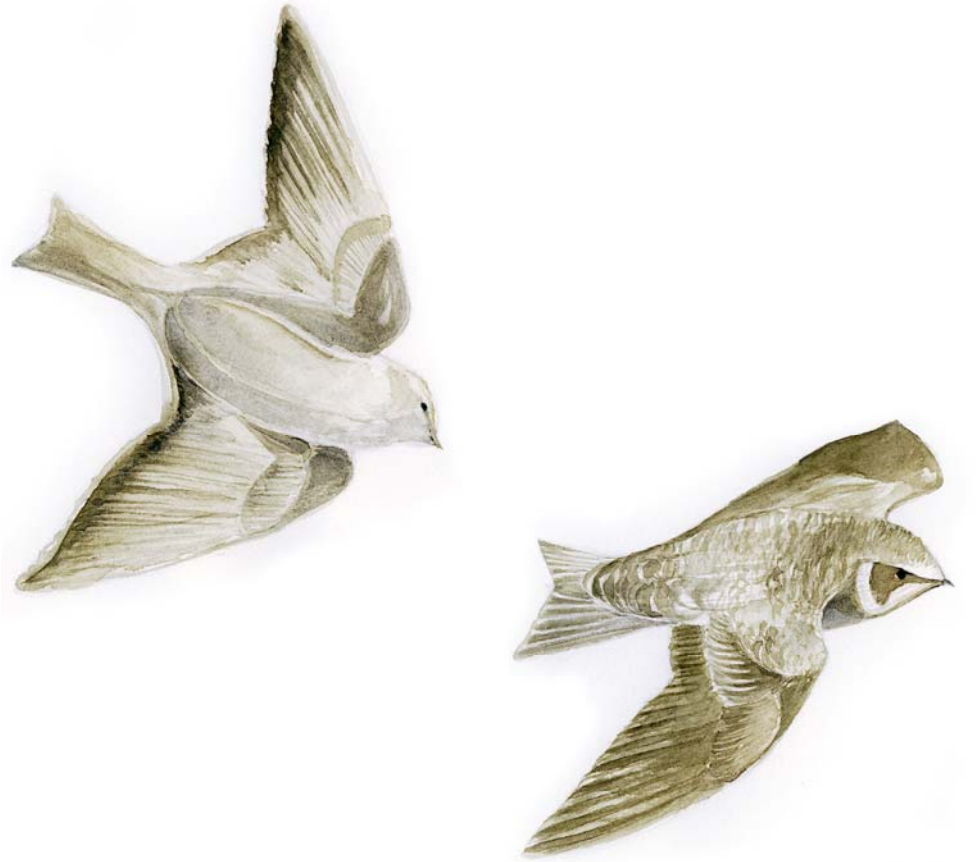
since the European Grey Wagtail is actually strikingly yellow (although not as yellow as the Yellow Wagtail, *Motacilla flava*). The Pied Wagtail is white, grey and black. The Bedouin call the Grey Wagtail 'yellow', whilst the Pied Wagtail is called 'grey'. The yellow species (= the Grey Wagtail) appears first, staying for a maximum of 10-15 days, then disappearing. Then the grey one (= Pied Wagtail) becomes dominant, staying until the almond blossom appears in early spring.

Species seen outside the gardens

73 Species: Rock Dove	**Arabic**: Hamam bari	**الأسم العربى:** حَمـــام بَـــرِّى
Latin name: *Colomba livia*	**Bedouin**: Hamam bari or Gabali	**الأسم البدوى:** حَمـــام بَـــرِّى أو جَبَلِـى
Family: Columbidae		Length: 25-30 cm

Very common and fairly widespread, Rock Doves are found in flocks of up to 50 individuals. They are often seen perched on rock faces. The Bedouin distinguish between the wild species and domesticated pigeons. They feed on grains such as rice and maize, but are not regarded as garden pests. Their call is similar to that of ordinary domestic pigeons. They are common in Wadi Arbae^{c}in, and around Gebal Musa and the Monastery, and have increased in numbers in recent years. Sometimes wild Rock Doves will join flocks of domestic pigeons. One informant said that Rock Doves can be found in gardens, feeding on flowers (perhaps this means on seeds) and taking seeds from camel dung in places where camels are tethered.

74	**Species**: Rock Martin (Pale Crag Martin)	**Arabic**: Sonono al Sakhr El Bahet or Al AbiaD	**الأسم العربى: سُنُونُــو الصَخْــر الباهِــت أو الأبْيَــض**
	Latin name: *Ptyonoprogne fuligula*		
	Family: Hirundinidae		Length: 12-15 cm



Rock Martins are very common and conspicuous summer visitors, frequently to be seen flying in their characteristic swooping fashion throughout the area, feeding on insects.

75 Species: Tristram's Grackle	**Arabic**: Suwaadiya	**الأسم العربى:** سُـــــوادیـــــــة
Latin name: *Onychognathus tristramii*	**Bedouin**: ShaHroor	**الأسم البدوى:** شَحْـــــرُور
Family: Sturnidae		Length: 20-24 cm

These engaging birds are not true grackles (a New World family), but actually the northernmost representative of an African genus of starlings. They are immediately recognizable in flight by the orange flash of their secondary wing feathers, and by their characteristic whistling call. They are common residents, found throughout the area except apparently in ^{c}Ain El KhoDra. They occur in small groups of 2-20, usually outside the gardens on steep, rocky wadi slopes, but also around the boundaries of gardens. They build nests like the White-crowned Black Wheatear. They are found near camels in order to feed on the insects living on its skin, and also feed on maize, fig, pomegranate and other fruits and seeds. They are present throughout the year. According to one informant they occur in three sizes.

76 Species: Chukar	**Arabic**: Shinar	**الأسم العربى: الشِنّـــار**
Latin name:	**Bedouin**: Shinar	**الأسم البدوى:**
Alectoris chukar	or Ferakh el gebal	**الشِنـــار - فِـراخ الجَبَـل**
Family: Phasianidae		Length: 30-35 cm

The Sinai Chukars are the southwestern-most (and isolated) population of this species. They are common on the steep rocky slopes of the narrow wadis around St. Katherine. Their distinctive call that gives them their name ("chuck chuck") is frequently heard as individuals communicate within their family groups while feeding early in the morning or in the late afternoon. They are breeding residents, abundant all year round except during the breeding season (Feb-April), when they become much less obvious. They are found on the mountainsides in all wadis except ᶜAin El KhoDra. They nests in scrapes under plants between rocks. In summer they feed on fruit, including hawthorn, apple, fig, grapes and olive, and in winter on DabaHleel (*Scorzonera*, possibly *mollis*) roots. One informant said they store food

Tim Hurst

Samy Zalat

in winter.

They lay 12-40 eggs in March. The female sitting on her eggs has a special call: 'ka ka ka'. Groups have one or more leaders (sentinels) who stand guard on a rock vantage point, making a special call ('qeet qeet qeet') to the others if it is safe. If it is not safe, the sentinels make a different call: 'ssst ssst'. In former times the Bedouin used a wooden or stone-built cage to trap them, up to eight at a time; they say that the meat is delicious, similar to that of the Sand Partridge and better than the very rare Quail (which occasionally used to be caught on migration).

Samy Zalat

both pictures show Chukar traps

77 Species: Desert Lark	**Arabic**: Qonboret el Sakhr	**الأسم العربى:** قُنْبُـــرة الصَخْـــر
Latin name: *Ammomanes deserti*	**Bedouin**: Reheden	**الأسم البدوى:** رهِيـــــدِن
Family:Alaudidae		Length: 11-16 cm

This is a fairly common species, found throughout the area outside gardens on rocks and rubble. They tend to occur as solitary individuals or in pairs.

78 Species: Ravens	**Arabic**: Ghorab el bein	**الأسم العربى:** غُـــراب البيـــــن
Latin name: *Corvus* spp	**Bedouin**: Ghorab	**الأسم البدوى:** غُـــــراب
Family: Corvidae		Length: 55-60 cm

Although reported to be common in Sinai, actually Brown-necked Ravens (*Corvus ruficollis*: Ghorab el bein: غُـــراب البيـــــن) are now uncommon and are only encountered episodically. They build their nests from small stones and rubbish in caves in the higher mountains. They live in every wadi except Wadi Arbae^{c}in, travelling long distances and occasionally coming inside gardens. They are present throughout the year, feeding mainly on rubbish heaps, but they also are reported to eat dates. Their numbers have decreased in number in the last few years. Some Bedouin suggest this is due to the decrease in the quantity of rubbish available at Abu Seila and near the old St Katherine airport. They produce a peculiar croaking call, and seeing them is regarded as a bad omen.

Fan-tailed Ravens (*Corvus rhipidurus*: Ghorab marwaHy Al Zanab: **غُـراب مَرْوَحِـى الذَنَـب**) are now the commoner of the two species. They can be found in Wadi Arbae^{c}in, where they build nests from sticks on rock ledges. Although they live in pairs, they collect in large groups of 40-50 to feed.

There is an interesting Bedouin story about ravens. As the story goes, two ravens are talking together near Abu Rudeis on the Gulf of Suez, and both of them habitually feed from camel dung. One said to the other, "Why are we staying here in these remote areas with horrible food ? Let's go to Bilbeis (a small town in the Delta), where there are a lot of dates." One of them went there, and upon arrival, hundreds of hunters shot at him. He returned to his friend, wounded, and said to him:

بَعـر أبُـو رُدِيـــس
ولا تَمْـــر بِلْبيـــس
Ba^{c}r Abu Rudeis
wala tamr Bilbeis
Droppings of Abu Rudeis
Are far better than dates of Bilbeis

And this means, of course, that Bedouin life in the mountains, with all its hardships, is far better than the soft living of mainland Egypt.

79 Species: Palestine Sunbird	**Arabic**: Tameir ^{c}arabi	**الأسم العربى:** تَمِيـــر عَرَبِـــى
Latin name: *Nectarinia osea*		
Family: Nectariniidae		Length: 9-11 cm

This bird is uncommon in the high mountains, but more common at lower elevations such as in Wadi Feiran. It is seen foraging in bushes and small trees. In gardens the birds build their nests near to each other in olive trees. They live in pairs but only one individual is normally seen. They are mainly migratory, recorded most frequently in August and September. Males are rarely seen, but have been recorded from Wadi Arbae^{c}in and St Katherine.

80 Species: European Bee-eater	**Arabic**: Werwar oropei	**الأسم العربى:** ورْوار أوروُبـــــى
Latin name: *Merops apiaster*	**Bedouin**: Banaat bariq or barik	**الأسم البدوى:** بَنَـــات بـــارق - بـــارك
Family: Meropidae		Length: 20-25 cm

Bee-eaters occur frequently in gardens, perched on trees and searching for prey. They feed on insects, particularly wild bees and wasps. They are migratory; and occur in small groups of between four and nine in Wadi Arbae^{c}in, Gebal and St Katherine. Now that beehives have been placed in the mouth of Wadi Arbae^{c}in and in Wadi Gebal, these beautiful birds can be seen waiting for a meal outside the hive entrances. They are often heard before they are seen, their characteristic “proop proop” announcing their arrival.

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81	**Species**: Hume's Tawny Owl	**Arabic**: Bumet butler	**الأسم العربى:** بُومـــــة بُتْلِـــــر
	Latin name: *Strix butleri*	**Bedouin**: Buma	**الأسم البدوى:** بُومَـــــــة
	Family: Tytonidae		Length: 30-35 cm

This is a mysterious species because it has hardly been studied, and its current status is unknown. Individuals responded to playback calls after dusk at the end of Wadi Arbae^{c}in, and the Bedouin say that it is present throughout the year in many other wadis too (Gebal, El Tall^{c}a, El Tall^{c}a El Kebira, ^{c}Ain El KhoDra; recently seen in Wadi Tobouq, Abu Tueeta, Noqra and on tamarisk in Tarfa). Though rarely spotted, in reality this owl is probably one of the most common resident birds of prey of the Protectorate. The Bedouin say there are two varieties, one red and one grey like the colour of feral pigeons. Tawny Owls (*Strix aluco*) are known to vary in this way, but this has not been noted for Hume's Tawny Owl. According to the Bedouin, they feed on insects and build their nests from plant material (but most owls nest in holes so this would be unlikely). The Bedouin think of this species, as all owls, as a vampire, calling it Buma MaSaSa (blood-sucking owl). If you kill an owl, the owl's eyes will always be open. The owl is considered to be bad because Bedouin believe that the females kill their own babies, and furthermore they do not like the call, which frightens them at night. Owls are believed to ignore cries for help from other owls, and for Bedouin this is a heinous crime.

82 Species: Sand Partridge	**Arabic**: Hagal	**الأسم العربى: حَجَـــــــل**
Latin name: *Ammoperdix heyi*	**Bedouin**: Hagal Al Sakhr	**الأسم البدوى: حَجَـــــــل الصَخْـــــــر**
Family: Phasianidae		Length: 20-25 cm

Some Bedouin seem to confuse Chukars and Sand Partridges, though there is a very clear scientific difference. One of our informants stated clearly that the Chukar has a white collar around the neck, with no white around the eye. Therefore, he concluded correctly, Chukars are not represented in Sherif Baha El Din's book on the Common Birds of Egypt, whereas the Sand Partridge is. Another claimed that they vary in colour among wadis.

They are present in every wadi, in the mountains, gardens and around houses. They build their nests from plant material, and feed on seeds picked up from the ground or from camel droppings. One informant said they feed on fruits such as figs, apple, olives and dates, but this may be more relevant to chukars: another stated that Sand Partridges forage on the ground under trees, whereas Chukars can feed in the trees themselves. Their call is quite different, a 'tsu-tsu' call rather than the 'chuck-chuck' of the Chukar. The male is called 'Al Ganbour' and the female 'Hagala'. Numbers visibly increase in spring during the breeding season.

83 Species: Storks	**Arabic**: El Loqloq	**الأسم العربى: لُقْلُـــــــق**
Latin name: *Ciconia* spp	**Bedouin**: Naja^{c}	**الأسم البدوى: نَجَـــع**
Family: Ciconiidae		Length: 90-95 cm

There are two species of stork, the White Stork (*Ciconia ciconia*: El Loqloq El abiaD: **لُقْلُـــــــق أبْيَـــض**) and the Black Stork (*Ciconia nigra*: El Loqloq El eswed:**لُقْلُـــــــق إسْـــود**). The Bedouin name for 'stork' means a 'traveller' from one country to another, and hence 'the migrant'. They then qualify this by 'white' (Naja^{c} abiaD: **نَجَـــع أبْيَـــض**) or 'black' (Naja^{c} eswed: **نَجَـــع إسْـــود**). Storks are seen only between September and December while on migration to Africa. They fly in huge flocks (50 or more) for up to three hours at a time. They can be seen in their hundreds, wheeling on thermal currents over the Sinai coast.

They carry ectoparasites which weaken them and can cause deaths, and they can also die of thirst. Dead birds are often found in the wadis (e.g. Wadi El KhoDra, Gebal and St Katherine). From their rings, they have clearly flown considerable distances.

When they arrive at the gardens of St Katherine, they feed on 'worms' and fish in the pools and also on the vegetation. The Bedouin see them spending the night on the tops of the mountains.

84 Species: Swifts	**Arabic**: Samama	**الأسم العربى:** سَمـــــامـة
Latin name: *Apus* spp	**Bedouin**: Borqea[c] or Birgea[c]	**الأسم البدوى:** بُرْقِيـــــع - برْجِيـــع
Family: Apodidae		

There are two species, the Common Swift (*Apus apus*) and the Pallid Swift (*Apus pallidus*): these are not distinguished in the common names. Swifts represent the ultimate in adaptation for feeding on insects. The Arabic name means 'bird of paradise', from the fact that they are always high in the sky in flocks, and never seem to land. Despite their very subtle differences, the Bedouin seem to be aware that these species are distinct: the common swift is described accurately as the 'all-black one with a forked tail', and it is recognised that it comes through on migration for only a few days per year in large flocks, and never touches the ground.

85 Species: Rufous Bush Robin	**Arabic**: Dakhla Hamraa'	**الأسم العربى:** دَخْلـــــة حَمْـــراء
Latin name: *Cercotrichas galactotes*	**Bedouin**: Zaqzooq	**الأسم البدوى:** زَقـــزُوق
Family: Turdidae		Length: 15-20 cm

This species is present in all the wadis, feeding on 'worms' (caterpillars) in fruits, especially grapes and pomegranates. It occurs at the end of summer after the supposed 'migration' of the Sinai Rosefinch in October. It has a distinctive call: 'Teer Teer Teer'.

86	**Species**: Bonelli's Eagle	**Arabic**: ᶜEqab Maseeret Kiri	**الأسم العربى:** **عِقـــاب مَسِـيرة كِيـــرى**
	Latin name: *Hieraaetus fasciatus*		
	Family: Accipitridae		Length: 65-70 cm

This is the only large bird of prey still with a breeding population in south Sinai, albeit a small one. It is present throughout the year, in the high mountains around St Katherine, Gebal El Bab, Tarboosh, Madsous, Um Shomar and Wadi Gebal. Large hawks and eagles in general are symbols of martial prowess among the Bedouin - potent imagery for their poems.

87 Species: White Pelican	**Arabic**: Baga^{c} AbiaD	**الأسم العربى:** **بَجَـــع أبْيَـــض**
Latin name: *Pelecanus onocrotalus*		
Family: Pelecanidae		Length: 135-140 cm

These migratory birds have been recorded in ^{c}Ain El KhoDra. Occasionally they die in the wadi after coming down for a wash and a drink of water.

87	**Species**: Egyptian Vulture	**Arabic**: Rakhama maSriya	**الأسم العربى:** رَخَمـــــة مَصْريـــــة
	Latin name: *Neophron percnopterus*		
	Family: Accipitridae		Length: 55-60 cm

In the past, this species used to build its nests in caves on mountain sides, with groups of 4-11 nesting together. They feed on young goats and large insects. They used to be found in Wadi ItlaH, Gebal, El Rebk, Al Galt Al Azraq and Lamasridi, but were absent from Wadi Arbaeʿin. There are no recent breeding records, although birds are seen on migration fairly regularly. The illustration shows a juvenile bird.

88	**Species**: Little Owl	**Arabic**: Um Qweiq	**الأسم العربى: أم قـــويـــق**
	Latin name: *Athene noctua*	**Bedouin**: Al MokhSaa	**الأسم البدوى: المُخْـصـــاة**
	Family: Tytonidae		Length: 15-20 cm

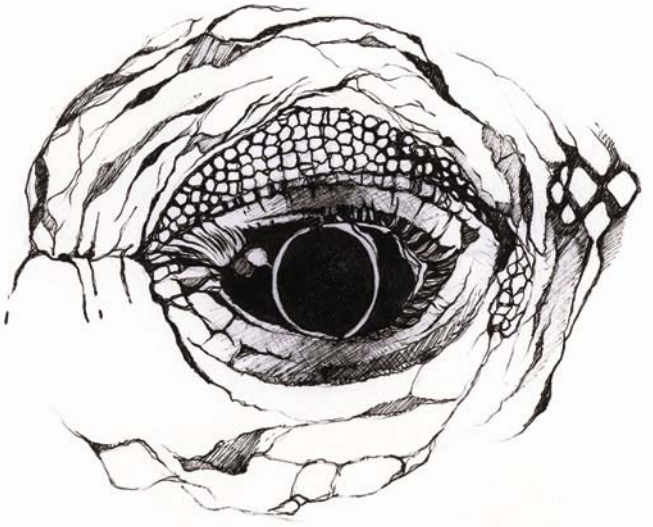
Any owl is generally considered frightening in Egypt. The general name Um Qweiq is the normal term for any owl, but mainly the Little Owl. One Bedouin informant said that if a man's wife is unsatisfactory she is labelled with this name, meaning she is the source of bad things.

89 Species: Harriers	**Arabic**: Marza	**الأسم العربى: مَـــــرْزة**
Latin name: *Circus* spp		
Family: Accipitridae		Length: 35-40 cm

The Hen Harrier (*Circus cyaneus*: Marzet al dagag: **مَـــــرْزة الدَجـــــاج**), Pallid Harrier (*Circus macrourus*: Marza bahta: **مَـــــرْزة باهْتـــــة**) and Montagu's Harrier (*Circus pygargus*: Marzet montago: **مَـــــرْزة مُونْتـــــاجُو**) are all seen on migration in Sinai in spring and late summer. They all seem to feed on Sand Partridges. The illustration shows a male Montagu's Harrier.

90 Species: Buntings	**Arabic**: Dersa	**الأسم العربى: دِرْســة**
Latin name: *Emberiza* spp		
Family: Emberizidae		Length: 11-16 cm

There are a number of buntings found in the South Sinai mountains, but their numbers seem unaccountably to have plummetted in recent years. The Yellowhammer (*Emberiza citrinella*: Dersa Safra': **دِرْســـة صَفْــراء**) has been absent for 5-7 years, having previously been found in Wadi Gebal and Wadi Esba^{c}ia, feeding on seeds. House Buntings (*Emberiza striolata*: Dersa mekhaTaTa: **دِرْســـة مِخَططـــة**) have not been seen for 8 years; they used to be present in groups of 5-9 individuals, feeding on insects and figs in Wadi Gebal. The Black-headed Bunting (*Emberiza melanocephala*: Dersa sawda' al ra's: **دِرْســة سَــوْداء الرأس**) is uncommon, but has been seen recently in Wadi Feiran. Cinereous Buntings (*Emberiza cinerecea*: Dersa shamiya: **دِرْســـة شامِيـــة**) are still present in the gardens in autumn, feeding on pomegranates. Ortolan Buntings (*Emberiza hortulana*: Derset al she^{c}eir: **دِرْســـة الشِـعِـيـر**) and Cretzschmar's Buntings (*Emberiza caesia*: Dersa zarqa' al ra's: **دِرْســـة زَرْقـــاء الـرأس**) are also occasionally seen. The illustration shows a Yellowhammer.



Lizards and Snakes

الزواحـــف و الثعـابين

Lizards and Snakes
الزواحـــــف والثعـــابيـــــــن

91	**Species**: Sinai Agama	**Arabic**: Hardoon	**الأسم العربى:** حَـــــرْدُون
	Latin name: *Pseudotrapelus sinaita* **Family**: Agamidae	**Bedouin**: El BleeS	**الأسم البدوى:** البْـلِيـــص

Jennifer Johnson

This is a large, spectacularly-coloured lizard: in the breeding season the males have electric-blue heads. They tolerate extremely arid habitats, and can often be seen basking and defending territories on the top of rocks. Although widely distributed, the Sinai Agama occurs at low densities and is ideal to use as an indicator species for conservation monitoring.

92	**Species**: Starred Agama	**Arabic**: Hardoon	**الأسم العربى:** حَـــــرْدُون
	Latin name: *Laudakia stellio* **Family**: Agamidae	**Bedouin**: Hardoon	**الأسم البدوى:** حَـــــرْدُون

Jennifer Johnson

Jennifer Johnson

This diurnal, rock-dwelling lizard occurs at higher elevations (above 500 m, right up to the top of Mt St Katherine), especially within the Ring Dyke. The species is fairly common and prominent but localized. It usually lives between large boulders, and is very alert and obvious when basking in the sun on the top of the rocks. The population in the immediate St Katherine area appears to be declining, probably due to habitat degradation and increased disturbance. The lack of any economic impact on the Bedouin means that they pay little attention to this species, or indeed to any lizard.

Snakes
الثعـــابيـــــــن

The general term used for all snakes by both Bedouin and Egyptians is Thoᶜban, but large species that are active hunters are called Hanash **(حنَـش)** by Egyptians. Smaller species that are sit-and-wait predators are called Haya **(حيـــة)**, and include the most dangerous species. In the Ring Dyke one well-known venomous snake occurs, Burton's Carpet Viper *Echis coloratus*; this is an active crepuscular predator, abundant in rocky places. Outside the Ring Dyke at lower elevations, other dangerous snakes are also common, such as the Persian Viper *Pseudocerastes persicus* and Horned Viper *Cerastes cerastes*, abundant in rock outcroppings and fine sand. The Desert Black Cobra *Walterinnesia aegyptia* is also present but rare in gardens, oases, irrigated and desert areas with sparse vegetation.

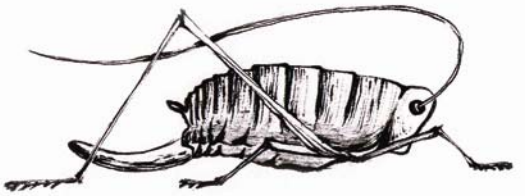
In St Katherine, the Bedouin have names for various snakes, which do not always correspond with true species. However, despite only having one name for a number of species, the Bedouin seem to be perfectly aware of the differences among the species within a category (Al Zaraq **الزرق**, for instance). Differentiation is made mainly on the basis of their toxicity, but also on colour pattern or habits. In the past, Bedouin spears were dipped in snake poison while tempering them, allegedly to make wounds fatal.

Fred Manata

Horned Viper *Cerastes cerastes*

Jennifer Johnson

- El Dooda **(الدودة)** refers to any snake
- Abu Gabali **(أبو جبلى)** is any snake with dots on the body and abundant in mountains; several species match this description
- Al Zaraq **(الزرق)** refers to at least two species, the Diadem Snake *Spalerosophis diadema* (mildly venomous) and Sand Snakes *Psammophis* sp (non-venomous); and possibly others.
- Abu Murira **(أبو مريرة)** is a snake with a black line on the head like a ᶜOqal (the rope retainer of the headdress of Arabs from the Arabian Peninsula). It is probably a *Coluber* sp, mentioned as very rare
- El Seida **(الصيدة)** or Um Geneib **(أم جنيب)** is probably the Persian Viper *Pseudocerastes persicus*, a small snake that jumps in attack. Bedouin believe that if this snake is fried in olive oil and eaten with Fatta (a traditional bread-based dish) on an empty stomach, it will enable a person to be very strong, and to remain for 24 hours without needing water. However, having eaten it, if you do drink water, you will end up with a swollen stomach. One of the strongest of all the Bedouin was a man called Rabiᶜ Gabali (Abu Harbi, 'father of war'). Everyone believed that his strength derived from this process, and even the man himself used to recommend it to those who wanted to become strong (such as the authors of this book!).
- Eswed El Lil **(إسود الليل)** is black and active at night, and hence is probably the Desert Black Cobra *Walterinnesia aegyptia*
- Abu SeiHa **(أبو صيحة)** is a snake that makes a noise when it attacks. Its head is black, and its body grey, and it is slow. It is probably the Wadi Racer *Coluber rhodorhachis*, which clearly does not live up to its name!



Insects and other arthropods

الحشرات و مفصليات الأرجل الأخرى

Insects and other arthropods
الحشرات و مفصليات الأرجل الأخرى

Pollinators الملقحـــــات

Wild Bees (Hymenoptera: Apoidea) نحـــــل بـــــرى
(رتبـة غشائيـة الأجنحـة)

Jennifer Johnson

Solitary bee, *Amegilla*

Fred Manata

Honeybee, *Apis mellifera*

Solitary bee, *Melecta*

The biodiversity of bees in the high Sinai mountains is high, and many of the plants are dependent on their pollination services for reproduction.

Sinai is one of the very few places in the world (and it may be unique) where no social bees of any kind occur naturally, only solitary bees. Common species of solitary bee are various kinds of *Anthophora* (Apidae), *Halictus* and *Anthidium* (Halictidae), and *Megachile* and *Coelioxys* (Megachilidae). The Bedouin call bees NaHla, but they distinguish *Anthophora* with the name Ranana **(رنّانة)** : 'buzzing insect'). Recently hives of domesticated social honeybees have been brought in from Egypt, and scientists are worried about their impact on the wild bees, and hence on the efficiency with which native plants are pollinated.

Hoverflies (Diptera: Syrphidae) **الذبـــاب المحلـــق (رتبـــة ثنائيـــة الأجنحـــة)**

Fred Manata

Hoverfly *Eupeodes (Metasyrphus) corollae*, hovering

Hoverflies are important flower visitors and pollinators, but in general they are not common in arid areas. Egypt has only a relatively short list of recorded species. Many rely on water as the habitat for their filter-feeding larvae. The larvae of others depend on the presence of aphids for their major food source, and in general aphids are not adapted to deserts. One common hoverfly species in St Katherine is the shiny bronze *Eristalinus aeneus*, often found hovering over small pools of stagnant water.

Insect Pests
الآفـــــــات

Grasshoppers and Crickets (Caelifera & Ensifera)
النطـــاطـــات (رتبـــة مستقيمـــة الأجنحـــة)

Samy Zalat

Poecilocerus bufonius

Jennifer Johnson

Egyptian grasshopper, *Anacridium aegyptiacum*

Fred Manata

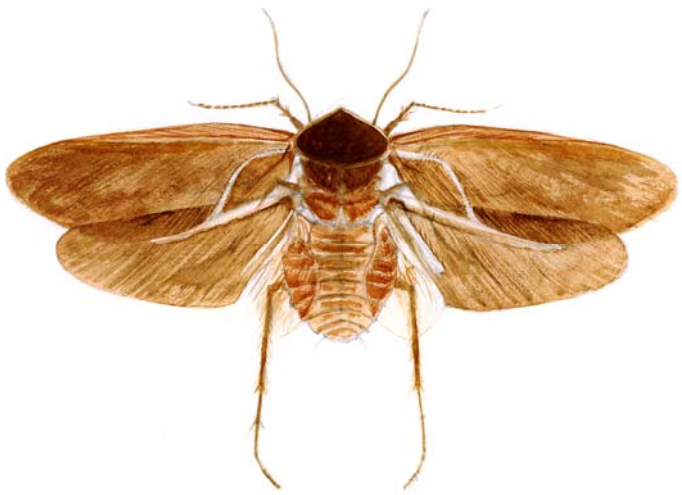
Samy Zalat

Poecilocerus bufonius

Occasionally the Sinai is invaded by swarms of the Migratory Locust (*Schistocera migratoria*), but this happens less frequently now that locust control has improved (although there was a big invasion in 2004). In general, grasshoppers and locusts are called SarSoor **(صـرصـور)** by the Bedouin. The species called the Field Cricket in Europe (*Gryllus bimaculatus*) is here called the Apricot Cricket (SarSoor El Mishmish **صـرصـور المشْـمشْ**) because it is a pest of apricots, eating the leaves. The House Cricket (*Acheta domestica*) is called SarSoor El Qerba, the Water-bag Cricket, because it lives underneath goatskin water-bags where conditions are moist. The huge Egyptian Grasshopper (*Anacridium aegyptiaca*) is fairly uncommon; it is called 'Gakhdab'**(جخْـدب)** by the Bedouin. A large dark grasshopper (*Poecilocerus bufonius*) occurs on Sinai Milkweed (*Asclepias sinaica*) a poisonous plant. It assimilates the plant poisons, and exudes them from glands on its body when threatened: this species is called ZagaT ('the one that sprays toxin onto girls faces'). If a girl comes home in tears because she has been sprayed by this grasshopper, they say ZagaT Rasheni **(زجـط رشنـى)** ('I have been sprayed in my eyes').

As an example of the superb natural-history skills of the Gebaliya, Mahmoud Duqouny remembers observing a solitary sphecid wasp paralysing a locust (probably the Desert Locust *Schistocerca gregaria*) with its sting, dragging it to its hole, and then closing the hole with a small stone stuck into the opening with a salivary secretion. Many sphecids are parasitoids on grasshoppers, and females lay their eggs on paralysed victims to provide fresh food for their offspring.

Cockroaches **الصـــراصيـــر (رتبـــة مستقيمـــة الأجنحـــة)**
(Dictyoptera: Blattidae)



The common German cockroach (*Blatta germanica*) is not differentiated by the Bedouin from other orthopteroid insects (SarSoor **صـر ـرصـر ـور**) such as grasshoppers and crickets.

Butterflies and Moths
(Lepidoptera)

الفراشـــــــات
(رتبـــة حرشـــفيـــة الأجنحـــة)

Mike James

Caterpillar of the Milkweed butterfly
Danaus chrysippus

Mike James

The endemic Sinai Baton Blue
Pseudophilotes sinaicus

Sinai Baton Blue Tiger Blue Desert White

photos by Mike James, Kathy Meakin & Fred Manata

Fred Manata

Clouded Yellow

Jennifer Johnson

Long-tailed Blue, *Lampides boeticus*

Fred Manata

Desert White, *Pontia glauconome*

Kathy Meakin

Tiger Blue, *Tarucus* sp

Fred Manata

Desert White, *Pontia glauconome*

Many moth and some butterfly caterpillars are pests, feeding on the leaves or fruit of the trees and vegetables of the gardens. In general Egypt's fauna is limited in numbers, but the Sinai mountains are home to a very large proportion of them (two-thirds of the butterflies, for instance). The butterflies are very obvious since they fly during the daytime; the Bedouin call them Farasha **(فراشـة)** , which means 'spread out', referring to the extended broad wings. The garden vegetation is a magnet for skippers (Hesperiidae: e.g. Stauder's Marbled Skipper, *Carcharodus stauderi*), blues (Lycaenidae: e.g. the Grass Jewel, *Freyeria trochylus*; the Long-tailed Blue, *Lampides boeticus*; the Little Tiger Blue, *Tarucus balkanicus*; and the Grass Blue, *Zizeeria karsandra*) and whites (Pieridae: the Clouded Yellow, *Colias croceus*; the Salmon Arab, *Madais fausta*; and the African White, *Pontia glauconome*). Apart from hawkmoths, which are noticeable because of their large size, moths are more obvious to the Bedouin as 'worms', the caterpillars that consume valuable fruits and vegetables.

Outside the gardens on the mountaintops are two rather special butterflies They are endemic to the Protectorate, that is, occurring only within its boundaries, and nowhere else in the world.

One is the Sinai Baton Blue (*Pseudophilotes sinaicus*), with a good claim to be the smallest butterfly in the world. Its larvae feed on Sinai Thyme (*Thymus decussatus*), another mountain speciality whose world distribution encompasses only south Sinai and the Hejaz, the nearest mountains in Saudi Arabia. The total world population of the Sinai Baton Blue is not more than 600 individuals, contained within an area of just a few square kilometres.

The other endemic butterfly is the Sinai Hairstreak (*Satyrium jebelia*), whose larval food plant is mainly the very rare and scattered trees of Sinai Buckthorn (*Rhamnus disperma*). Adults visit the flowers of this tree, and also Sinai Hawthorn (*Crateagus sinaica*) and Cotoneaster (*Cotoneaster orbicularis*). Little is known about this species.

These rare and exquisite creatures maintain an ever-shrinking foothold in Sinai, among some of the oldest mountains in the world.

Ants (Hymenoptera: Formicidae) **النمـــــــل (رتية غشائيـــة الأجنحـــة)**

Kathy Meakin

Cataglyphis ants tackling a dead Praying Mantis

Ants are very common everywhere in Sinai. The two most obvious species are both large and black: *Cataglyphis* is commonly seen running around during the day, with its abdomen pointing upwards. *Camponotus* is a very large robust ant active at night.

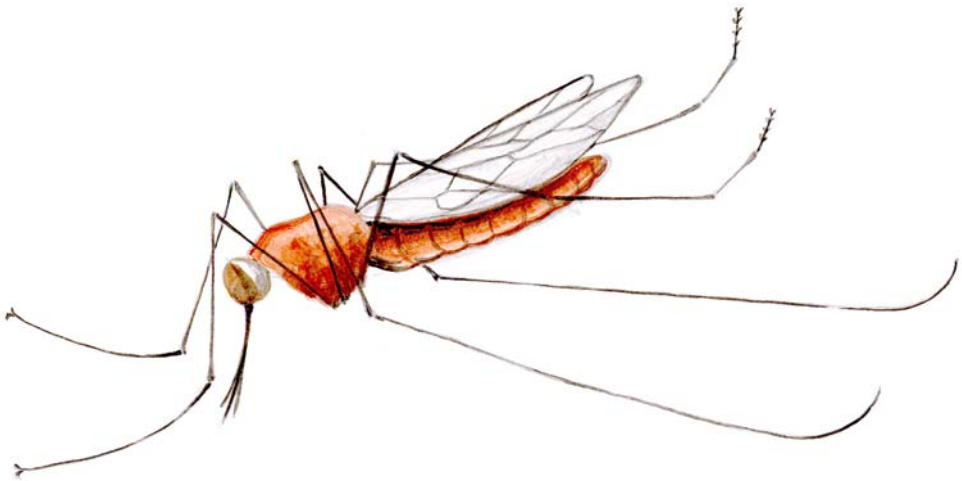
Bugs (Heteroptera) **بـــــق النبـــــات (رتبـــة مختلفـــة الأجنحـــة)**

A common bug on many plants of the gardens (but especially the Sinai milkweed, *Asclepias sinaica*) is the Firebug, *Spilostethus pandurus* (Lygaeidae). Its bright colours warn potential bird predators of its nasty taste derived from the poisons of the plants on which it feeds. The bug has long dagger-like mouthparts to pierce the plant stems and seedpod to suck out the plant juices.

Jennifer Johnson

Firebug
Spilostethus pandurus

Mosquitoes (Diptera) **الناموس (رتبـــة ثنائيـــــة الأجنحـــــة)**



The most irritating pest of the gardens and the houses of the Bedouin who tend them are mosquitoes (Culicidae). The Bedouin call these Ba^{c}oDa **(بعـوضـة)**, and label them their most serious problem.

Aphids (Homoptera: Aphididae) **المـــــــن (رتبــة متساويــة الأجنحـــة)**

Fred Manata

Aphids suck the juices of plants, and therefore require well-watered plants. They are therefore more common in the gardens than in the surrounding desert, but unlike temperate Europe aphids are not a major problem in Sinai. The bright yellow milkweed aphids (*Aphis nerii*) on the poisonous Sinai Milkweed (*Asclepias sinaica*) are very obvious. The Bedouin call aphids and other small insects El Nema **(النمـة)** meaning 'small abundant creatures'.

Insect and other Predators
المفترســـــــات

Ladybird beetles **أبو العيـــــــد**
(Coleoptera: Coccinellidae) **(رتبـــة غمديـــة الأجنحـــة)**

Jennifer Johnson

Fred Manata

Most ladybirds feed on aphids both as larvae and adults, making them very useful in the fight against aphid pests in gardens. A typical species is the 7-spot Ladybird (*Coccinella septempunctata*). The Gebaliya call ladybirds ‘Owainet Um Sulaiman’ **(عوينـة أم سليمـ ـان)**, which means ‘Eye of Suleiman’s mother’.

Wasps (Hymenoptera) **الزنابيـــــــر (رتبـــة غشائيـــة الأجنحـــة)**

Potter wasp, *Delta*

Sand wasp, *Stizus*

Rebecca Guenther

Oriental hornets, *Vespa orientalis*

Wasps come basically in two types, predators and parasitoids. Social wasps (Vespidae) are predators; the most ferocious is the Oriental hornet (*Vespa orientalis*) but fortunately they hardly occur in the high mountains. They are common and a tremendous nuisance just outside the Ring Dyke in, for example, Wadi Gharaba. In contrast, there is a large diversity of solitary hunting wasps, such as the Eumenidae (*Delta*, *Odynerus, Euodynerus*, *Ischnogasteroides*, *Rhynchium*) and the Sphecidae (*Cerceris*, *Bembix*, *Podalonia*, *Philanthus*). Bedouin call all wasps 'Dabra **(دبـــرة)** .

Praying Mantis **فـــرس النبـــــى**
(Dictyoptera: Mantidae)

Fred Manata

Fred Manata

The Bedouin call them ‘Faras El Dendi’ **(فَـرس الدِنْـدى)** , or ‘Dendi’s horse’, and believe they are very peaceful insects and not at all harmful. The species illustrated is *Blephariopsis mendica*.

Dragonflies (Odonata) **الرعاشـــــــات (رتبـــة الرعاشـــات)**

Jennifer Johnson

Damselfly, *Ischnura elegans*

Jennifer Johnson

Red Darter, *Crocothemis erythraea*

Jennifer Johnson

Dragonfly, *Sympetrum sanguineum*

The commonest dragonfly is the Red Darter (*Crocothemis erythraea*), called ‘deer-like’ (Ghezlan **(غـزلان)** by the Bedouin. The thin damselflies are also commonly seen around the water sources of the gardens.

Spiders and Scorpions (Arachnida) **العنـاكـــــب والعنـاكـــش والعقارب**

Kathy Meakin

Small huntsman spider (Philodromidae)

Kathy Meakin

Wolf spider, *Lycosa*

Kathy Meakin

Crab spider, *Misumena*

Sun-spiders (Solpugidae) are primitive but very effective fast-running predators. The Bedouin call small ones Abu Hanakeen **(أبو حنكيـن)** and El Brira **(البريـرة)** . There is a really large species, about 7 cm in bodylength, called the camel spider: the Bedouin call this kind 'Tarid El Boᶜaran' **(طـارد البعـران)** or 'Tarid El Gamal' **(طـارد الجمـل)**, which means 'repeller of camels'. Its fearsome appearance, essentially a huge pair of jaws on legs, may have given rise to the erroneous Bedouin belief that it is highly poisonous. It is nocturnal, and when the night is warm it is very active in pursuit of its prey. It is reputed by science to have the most powerful bite for its size than any animal, and will eat even small mice and lizards. The Bedouin say that if a camel spider attacks you, you must go into the sun: because its eyes are on the top of the head, facing upwards, the glare will blind it and you will escape. They also say that if it bites a camel, the camel will jump up high repeatedly and may die. Ordinary spiders are called Kanbosh (**كنْبوش**).

There are several species of scorpions in Sinai, but two are common. There is a large yellowish species (*Leiurus quinquestriatus*) with a dangerous sting, and a small black one (*Orthochirus scrobiculosus*) that rarely stings. Sucking the poison out of scorpion stings and mild snake bites is something performed by special people called Hawi (from Haya, a kind of snake).

Medically important species
الأنـــواع ذات الأهميـــــة الطبيـــــة

Ticks (Acarida) **الأكاروســـــات**

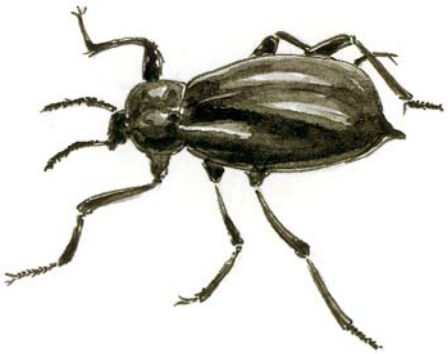
Huge camel ticks (*Hyalomma anatolicum* and *dromedarii*) are an unwelcome but common pest of camels, living mainly underneath in the axillary areas. They attack existing wounds and greatly exacerbate the problem. According to Bedouin myth, a man left a tick on a rock for one year, and on his return he found the tick in exactly the same place. He took it and put it in his belt pocket next to his skin, and the tick emerged and bit him in his navel and he died. Thus the Bedouin say: Shaalo min El Hol lil Hol we qataloh **(شالوا من الحول للحول وقتله)** (literally, 'carrying it after a year, it killed him'), meaning that one should be careful of holding on to something harmful.

Blowflies (Diptera) **الذبـــــاب الممرض (النافخ) (رتبـــة ثنائيـــة الأجنحـــة)**

Blowflies and houseflies spread disease, transferring bacteria on their legs and mouthparts as they move about feeding on noxious liquids. The common species are worldwide, such as *Calliphora*, *Lucilia sericata*, *Musca domestica* and *Sarcophaga*. The Bedouin call them Debana**(دبانـة)**

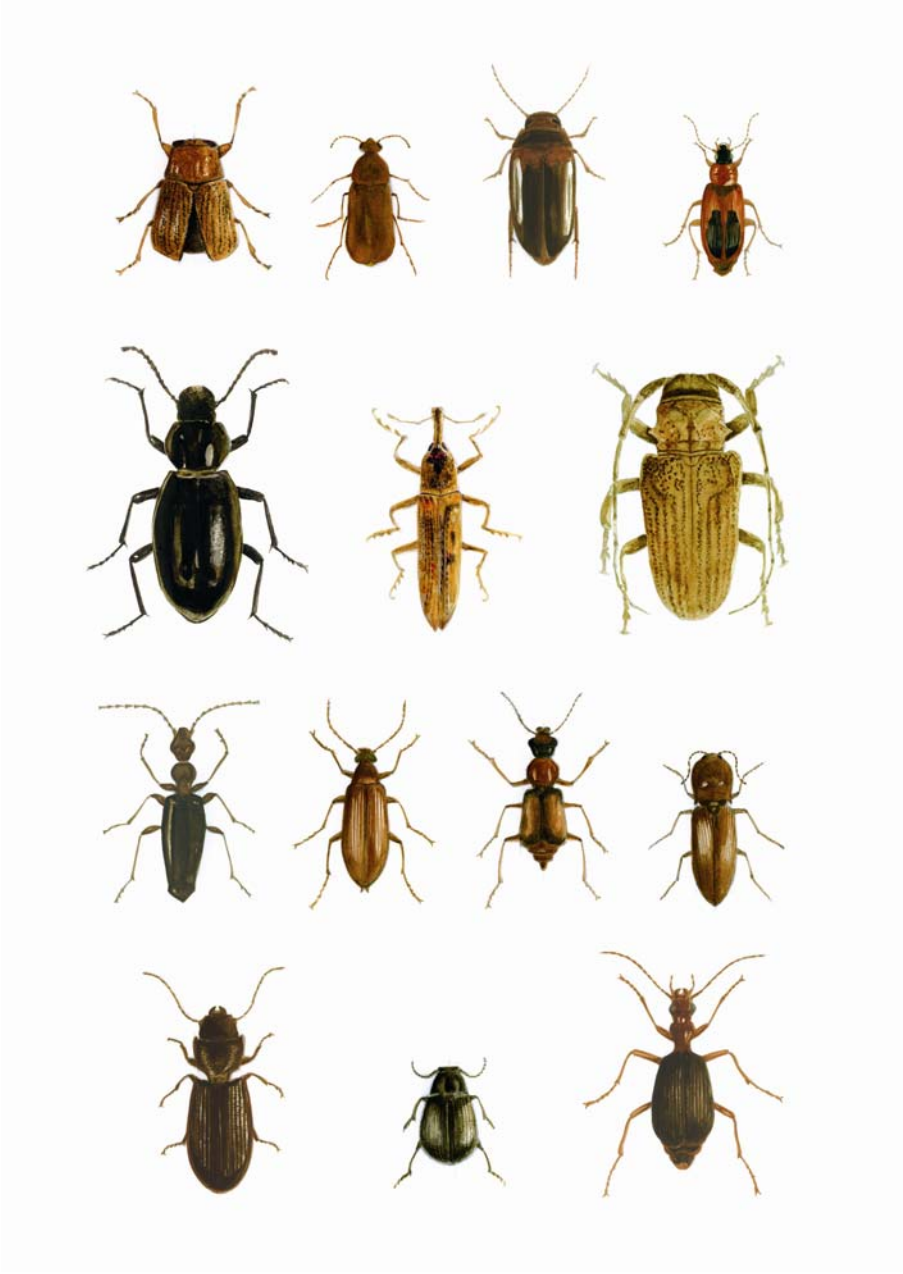
Others **أنـــواع أخـــــرى**

Beetles (Coleoptera) **الخنـافـس (رتبـة غمديـــة الأجنحـــة)**



There are a number of beetles recognised by the Bedouin. The domed shape of many beetles reminds them of donkeys, and some of their names derive from this. *Adesmia* species (ᶜOeir el Banaat: **البنـات عويـر** = newborn donkey for girls) are common large black spiny tenebrionid beetles. These are scavengers, feeding on decaying plant material. Scarabs *Scarabaeus* species (Goᶜal: **جعـــل**) are of course very well known in Egypt, although

the species in Sinai is much smaller than the famous scarabs of the Pharaohs. There is a beetle that the Bedouin call Fesiaia **(فسيايـة)** (wind with a bad smell) which is probably *Blaps*, a large tenebrionid commonly seen walking over the sand.



Appendix I: Sinai Climatological data

	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Overall
Temp.ºC	9.5	13.2	18.6	22.9	24.6	24.9	23.5	21.1	17.0	11.9	8.6	7.7	17.0
Rainfall (mm)	5.0	2.0	6.3	3.9	2.1	0.0	0.0	0.0	0.0	1.9	6.3	5.3	33
Humidity (%)	43	45	34	26	31	28	27	28	27	31	38	40	33.2
Sunshine (hrs)	7.5	9.0	9.8	10.0	10.3	12.4	12.4	12.0	10.4	9.2	8.7	8.2	10.0

Appendix II: Some examples of garden information gathered

Informant	**Mohammed Atteia**	**Gamil Attia Hussein**	**Mahmoud Omar Hussein**	**Hussein Saleh**
Location	Wadi Gharaba	Wadi Gharaba	Sheikh Awad	Wadi Gebal
Clan	El Weheebaat	El Weheebaat	El Weheebaat	Awlad Seliim, Abu Meghanim lineage
No. of gardens	2	1	1	3
Total size (m^2)	6,300	4,200	300	12,000
Owner	wife	shared among brothers		self
History of gardens	owned for at least 4 generations	established by grandfather	established by grandfather	1. established by father in 1951 2. established by himself in 1998
Age of gardens (yrs)	150	60	>100	oldest 53
Time continuously cultivated	11 years	always	95 years	always
Unused area	900 m^2		60 m^2	none
Irrigation	manual	manual	pumped	manual
Fertilizers	local fertilizer (dung of goats "damna" and camels "sabkha")	local fertilizer	local fertilizer, nitrate 50 kg (40 LE), once a year; affects fruit taste	Local fertilizer
Animals seen	Fox, Hyaena, Wolf, Starred and Sinai Agama,*Uromastyx* lizard	Fox Hyaena	Ibex, Hyrax, Rabbit, Hyaena Fox, Cat	Ibex, Fox, Rabbit, Hyrax, Mice

	Mohammed Atteia	Gamil Attia Hussein	Mahmoud Omar Hussein	Hussein Saleh
Main problem	water shortage; insect pests, mosquito	water shortage; aphid on *Zizyphus*; spiders and caterpillars infesting palm	water shortage; chukars and partridges eating the fruit	water shortage; almond and pomegranate attacked by insects
Farming practice	husband farms, wife irrigates	husband farms	both husband and wife irrigate and tend the vegetables	husband farms, wife irrigates and harvests
Vegetables cultivated	tomato, aubergine, tobacco	no vegetables	tomato 5kg, courgette 60kg, aubergine 20kg, pepper 20kg, rocket	tomato, courgette, beans
Seed origin	local, from Tarfa	local	local	local
Use of vegetables	sold, eaten fresh, cooked, pickled, animal fodder	eaten fresh or cooked	excess sold, eaten fresh and cooked, preserved, animal fodder	eaten fresh or cooked
Vegetable pests and diseases	tomato pest		caterpillar, moth damage, a disease of courgette (healthy for 2-3months and then die, perhaps of heat)	caterpillars
Fruits cultivated (no. of trees)	8 fig, 6 grape, 4 apricot, 15 almond, 8 palm, 2 lemon, 2 orange, 10 *Zizyphus*, 2 pomegranate	5 *Ziziphus*, 5 palm and *Acacia*	4 fig, 6 grape, 1 pomegranate	grape, almond, pomegranate, apple
Amount produced (kg)	fig 160, grape 200, apricot 4, almond 30, *Zizyphus* 80, pomegranate <1, (palm, lemon & orange trees are too young)	50	fig 80, grape 30	not known
Use of fruits	sold, eaten fresh, preserved, medicinal, animal fodder	eaten fresh or cooked, preserved, medicinal, animal fodder	sold, eaten fresh, medicinal, animal fodder	sold, eaten fresh, preserved, medicinal

	Mohammed Atteia	Gamil Attia Hussein	Mahmoud Omar Hussein	Hussein Saleh
Favourite tree	grape	*Zizyphus*, because it is tolerant of drought	all trees	
Useful animals	warblers (eat insects)	pied wagtail (eats insects)	goats (fertilizer)	
Harmful animals	chickens and goats eat plants	birds eat fruits	chukars eat fruits	donkey

Appendix III: Common wild plants of the gardens.

Plant	Family	Common name	Bedouin	الأسم بالعربى
Achillea fragrantissima	Compositae	Fragrant Milfoil	QaySum	قَيْصُـــــوم
Alcea sp	Malvacae	Mallow	Khobeza	خُبَّيِـــــزة
Alkanna orientalis	Boraginaceae	Yellow Gromwell	Loubayd	لُوبَيْـــــد
Anabasis articulata	Chenopodiaceae	Desert Blight	ᶜAgram	عَجْـــــرَم
Artemisia herba-alba	Compositae	White Wormwood	SheiH	شِـــــيح
Artemisia judaica	Compositae	Palestine Wormwood	SheiH	شِيـــــح
Asclepias sinaica	Asclepidaceae	Sinai Milkweed	Hargal	حَرْجَـــــل
Astragalus echinus	Leguminosae	Spiny Milkvetch	Gadath	جَـــــدَث
Atriplex leucoclada	Chenopodiaceae	Saltbush	Roghl	رُغْـــــل
Ballota undulata	Labiatae	Wavy Horehound	GhaSSa	غَصَّـــــة
Caylusea hexagyna	Resedaceae	Mignonette	Zenaba	زنـــــابة
Centaurea aegyptiaca	Compositae	Egyptian Knapweed	Morur	مُـــــرُور
Citrullus colocynthis	Cucurbitaceae	Bitter Apple	HanDal, HanZal	حَنْضَل أو حَنْظل
Deverra tortuosa	Umbelliferae	Bedouin Toothwort	ZagoaH	زاجُـــــوح
Echinops sp	Compositae	Globe Thistle	Khosheer	خُشِـــــير
Ephedra sp	Ephedraceae	Ephedra	ᶜAldaq	عَلْـــــدَق
Euphorbia peplus	Euphorbiaceae	Spurge	Wideina	ودِينـــــة
Fagonia arabica	Zygophyllaceae	Arabian Caltrop	Damga	دَمْجة
Fagonia mollis	Zygophyllaceae	Caltrop	Woraqa	وُرَاقـــــة
Glaucium arabicum	Papaveraceae	Arab Horned Poppy	Neᶜmaan	نِعْمـــــان
Juncus rigidus	Juncaceae	Rush	Dees	ديـــــس
Lactuca orientalis	Compositae	Oriental Lettuce	GekheeS	جِخِيـــــص

Matthiola livida	Cruciferae	Stock	SleHia	سْلِيحْيـــــا
Mentha longifolia	Labiatae	Mint	Habag	حَبَـــــــج
Nepeta septemcrenata	Labiatae	Seven-lobed Catmint	GhameeSa	غْمِيصـــــــة
Ochradenus baccatus	Resedaceae	Shruby Mignonette	Qordi	قُـــــرْدِى
Oligomeris linifolia	Resedaceae	Oligomeris	Khezaama	خِزامـــــــة
Origanum syriacum	Labiatae	Oreganum	Za^{c}tar	زَعْتَـــــــر
Peganum harmala	Zygophyllaceae	Wild Rue	Harmalaan, Harmal	حَرْمَـــلان أو حَـــــرْمَـــل
Phlomis aurea	Labiatae	Golden Wickweed	^{c}Awarwar	عَـــــوَرْوَر
Phragmites australis	Graminae	Reed	BooS	بُـــــوص
Plantago arabica	Plantaginaceae	Arabian Plantain	Heweit elbadan	حِويت البَـــدَن
Retama raetam	Leguminosae	Retem	Ratam	رَتَـــــــم
Rosa sp	Rosaceae	Rose	Ward bari	وَرْد بَرِّى
Silene schimperiana	Caryophyllaceae	Sinai Catchfly	LoSeiq	لْصِيـــــق
Solanum nigrum	Solanaceae	Black Nightshade	^{c}Anab El Hardoon	عَنَب الحَـــرْدُون
Stachys aegyptiaca	Labiatae	Egyptian Woundwort	QorTom	قُرْطـــــم
Tanacetum santalinoides	Compositae	Sinai Tansy	Mir	مِـــــــر
Teucrium polium	Labiatae	Felty Germander	Ga^{c}da	جَعْـــــدة
Varthemia montanum	Compositae		Hinayda	هِنَيْـــــدة
Verbascum sinaiticum	Scrophulariaceae	Sinai Mullein	Kherma^{c}, Widaan el Homaar	خِرْمـــاع أو ودان الحُمَـــار
Zilla spinosa	Cruciferae	Roquette	Thilla	ثِلَّـــــــة

Appendix IV: Common birds recorded during the summers of 1996 and 2002. The species listed in descending order of abundance. Number seen in each site are given in brackets.

Common name	Latin name	Locality	Total No.
Inside Gardens			
Sinai Rosefinch	*Carpodacus synoicus*	St Katherine (13), Wadi Arbaeᶜin (19), Wadi ItlaH (9), Wadi Gebal (52)	93
Yellow-vented Bulbul	*Pycnonotus xanthopygos*	Wadi Gebal (11), Wadi El Tallᶜa (1), Tarfa (16), ᶜAin El KhoDra (6), Wadi Feiran (29)	63
White-crowned Black Wheatear	*Oenanthe leucopyga*	St Katherine (8), Wadi Arbaeᶜin (13), Wadi Gebal (19), Wadi ItlaH (3), Tarfa (8), ᶜAin El KhoDra (5), Wadi Feiran (3)	59
Laughing or Palm Dove	*Streptopelia senegalensis*	St Katherine (14), Wadi Arbaeᶜin (8), Wadi El Tallᶜa (7), Tarfa (3), ᶜAin El KhoDra (10), Wadi Feiran (6)	48
Lesser Whitethroat	*Sylvia curruca*	St Katherine (14), Wadi Arbaeᶜin (8), Wadi El Tallᶜa (7), Tarfa (3), ᶜAin El KhoDra (10), Wadi Feiran (6)	48
Red-backed Shrike	*Lanius collurio*	Wadi Feiran (2), Tarfa (1),Wadi ItlaH (1), Wadi Gebal (17)	21
Scrub Warbler	*Scotocerca inquieta*	Wadi Arbaeᶜin (2), Wadi Gebal (12), Wadi ItlaH (3)	17
Orphean Warbler	S*ylvia hortensis*	Wadi Gebal (6), Wadi ItlaH (5), Tarfa (4), Wadi Feiran (2)	17
Spotted Flycatcher	*Muscicapa striata*	Tarfa (2), Wadi Feiran (1), Wadi ItlaH (1), Wadi Gebal (6)	10
Blackstart	*Cercomela melanura*	ᶜAin El KhoDra (5), Wadi Feiran (2)	7
Trumpeter Finch	*Bucanetes githagineus*	Wadi Feiran (4), Wadi Gebal (2)	6
Hoopoe	*Upupa epops*	Tarfa (1), Wadi Razana (1), Wadi Feiran (3)	5
Arabian Warbler	*Sylvia leucomelaena*	Wadi Gebal (4)	4
Green Warbler	*Phylloscopus nitidus*	Wadi Gebal (3)	3
Chiffchaff	*Phylloscopus collybita*	Wadi Feiran (1), Wadi Gebal (2)	3
Great Grey Shrike	*Lanius excubitor*	Wadi Gebal (3)	3
Masked Shrike	*Lanius nubius*	Wadi Gebal (1), Wadi Feiran (2)	3
Blackcap	*Sylvia atricapilla*	Wadi Gebal (2)	2
Woodchat Shrike	*Lanius senator*	Tarfa (1), Wadi Feiran (1)	2
Mourning Wheatear	*Oenanthe lugens*	Tarfa (1)	1
Olivaceous Warbler	*Hippolais pallida*	ᶜAin El KhoDra (1)	1
Reed Warbler	*Acrocephalus*	Wadi Feiran (1)	1

	scirpaceus		
Icterine Warbler	*Hippolais icterina*	Tarfa (1)	1
Wood Warbler	*Phylloscopus sibilatrix*	Wadi Feiran (1)	1
Common Buzzard	*Buteo buteo*	Wadi Sa^{c}al (1)	1
Lesser Kestrel	*Falco naumanni*	Wadi Feiran (1)	1
Green Sandpiper	*Tringo ochropus*	Wadi Feiran (1)	1

Outside Gardens			
Pigeon (Rock Dove)	*Colomba livia*	St Katherine (97), Wadi Arbae^{c}in (22), ^{c}Ain El KhoDra (16), Tarfa (6), Wadi ItlaH (6), Wadi Gebal (3), Wadi Feiran (1)	161
Rock Martin (Pale Crag Martin)	*Ptyonoprogne fuligula*	St Katherine (2), Wadi Arbae^{c}in (8), ^{c}Ain El KhoDra (2), Tarfa (8), Wadi ItlaH (8), Wadi Gebal (25), Wadi Feiran (9)	62
Tristram's Grackle	*Onychognathus tristramii*	St Katherine (6), Wadi Arbae^{c}in (6), Wadi Gebal (7), Wadi ItlaH (5), Wadi Feiran (6)	30
Chukar	*Alectoris chukar*	Wadi Arbae^{c}in (4), Wadi El Tall^{c}a (1), Wadi Gebal (14), Wadi Feiran (1)	20
Desert Lark	*Ammomanes deserti*	St Katherine (2), Wadi Arbae^{c}in (5), Wadi Gebal (7)	14
Brown-necked Raven	*Corvus ruficollis*	^{c}Ain El KhoDra (3), Wadi Gebal (1), Wadi Feiran (1)	5
Palestine Sunbird	*Nectarinia osea*	Wadi Arbae^{c}in (1), Wadi ItlaH (1), Wadi Gebal (2)	4
European Bee-eater	*Merops apiaster*	^{c}Ain El KhoDra (2), Wadi Gebal (1),	3
Hume's Tawny Owl	*Strix butleri*	Wadi Arbae^{c}in (2)	2
Rock Sparrow	*Petronia brachydactyla*	Wadi ItlaH (2)	2
Black Stork	*Ciconia nigra*	Tarfa (1)	1
White Stork	*Ciconia ciconia*	Tarfa (1)	1
Marsh Harrier	*Circus aeruginosus*	Wadi Sa^{c}al (1)	1
Sand Partridge	*Ammoperdix heyi*	Wadi Gebal (1)	1
Common Cuckoo	*Cuculus canorus*	Wadi Gebal (1)	1
Black-headed Bunting	*Emberiza melanocephala*	Wadi Feiran (1)	1

Appendix V: Common names used by Gebaliya Bedouin for animals

Mammals		الثدييـــــات
Red Fox	Abu El HuSain	أبُـــو الحُصَيْـــن
Dormouse	Abu KoHla	أبُـو كُحْلـــــة
Ruppell's Sand Fox	Abu Risha	أبُـــو ريشـــــة
Hare	Arnab	أرْنَـــب
Ibex (male)	Badana	بَدَنـــــــة
Goat	ᶜAnza	عَنْـــزة
Hyaena	Dabᶜ	ضَبُـــــع
Wolf	Deeb	ديـــــب
Mouse	Far	فـــــار
Spiny Mouse (*Acomys*)	Fa'r	الفـــأر
Leopard	Nimr	نِمْـــــر
Wild cat	QiT bari or OT bari	قِـط بَـرِّى - أط بَـــرِّى
Hedgehog	QonfeZ	قُنْفِـــذ
Ibex	Seid, Teytal	صِيـــــد- تيتَـــــــل
Hyrax	Wabar	وَبَـــــر
Goat (young)	ZalTana	زَلَـطانـــة
Birds		الطيـــور
Wheatear	Abu El ᶜala	أبُـــو العَـــلا
Scrub Warbler	Abu LefSay	أبُـــو لِفْصَـــىْ
Sand partridge (male)	Al Ganbour	الجـــانْبُـــور
Little owl	Al mokhSaa	المُخْـصـــاة
White-crowned black wheatear	Bagaᶜa', Baqaᶜa'	بَجَعـــاء - بَقَعـــاء
European bee-eater	Banaat bariq or barik	بَنَـــات بـارق - بـارك
Common swift - Pallid swift	Borqeaᶜ or Birgeaᶜ	بُرْقِيـــع - برْجِيـــع
Yellow-vented bulbul	Bulbul	بُـلْبُـل
Hume's tawny owl	Buma	بُومـــــة
Hoopoe	Gabaar umuh wa abuh	جَبّـــار أمُـــه وأبُـــوه
Sinai rosefinch	Gazama	جَـزَمـــــة
Warbler	Gazguz	جَـزْجُـــوز
Laughing or palm dove	Gamam	جَمـــام
Raven	Ghorab	غُـــراب
Sand partridge	Hagal El Sakhr	حَجَـــل الصَخْـــر
Pigeon (Rock Dove)	Hamam bari or gabali	حَمـــام بَـرى أو جَبَلِـى
White stork	Najaᶜ abiaD	نَجَـــع أبْيَـــض
Black stork	Najaᶜ eswed	نَـجَـــع إسْـــود
Wagtail	Raᶜaei	رَعايـــــى
Egyptian vulture	Rakhama	رَخَمـــــة
Desert lark	Reheden	رهِيـــدِن
Chiffchaff	Saksaka, Harami al romaan	سَكْسَكَـــة أو حَرامِـــى الرُمّـــان
Falcon	Saqr	صَقْـــــر
Long-legged buzzard	Saqr	صَقْـــــر
Lesser kestrel	Saqr al garaad	صَقْـــر الجَـــراد
Common buzzard	Saqr Hawaam	صَقْـــر حَـــوّام
Red-backed Shrike	Saqr Sagheir	صَقْـــر صَغِيـــر
Tristram's Grackle	ShaHroor	شَحْـــرُور
Chukar	Shinar or Ferakh el gebal	الشِنّـار - فِـراخ الجَبَـل
Rufous bush robin	Zaqzooq	زَقْـــزُوق
Reptiles and snakes		الزواحـــف والثعابيـــن

Snake (any dotted mountain snake)	Abu Gabali	أبُـــو جَبَلِـــــى
Sinai banded snakes, including the endemic Sinai banded snake	Abu Murira	أبُـــو مُريـــــــرة
Snake (a slow black-headed snake that makes a noise in attack)	Abu SeiHa	أبُـــو صِيحـــــــة
Gold skink lizard (*Eumeces*)	Al HaZaa	الحَظـــــاة
Eyed skink lizard (*Chalcides*)	Al wazagha	الوَزَغـــــــة
Clifford's snake (*Spalerosophis* sp)	Al Zaraq	الـــــــزَرَق
Bosc's lizard (*Acanthodactylus*)	ᶜArbana	عَرْبانـــــــة
Ornate dabb lizard (*Uromastyx*)	Dab	ضَـــب
Sinai agama	El BleeS	البْلِيـــــص
Snake	El Dooda	الـــــدُودة
Snake (a small snake that jumps in attack)	El Seida - Um Geneib	الصِيـــــــدة أو أم جْنِيب
Snake (black, nocturnal)	Eswed El Lil	إســـــود الليـــــل
Snake (actively hunting ones)	Hanash	حَنَـــــش
Starred agama	Hardoon	حَـــــرْدُون
Burton's carpet viper (*Echis*)	Haya - Treasha	حيـــة - طُريشة
Rock or fan-footed gecko	NaTaqa	نْطاقـــــــة
Snake	Thoᶜban - Teᶜban	تُعْبـــــــان - تِعْبـــــان
Horned viper (*Cerastes*)	Um Qoroon	أم قُـــــرُون
Scorpions and spiders		العقـــــارب والعناكـــــب
Sun spider	Abu Hanakeen	أبُـــو حَنَكِيـــــن
Scorpion (adult)	ᶜAqrab	عَـــــقْرَب
Sun spider	El Brira	البْـريـــــرة
Spider	Kanbosh	كَنْبُـــــــــوش
Scorpion (young)	Khring	خْرِيـنْـــــج
Ticks	Qorad	قُـــــراد
Camel spider (large species)	Tarid El Boᶜaran, Tarid El Gamal	طـــارد البُعْـــران - طـــارد الجَمَـــل
Insects		الحشـــــرات
Bugs	Akalan	أكَـــلان
Mosquito	BaᶜoDa	بَعُـــــــوضة
Ladybird	ᶜOwainet Um Sulaiman	عُوَيْنـــــــة أم سُلَيْمان
Beetle (*Adesmia*)	ᶜOeir el Banaat	عُويـــر البَنـــــات
Wasp	Dabra	دَبْـــــرة
Fly	Debana	دِبَـانـــــــة
Aphid (or any small insect)	El Nema	النِمَـــــــة
Butterfly, moth	Farasha	فَراشـــــــة
Praying mantis	Faras El Dendi or El Gendi	فَـرَس الـدِنْـدِى أو الجِنـدى
Beetle (small beetle probably *Blaps*)	Fesiaia	فسيابـة
Egyptian grasshopper	Gakhdab or Shakhdab	جَخْـــــدَب أو شَخْـدَب
Dragonfly	Ghezlan	غِـــزْلان
Scarab beetle	Goᶜal	جُعَـــــل
Bee	NaHla	نَحْلَـــــــة

Ant	Namla	نَمْلـــــــــــة
Wild bee (*Anthophora*)	Ranana	رَنَانـــــــــة
Cricket, cockroach	SarSoor	صَرْصُـــــــور
Apricot cricket, field cricket	SarSoor El Mishmish	صَرْصُـــــور المِـشْمِـشْ
House cricket	SarSoor El Qerba	صَرْصُـــور القِرْبِـــــة

Appendix VI: Index and Glossary of Bedouin and Arabic names and other words

Not all the names in this table are found in the text, but we prefer to include as many as possible that may be encountered around the town of St Katherine. Be aware of variations in both pronunciation and format of place names. For example, sometimes a name will be prefixed by 'wadi', 'wadi el', or 'el', and sometimes by nothing at all.

Name	Pronunciation	Arabic	Meaning	p
AbiaD	′a-by-aD	أَبْيَـــض	'white', a variety of pomegranate	
Abu	′a-bu	أَبُـــــو	with or having; literally 'father of'	
Abu El ᶜAla	′a-bu el ′ᶜa-la	أَبُـــو العَـــــلا	Hooded Wheatear (*Oenanthe monacha*). ""ᶜala: to raise, go up"	
Abu El HuSain	′a-bu el Hu-′Sain	أَبُـــو الحُصَيْـــن	Red Fox (*Vulpes vulpes*). "HuSain: strong or inaccessible"	
Abu Gabali	′a-bu ′ga-ba-li	أَبُـــو جَبَلِـــــى	any dotted mountain snake. "Gabali: mountainous"	
Abu Geeda	′a-bu ′gee-dah	أَبُـــو جِيـــــدة	place with a dyke. "Geeda: a long and graceful neck"	
Abu Geefa	′a-bu ′gee-fah (′jee-fah)	أَبُـــو جِيفـــة	bad-smelling carrion. "Geefa: carrion"	
Abu Hanakeen	′a-bu Ha-na-′keen	أَبُـــو حَنَكِيـــن	sun spider. "Hanak: mouth, Hanakeen: two mouths"	
Abu Hebbeiq	′a-bu He-′beiq	أَبـــو حِبِيـــق	place with mint	
Abu KoHla	′a-bu ′koH-la	أَبُـــو كُحْلـــــة	dormouse (*Eliomys*). "KoHl: eyeliner"	
Abu LefSay	′a-bu ′lef-Siy	أَبُـــو لِفْصَـــــىْ	scrub warbler (*Scotocerca inquieta*). "LefSay: tell-tale from whom nothing can be hidden"	
Abu Mreygha	′a-bu mu-′rey-ghah	أَبُـــو مريغـــــة	place where animals roll in the dust	
Abu Murira	′a-bu mu-′ri-rah	أَبُـــو مُريـــــرة	banded snakes, including the endemic Sinai banded snake "Murira: bitterness or vigour"	
Abu Risha	′a-bu ′ri-sha	أَبُـــو ريشـــــة	Ruppell's Fox (*Vulpes rueppelli*). "Risha: feather"	
Abu QaSaba	′a-bu ′qa-sa-bah	أَبُـــو قَصَبـــــة	place with bamboo. "Qasaba: cane, bamboo"	

Abu SeiHa	′a-bu ′Sey-Ha	أبُـــو صيحـــــــة	a slow black-headed snake that makes a noise in attack. “SeiHa: shout or scream”	
Abu Seila	′a-bu ′sey-lah	أبُـــو سِيلـــــــة	place where water descends to the plains. “Seyla: discharge, running”	
Abu Tufan	′a-bu ′Tou-faan	أبُـــــو طُوفـــان	place with heavy floods. “Tufan: flood, inundation”	
Abu Zneima	′a-bu Z-′ni-ma	أبُـــو زْنِيمـــــة	town on Gulf of Suez. “Zneima: outsider or wicked”	
Al Fa’r Al Showki	al ′fa-ʿar al ′show-ki	الفـــأر الشُـــوْكِى	Spiny Mouse (*Acomys cahirinus*). “Showki: Spiny”	
Al Galt Al Azraq	al ′galt ′laz-raq	الجَلْـــــت الأزْرَق	the blue pool	
Al Ganbour	al gan-′bour	الجـــــانْبُـــــور	male sand partridge (*Ammoperdix heyi*). “Ganbour: ***”	
Al Shana	al ′sha-na	الشـــــانـــــا	a snack produced from almonds and dates	
Al Zaraq	al ′za-raq	الـــــــزَرَق	particular snakes. “Zaraq: injector”	
Amricani	am-ri-′ka-ni	أمْـــريكـــــانِى	‘American’, name of a variety of apple and apricot	
Arnab	′ar-nab	أرْنَـــــب	hare (*Lepus capensis*)	
Aspani	as-′pa-ni	أسْـــــــبانِى	‘Spanish’, an apple variety	
Awlad Saᶜid	′aw-lad sa-′ᶜid	أوْلاد سَـــــعِيد	a Bedouin tribe in Sinai. “Awlad: children” “Saᶜid: happy”	
ᶜAdi	′ᶜa-di	عـــــــادِى	variety of fruits and vegetables. “ᶜadi: normal”	
ᶜAgami	′ᶜa-ga-mi	عَجَمِـــــى	‘not given’, i.e. unvaccinated against scorpions. “ᶜagami: foreign, non-Arab”	
ᶜAgram	′ᶜa-gram	عَـــــــــجْرَم	desert blight (*Anabasis articulata*)	
ᶜAin	′ᶜain	عَـــــــــيْـن	spring, source of water	
ᶜAin Eklabeya	′ᶜain ekla-′be-yah	عَيْـــن إكْـــلابيـــة	spring of the pear trees	
ᶜAin El Gamal	′ᶜain el ′ga-mal	عَيْـــن الجَمَـــــل	walnut. “eye of the camel”	
ᶜAin El KhoDra	′ᶜain el ′kho-dra	عَيْـــن الخُضْـــــرة	spring of green land	
ᶜAin El Shinar	′ᶜain el shi-′nar	عَيْـــن الشِـنّـــــار	spring of chukar partridges	
ᶜAin Maᶜin El Raᶜiyan	′ᶜain ma-′ᶜin er-′ra-ᶜi-yen	عَيْـــن مَعِين الرَعِيان	spring where girls fill their water containers	
ᶜAin Negila	′ᶜain ne-′gi-lah	عَيْـــن نِجيلـــة	grassy spring	
ᶜAin Shkaiya	′ᶜain sh-′kai-yeh	عَيْـــن شْكايـــة	permanent spring	
ᶜAin Zaᶜtar	′ᶜain ′za-ᶜ-tar	عَيْـــن زَعْتَـــر	spring of thyme	
ᶜAldaq	′ᶜal-daq	عَـــــلْدَق	*Ephedra*	
ᶜAish	′ᶜaish	عَيْش	bread	
ᶜAnab	′ᶜa-nab	عَنَـــب	grape (*Vitis vinifera*)	

ᶜAnab El Hardoon	ʳᶜa-nab el har-ʹdoon	عَنَـــب الحَـــرْدُون	black nightshade (*Solanum nigrum*). “Hardoon: agama lizard”	
ᶜAnab eswed	ʳᶜa-nab ʹes-wod	عَنَـــب إسْـــــود	black grapes	
ᶜAnqood	ᶜan-ʹqood	عَنْـــــقُود	a large bunch of grapes	
ᶜAqrab	ʳᶜaq-rab	عَـــــــقْرَب	scorpion	
ᶜArabi	ʳᶜa-ra-bi	عَـــــــرَبى	a variety of plum. “ᶜarabi: Arab”	
ᶜArmoosh	ᶜar-ʹmoo-sh	عَـــــــرْمُوش	vinegar from fermenting grape stems	
ᶜAsali	ʳᶜa-sa-li	عَـسَـــــــلى	a variety of apple. “ᶜasali: honey-coloured”	
ᶜAsfur El Gana	ᶜas-ʹfur el ʹgen-na	عَـصْفُـــور الجَنّـــــة	the swift (*Apus*). “Asfur: bird” “Genna: paradise”	
ᶜAsfour sinaa’ el wardi	ᶜas-ʹfur si-ʹna’ el ʹwar-di	عَـصْفُـــور سَيْنـاء الوَرْدِى	Sinai rosefinch (*Carpodacus synoicus*). “warda: rose”	
ᶜAwarwar	ᶜa-ʹwar-war	عَـــــــوَرْوَر	wickweed (*Phlomis aurea*)	
ᶜA’ela – ᶜEla	ʳᶜay-la	عائلـــــــة – عِيلـــــة	lineage within the clan	
ᶜAzeiga	ᶜa-ʹzey-ga	عَزِيجـــــــــة	a comfortable place	
ᶜOwainet Um Sulaiman	ᶜo-ʹwey-net om su-lei-ʹman	عُوَينـــــــة أُم سُلَيْمـــــان	ladybird. “eye of Suleiman’s mother”	
ᶜOeir el Banaat	ᶜo-ʹir el ba-ʹnaat	عُوير البَنَـــــات	*Adesmia* beetle. “newborn donkey of the girls”	
BaᶜoDa	ba-ʳᶜo-dah	بَعُـــــــوضة	mosquito. (not a Bedouin word: meaning unknown). An alternative Arabic name is Namusa	
Bab El Donya	ʹbab el ʹdo-nya	باب الدُنيا	the gate of the world/life	
badana	ʹba-da-na	بَدَنـــــــــة	male ibex (*Capra ibex*)	
Baqdounis - Ba’dounis	ba’-ʹdou-nis	بَقْدُونـــس – بادُونـــس	parsley (*Petroselinum crispum*)	
Bagaᶜa’, Baqaᶜa’	ba-ʹga-ᶜa, ba-ʹqa-ᶜa	بَجَعـــــاء - بَقَعـــــاء	white-crowned black wheatear (*Oenanthe leucopyga*)	
Baladi	ʹba-la-di	بَلَـــــــــــدِى	a variety of grape “Baladi: native, indigenous, local”	
Bamia	ʹba-mi-yah	بامِيـــــــــة	okra (*Hibiscus esculentus*)	
Banaat bariq-barik	ba-ʹnaat ʹba-riq	بَنـــــات بـــارق-بارك	bee-eater (*Merops apiaster*). “very pretty girls”	
Banati	ʹba-na-ti	بَناتِـــــــــى	a variety of grape. “Banati: girly”	
Barquq	bar-ʹquq	بَرْقُـــــــوق	plum (*Prunus domestica*)	
Barseem	bar-ʹseem	بَرْسِيـــــــم	alfalfa, clover	
BaSal	ba-ʹSaal	بَصَـــــــــل	onion (*Allium cepa*)	
BaTiikh	ba-ʹtiikh	بَطِيـــــــخ	water melon (*Citrullus lanatus*)	
BaZengan	ba-Zen-ʹgaan	بأذِنْجـــــــان	aubergine (*Solanum melongena*)	
Besisa	be-ʹsi-sah	بسِـــيسـة	a kind of cake	
BiDi	ʹbi-Di	بِيضِـــــــى	a variety name for figs and apples	
Billingaan	bi-lin-ʹgaan	بِيلِيْجـــــان	aubergine (*Solanum melongena*)	

Birgeaᶜ or Borqeaᶜ	bir-′ge-ᶜa, bor-′qe-ᶜa	برْجِيـــــع - برْقِيـــــع	swift (*Apus*). (meaning unknown)	
BooS	′boos	بُـــــــوص	reed (*Phragmites*)	
Bortuqaal - Bortu’aan	bor-tu’-′aan	بُرْتُقـــــال – بُرْتُـــنان	orange (*Citrus sinensis*)	
Bsilla	b-′si-la	بِسِـــــــلة	pea (*Pisum sativum*)	
Bulbul	′bul-bul	بُلـــــبُل	bulbul (*Pycnonotus xanthopygos*)	
Buma	′bu-ma	بُومـــــــــة	owl, Hume’s tawny owl (*Strix butleri*)	
BaT	′buT	بَـــــط	duck	
Daba	′da-ba	دَبـــــــــا	cucumber (*Cucumis sativus*)	
Dabᶜ	da-ba-′ᶜa	ضَبَـــــــع	hyaena (*Hyaena hyaena*)	
DabaHleel	da-baH-′leel	دَبَـــحْلِيـــل	*Scorzonera*	
Dabra	′da-brah	دَبْـــــرة	a wasp	
Dahab	′da-hab	دَهَـــــب	lit. “town of gold”	
Debana	′de-ba-nah	دِبّـانـــــــة	a fly	
Deeb	′deeb	دِيـــــــب	wolf (*Canis lupus*)	
Dees	′dees	ديـــــــس	rush (*Juncus*)	
Deir	′dir	دِيـــــــر	monastery	
Deir Abu Maghar	′dir ′a-bu ma-′ghar	دِيـــــرأبو مَـغـــار	monastery in a cave or cavern, hermitage	
Deir Antoush	′dir an-′tou-sh	دِيـــــر أنْتُـــــوش	monastery named after a person “Antoush”	
Deir El BaHari	′dir el ′ba-Ha-ri	دِيـــــر البَحَـــــرى	monastery facing north. “baHari: towards the (Mediterranean) sea”	
Deir El Banaat	′dir el ba-′naat	دِيـــــر البنـــــات	nunnery. “monastery of girls”	
Deir Segillya	′dir se-′gill-ya	دِيـــــر سِجِيلِيـة	monastery of baked clay	
Denaba, Zenaba	de-′na-ba	دِنابـــــة - زنابـــة	*Caylusea hexagyna*	
Damga	dam-′gah	دَمْجـــــة	*Fagonia arabica*	
Dokhaan	do-′khaan	دُخّـــــان	a variety of tobacco. “Dokhan: smoke”	
Ekhdeid El Deeb	e’kh-′deed ed-′deeb	إخْدِيـــد الدِيـــب	cheek of the wolf	
El ᶜAqaba	el ′ᶜa-qa-ba	العَقَبـــــــة	town in Jordan. “barrier or mountain road”	
El ᶜaTan	el ᶜa-′Tan	العَطـــــــن	the process of decay	
El BleeS	el ′bleeS	البْلِيـــــص	Sinai agama (*Pseudotrapelus sinaita*)	
El Brira	el ′bri-ra	البْـرِيـــــرة	sun spider	
El Dooda	el ′do-da	الـــــدُودة	snake. “worm”	
El Hashash	el ha-′shaa-sh	الحَشّـــــاش	well-known lineage of the Gebeliya	
El Gelf	el ′gelf	الجَلـــــــف	rough, coarse, blunt	

El HowaweiT	el Ho-wa-′wee-yeT	الحُـواويـــط	surrounded by stones	
El Khamsat	el ′kham-sat	الخَمْســـــات	by five	
El Loqloq	el ′loq-loq	اللَقْلَـــــق	stork (*Ciconia*)	
El Kweza	el ′kwe-zah	الكْـويـــزة	area with many Bedouin settlements	
El Milqaa	el-′mil-qah (′mil-gaah)	المِلقـــــاة	meeting place	
El MukhSaa	el ′mukh'-sah	المُخْصـــــاة	eagle owl (*Bubo bubo*)	
El Nema	el ′ne-mah	النِمّـــــــة	any small insect e.g. aphid, louse	
El Qa^{c}	el ′Qa-^{c}a	القـــــاع	low-lying place "bottom"	
El Raba	er-′ra-bah	الرَبّـــــا	elevated place	
El RaHa	er-′ra-Hah	الراحـــــة	resting place	
El Rebk	el ′reb-k	الربْـــــك	disturbed or uneasy	
El Seid	el ′Se-id	الصيـــــــد	ibex (*Capra ibex*)	
El Sharoei	el sha-′roo-wi	الشـــــارُوىْ	variety of grape	
El Seida	el ′Si-ye-da	الصيـــــــدة	a small snake that jumps in attack	
El Sal – El Sol	el ′Sal	الصَـــــل - الصُـــل	variety of almond. "clank, clink"	
El Tebq	et ′Tebq	الطِبْـــــــق	narrowly enclosed place	
El Tur	et ′Toor	الطُـــــــور	called after a well-known mountain	
El Tut	et ′toot	التُـــــــوت	mulberry (*Morus nigra*)	
El Zeiri	el ′zee-ri	الزيـــــــرى	old garden named after a person	
Estanboli	es-tan-′bo-li	إسْتَنْبُـــولِـــى	variety of grape from Greece	
Eswed El Lil	′e-su-wed e-′lil	إسْـــــود الليـــــل	a black nocturnal snake	
Far	′far	فـــــــار	mouse	
Farasha	fa-′ra-shah	فَراشـــــــة	butterfly, moth	
Fark	′far-k	فَـــــــرْك	variety of almond. "rubbing"	
Faras El Dendi	fars el ′den-di	فَـــــرَس الـدِنْـــدِى	praying mantis. "Dendi's horse"	
Farsh	′far-sh	فَـــــــرْش	open flat area suitable for camping	
Farsh Deghaymat	′far-sh de-′ghe-mi-yat	فَـــرْش دِغَيْمـــات	place with broken rocks	
Farsh el Romana	′far-sh e-ro-′ma-na	فَـــرْش الـرُومّـانـــة	place of pomegranates	
Farsh Um Thilla	′far-sh um ′Thil-lah	فَـــرْش أم ثِلّـــــــة	place of *Zilla* plants	
FaSoulia	fa-′sou-li-ya	فاصُولِيـــــــا	haricot beans (*Phaseolus vulgaris*)	
FaTemi	′faT-me	فاطِمِـــــــى	variety of pear	
Fatta	′fat-ta	فَتّـــــــة	hard bread softened in liquid. "milk or meat broth"	
Feddan	fed-′daan	فِـــــدّان	area of land = 4200 m^2	
Falta	′fel-ta	فلتـــــــة	variety of pear	

Ferakh El Gebal	fe-ʹra-kh el ʹga-bal	فِـــراخ الجَبَـــل	chukar (*Alectoris chukar*). “mountain chicken”	
Fesiaia	fe-ʹsay-yah	فِسيـــــايـــة	*Blaps* beetle	
FeTeer	fe-ʹTeer	فِطِيـــــــــر	corn bread (i.e. maize bread)	
Filfil	ʹfil-fil	فـلفِـــــــــل	sweet pepper (*Capsicum*)	
Fitr	ʹfi-tr	فِتْـــــــــر	fingerwidth, used for measuring the age of an ibex. “small span”	
Fool	ʹfool	فُـــــــول	broad beans (*Vicia faba*)	
Gaat	ʹgaa-t	جَـــــات	hole made from stone	
Gaᶜda	ʹga-ᶜ-da	جَعْـــــــــدة	*Teucrium polium*	
Gabaar umuh wa abuh	ga-ʹbaar ʹum-u wa a-ʹbu	جَبّـــار أمُـــه وأبُـــوه	hoopoe (*Upupa epops*). “power of his mother and father”	
Gadath	ʹga-das	جَـــــــدَث	spiny milkvetch (*Astragalus echinus*)	
Gakhdab, or Shakhdab	gakh-ʹdab	جَخْـــــــدَب - شَخْدَب	grasshopper. “hidden in narrow places” (from Shakhna, ‘holes’)	
Gamᶜei	ʹgam-ᶜa-i	جَمْعِـــــــى	a variety name of various fruits	
Gargeir	ʹgar-gir	جَـرْجِيـــــــر	rocket (*Eruca sativa*)	
Gazama	ʹga-za-ma	جَـــزَمـــــــة	Sinai rosefinch (*Carpodacus synoicus*)	
Gazguz	gaz-ʹguz	جَـزجُـــــوز	warbler	
Gebal	ʹge-bel	جَبَـــــــل	mountain	
Gebal Abu Gida	ʹge-bel ʹa-bu ʹgi-da	جَبَـــل أبُـــو جِيـــدا	mountain with a dyke	
Gebal ᶜAbbas Pasha	ʹge-bel ᶜa-ʹbess ʹba-sha	جَبَـــل عَبّـــاس باشـــا	named after the ruler of Egypt, Abbas Pasha	
Gebal Abu Rugum	ʹge-bel ʹa-bu ru-ʹgum	جَبَـــل أبُـــو رُجُـــــوم	mountain with gravestone or tombstone or headstone	
Gebal Al AHmar	ʹge-bel ʹaH-mar	جَبَـــل الأحْمَـــــر	red mountain	
Gebal Al Asmar	ʹge-bel ʹas-mar	جَبَل الأسْمَر	black mountain	
Gebal El Bab	ʹge-bel el ʹbab	جَبَل الباب	doorway mountain	
Gebal Ensheil	ʹge-bel en-ʹshiel	جَبَل إنْشِيل	named after a person, Enshiel	
Gebal Katrin	ʹge-bel ka-ʹtriin	جَبَل كاثرين	Mt St Katherine	
Gebal Madsous	ʹge-bel mad-ʹsous	جَبَل مَدْسُوس	hidden (behind other mountains)	
Gebal Musa (Sinai)	ʹge-bel ʹmou-ssa	جَبَل مُوسىَ (جَبَل سَيْناء)	Moses’ mountain (Mt Sinai)	
Gebal Safsafa	ʹge-bel saf-ʹsaf-a	جَبَل سَفْسافا	willow mountain	
Gebal Serbal	ʹge-bel ʹser-bal	جَبَل سِرْبال	garment mountain	
Gebal Somra	ʹge-bel ʹsom-ra	جَبَل سُمْرة	black mountain	
Gebal Tarboosh	ʹge-bel tar-ʹboo-sh	جَبَـــل طرْبُـــوش	tarboosh-like mountain	
Gebal Um Loz	ʹge-bel um ʹloaz	جَبَل أم لُوز	mountain that provides almonds	
Gebal Um Shomar	ʹge-bel um ʹshow-mar	جَبَل أم شُومَر	named after a person, Shomar’s mother	

Gebaliya	ge-ba-ʹle-ya	جَبالية	people of the mountains	
GekheeS	ge-ʹkhee-S	جِخِيـــــص	lettuce (*Lactuca orientalis*)	
Gamam	ge-ʹmam	جَمـــــام	laughing (palm) dove (*Streptopelia senegalensis*)	
Genina	ge-ʹni-nat	جِنِينـــــة	garden	
Geninat El Dir	ge-ʹni-nat ed-ʹdir	جِنِينة الدير	the Monastery garden	
Geninat El NaSrani	ge-ʹni-nat el nas-ʹra-ni	جِنِينـــةالنَصْرانـــى	garden of the Christian	
GhameeSa	gha-ʹmee-Sa	غَمِيصـــــة	catmint (*Nepeta septemcrenata*)	
Ghaara	ʹghaa-ra	غـــارة	variety of plum	
GhaSSa	ʹghaS-Sa	غَصّـــة	Horehound (*Ballota undulata*)	
Ghezlan	ʹghes-lan	غِـــزْلان	dragonfly	
Ghorab	ʹgho-rab	غُـــراب	raven (*Corvus*)	
Go^{c}al	go-^{c}al	جُعَـــل	scarab beetle	
Gozet El Teeb	go-ʹzeit et-ʹTeeb	جُـوزة الطيـــب	nutmeg (*Myristica fragrans*)	
Habaq, Habag	ʹHa-baq, ʹHa-bag	حَبَـــق - حَبَـــج	mint (*Mentha longifolia*)	
Habet El Baraka	ʹHa-bet el-ʹba-ra-ka	حَبـــة البَرَكـــة	black cumin "*Nigella sativa*"	
Hadiq or Hadig	ʹHa-diq, ʹHa-dig	حـــادِق- حـادِج	not sweet. "a bit salty"	
Hafir	ʹHa-fir	حافِيـــر	rock salt	
Hagal	ʹHa-gal	حَجَـــل	sand partridge (*Ammoperdix heyi*). "to hop"	
Hagala	ʹHa-ga-la	حَجَلـــة	female sand partridge (*Ammoperdix heyi*).	
Hajar NaSrani-Hajar NoSrani	ʹHa-jar naS-ʹra-ni	حَجَر نَصْرانِى – حَجَر نُصْرانى	the rock of the Christian	
HamaaT	Ha-ʹmaa-T	حَمـــاط	wild fig (*Ficus palmata*)	
Hamam bari	ʹHa-mam ʹba-ri	حَمـــام بَـــرِّى	wild pigeon, rock dove (*Columba livia*)	
HameDei	Ha-me-ʹDa-yi	حامِضِـــى	"acidic", a variety of pomegranate	
Hanash	ʹHa-na-sh	حَنَـــش	actively hunting snakes	
HanDal, Hanzal	ʹHan-Dal, ʹHan-zal	حَنْـــضَل – حَنْظـــل	bitter apple (*Citrullus colocynthis*)	
Handaqooq	ʹHan-da-ʹqoo-q	حَنْـدَقُـــوق	*Globularia arabica*	
Hardoon	Har-ʹdoon	حَـــرْدُون	starred agama lizard (*Laudakia stellio*)	
Harf	ʹHar-f	حَـــرْف	cress (*Lepidium sativum*)	
Hargal	ʹHar-gal	حَرْجَـــل	milkweed (*Asclepias sinaica*)	
Harmal, Harmalaan	ʹHar-mal, Har-ma-ʹlaan	حَرْمَـــل – حَرْمَـــلان	rue (*Peganum harmala*)	
HaSa Lban	Ha-ʹSa L-ʹban	حَصَـــىَ لُبـــان	rosemary (*Rosmarinus officinalis*)	
Haya	ʹHa-ya	حَيّـــة	sit-and-wait snakes	

Heweit El Badan	He-ˈweit el-ˈba-dan	حِـويت البَـــــــدَن	plantain (*Plantago arabica*). “good for the body”	
Hinayda	hi-ˈnay-da	هِنَيْـــــــدة	*Varthemia montanum*	
Hodhod	ˈhod-hod	هُـــــدْهُـــــدْ	hoopoe (*Upupa epops*)	
Ingaas	in-ˈgaa-s	إنْجـــــــاس	variety of pear	
Israʾeli	is-raʾ-ˈi-li	إسْرائيلِـــــــى	a variety of pomegranate	
Kabir	ka-ˈbir	كَبِيـــــــر	large	
KhaDari	kha-ˈDa-ri	خَضَـــــــرى	“green”. applied to many green fruit varieties	
Kanbosh	khan-ˈbosh	كَنْبُـــــــوش	spider	
Kharob	kha-ˈrob	خَـــــــرُوب	carob (*Ceratonia siliqua*)	
Khas	ˈkhas	خَـــــــس	lettuce (*Lactuca sativum*)	
Khashaabei	kha-sha-ˈbai	خَشّـــــــابى	“woody”, a variety of pomegranate	
KhaT el thamara	ˈkhaT et-tha-ˈma-ra	خَـــط الثَمَـــــــرة	the Milky Way. “fruit line”	
Khermaᶜ	ˈkher-ma-ᶜa	خِرْمـــــــاع	mullein (*Verbascum sinaiticum*)	
Khezaama	khe-ˈzaa-ma	خِزامـــــــة	*Oligomeris linifolia*	
Khobeza	kho-ˈbe-zah	خُبَّيـــــــزة	hollyhock (*Alcea*)	
KhoDrei	kho-ˈDre-i	خُضْـــــــرى	a tobacco variety	
Khokh	ˈkhokh	خُـــــــوخ	peach (*Prunus persica*)	
Khosheer	kho-ˈsheer	خُشِيـــــــر	globe thistle (*Echinops*)	
Khozaim Bareya	kho-ˈzaim ba-ˈre-yah	خُزَيْـــم بَرِّيّـــــة	wild area	
Khring	ˈkhri-ng	خُرَيْـــــــج	small scorpion	
Klabeya	kla-ˈbe-yah	كِلابيـــــــة	a variety of pear	
Koasa	ˈko-a-sah	كُوســـــــة	courgette, squash	
KoHl	ˈkoH-l	كُحْـــــــل	black powder obtained from plants, used as an eyeliner to make eyes look beautiful	
Komethra	ko-ˈme-thraʾ	كُمَّثْـــــــرَىَ	pear (*Pyrus communis*)	
Korkum	kor-ˈkum	كُـــرْكُـــــم	saffron (*Crocus sativus*)	
Labwa	ˈlab-wa	لَبْـــــــوة	caracal (*Felis caracal*)	
Lamasridi	la-mas-ˈri-di	لَمَسْرِيـــــــدِى	isolated area	
Lamoon	la-ˈmoon	لَمُـــــــون	lemon (*Citrus limon*)	
Lebeykha	le-ˈbey-kha	لِبيخـــــــة	dish of mixed vegetables	
LoSeiq	lo-ˈSe-iq	لُصِيـــــــق	catchfly, campion (*Silene* spp)	
Loubayd	lou-ˈʿba-yed	لُوبَيْـــــــد	yellow gromwell (*Alkanna orientalis*)	
Loz	ˈloz	لُـــــــوز	almond (*Prunus amygdalus*)	
Lozi	ˈlo-zi	لُـــــــوزى	variety of apricot. “like-almond”	
Maawi	ˈmaa-wi	مـــــــاوى	variety of apricot. “watery”	

Ma^{c}naqi	Ma-^{c}a-′na-qi	مَعْنَقِـــــــى	variety of apple	
Mabeet	ma-′beet	مَبِيـــــــت	sleeping place	
Mabeet Klabeya	ma-′beet kla-′be-yah	مَبِيـــت كْلابِيـــة	pear tree camp site	
Mabeet Sakakreya	ma-′beet sa-ka-′kre-yah	مَبِيـــت سَكاكْرِيـــة	sweet pear camp site	
Mabeet Saqr	ma-′beet ′sa-qr	مَبِيـــت صَقْـــر	falcon camp site	
Ma^{c}areed	ma-^{c}a-′reed	مَعارِيـــــــد	broad barrier	
MaleH	′maal-H	مالِـــــح	“salty”. a variety of pomegranate	
MalHey	′mal-Ha-y	مالْحِـــــــى	salty	
Marwabba	′mar-wab-ba	مَرْوَبـــــــة	bag to shake milk for making yohgurt	
Mir	mi-′^{c}ir	مِـــــــر	tansy (*Tanacetum sinaicum*)	
Mishmish	′mish-mish	مِشْـــمِـــشْ	apricot (*Prunus armeniaca*)	
MleiH	m-′lee-H	مْلِيـــــــح	*Reaumuria hirtella*	
Molokhayia	mo-lo-′khay-ia	مَلُوخِيـــــــة	Egyptian spinach (*Corchorus olitorius*)	
Molaqan	mo-lu-′qan	مُلْقَـــــــن	“given”. i.e. vaccinated against scorpions	
Morur	mo-′rur	مُرُور	knapweed (*Centaurea aegyptiaca*)	
Msakar	m-′sa-kar	مْسَكَّـــــــر	variety of pomegranate. “sugary”	
MakhaDa	ma-′kha-Da	مَخَـــــــــضة	bag to shake milk for making butter	
Muzaina	mu-′zei-na	مُزَيْنـــــــة	tribe of Bedouin	
Nabi	′na-bi	نَبـــــــى	prophet	
Nabq	′nab-q	نَبْـــــــــق	fruit of *Zizyphus*	
NaHla	′naH-lah	نَحْلـــــــــة	general name for any bee	
Naja^{c}	′na-ja-^{c}	نَجَـــــــعْ	stork (*Ciconia*)	
Namla	′nam-lah	نَمْلـــــــة	ant	
Naqb	′naq-b	نَقْـــــــب	mountain pass	
Naqb El Hawa	′naq-bel-′ha-wa	نَقْـــــب الهَـــوا	pass of the winds, the main pilgrim route into the Ring Dyke	
Naqb Misaikha	′naq-b mi-′sai-khah	نَقْـــب مِسَيْخـــة	unpleasant path	
Naqb Um Thilla	′naq-b um ′sil-lah	نَقْـــب أم ثِلّـــة	pass with *Zilla*	
Ne^{c}maan	ne-^{c}a-′maan	نِعْمـــــــان	horned poppy (*Glaucium arabicum*)	
Ne^{c}na^{c}	′ne-^{c}a-na-^{c}	نِعْنـــــــــاع	spearmint (*Mentha spicata*)	
Nimr	′nim-r	نِمْـــــــــر	leopard (*Panthera pardus*)	
NoSret El Nimr	′noS-ret el ′nimr	نُصْـــــرة النِمْـــر	leopard trap	
Nuweiba^{c}	nu-′wey-ba-^{c}	نُويبَـــــــــع	town on Gulf of Aqaba	
QiT bari or Ot bari	′qiT ′ba-ri, ′ot ′ba-ri	قِـط بَـــرِّى - أط بَـــرِّى	wild cat (*Felis sylvestris*)	

Qarᶜ	′qar-ᶜa	قَـــــــرْع	squashes	
QaraS	qa-′raS	قَـــــــرَص	prune	
Qasr El Zaᶜtar	′qa-Sr el ′za-ᶜ-tar	قَصْـــر الزَعْتَـــــر	palace of oregano	
Qatoom	qa-′toom	قَتُـــــــوم	trumpeter finch (*Bucanetes githagineus*)	
QaySum	qay-′Suum	قَيْصُـــــــوم	fragrant milfoil (*Achillea fragrantissima*)	
Qerba	′qer-ba	قِرْبـــــــة	water bag used by Bedouin	
Qerfa	′qer-fa	قِرْفـــــــة	cinnamon (*Cinnamomum verum*)	
Qiyasi	qi-′ya-si	قِياسِـــــــى	variety of apple	
Qithaaʾ	qi-′thaaʾ	قِيثـــــــاء	courgette (*Cucurbita pepo*)	
QonfeZ	qon-′feZ	قُنْفِـــــــذ	desert hedgehog (*Paraechinus dorsalis*)	
Qordi	′qor-di	قُـــــرْدِى	*Ochradenus baccatus*	
Qoronfel	qo-′ron-fel	قُرُنْفِـــــل	cloves (*Syzygium aromaticum*)	
QorTom	qor-′Tom	قُرْطُـــــــم	woundwort (*Stachys aegyptiaca*)	
Raᶜaei	Ra-′ᶜa-ei	رَعـــــــايى	wagtail (*Motacilla*)	
Rakhama	ra-′kha-mah	رَخَمـــــــة	egyptian vulture (*Neophron percnopterus*)	
Ramadan	ra-ma-′dan	رَمَضـــــــان	fasting month for Muslims	
Ranana	ra-na-′nah	رَنانـــــــة	*Anthophora* bee	
Rashaad	ra-′shaad	رَشـــــــاد	cress (*Lepidium sativum*)	
Ratam	ra-′taam	رَتَـــــــم	white broom (*Retama raetam*)	
ReHebet Nada	re-′He-bet ′na-da	رَحيبـــة نَـــدَىَ	wide plain with dew in the morning	
Reheeden	re-′hee-den	رهِيـــــــدِن	desert lark (*Ammomanes deserti*)	
Rigla	′rig-la	رِجْلـــــــة	purslane (*Portulaca oleracea*)	
Roaka	ro-′wa-kah	رُوَكـــــــا	rocket (*Eruca sativa*)	
Roghl	′ro-ghul	رُغْـــــــل	saltbush (*Atriplex leucoclada*)	
Romaan	ro-′maan	رُمّـــــــان	pomegranate (*Punica granatum*)	
Rubᶜ	′ru-ba-ᶜ	رُبْـــــــع	clan or ‘quarter’, one of the subdivisions of the Gebaliya tribe	
Saᶜoud	sa-ᶜou-d	سَعـــــــوُد	ghee, clarified butter	
Sabaanikh	sa-′baa-nikh	سَبانِـــــــخ	spinach (*Spinacia oleracea*)	
Sabᶜei	sab-ᶜa-i	سَبْعِـــــــى	variety of fig	
Safargal	sa-′far-gal	سَفَرْجَـــــــل	quince (*Cydonia oblonga*)	
Sagheir	Sa-′ghi-r	صَغِيـــــــر	“small”, applied to many fruit varieties	
Sakakreya	sa-ka-′kre-yah	سَكاكرِيـــــــه	variety of pear	
Samgh	′Sam-gh	صَمْـــــــغ	a secretion from Acacia bark	
Saqr	′Saq-r	صَقْـــــــر	falcon	
SarSoor	Sar-′Soor	صَرْصُـــــــور	cockroach, grasshopper or cricket	

SarSoor El Mishmish	Sar-′Soor el-′mish-mish	صَرْصُـــور المِـشْمِشْ	field cricket (*Gryllus bimaculatus*). “apricot cricket”	
SarSoor El Qerba	Sar-′Soor el ′qer-ba	صَرْصُـــور القِرْبـــــة	house cricket (*Acheta domestica*). “water-bag cricket”	
Suwaadiya	sa-′waa-de-ya	سُوادِيـــــــة	tristram’s grackle (*Onychognathus tristramii*)	
SawalHa	Sa-′wal-Ha	صَوالحـــــــــة	a Bedouin tribe	
Sad Dawoud	′sed da-′woud	ســـــدْ داوُد	dam of the prophet Dawoud (David)	
Seyaal	se-′yaal	سَيـــــــــال	*Acacia* spp	
Shaami	′shaa-mi	شامِـــــــى	a tobacco variety	
Sha^{c}ari	sha-^{c}a-ri	شَعَـــــــرى	a variety of pomegranate	
Shalook, Shalooka	sha-′look, sha-′loo-kah	شَلّـــــــوك - شَلّوكـــــه	variety of plum	
Shebr	′sheb-r	شِبْـــــــــر	hand span (used for measuring the age of an ibex)	
SheiH	′shi-H	شِيـــــــــح	wormwood (*Artemisia*)	
Sheikh ^{c}Awaad	′shei-kh A^{c}-′waad	شِيـــــخ عـــــواد	place named after “A^{c}waad”	
Sheragi	she-′ra-gi	شِرَجـــــــــى	variety of fig	
Shitwani	she-to-′wa-ni	شِتْوانـــــــى	variety of pear	
Shinar	shi-′nar	شِنـــــــــار	chukar (*Alectoris chukar*)	
Shitwi	′shit-wi	شِتْـــــــــوى	variety of pear “wintery”	
Shobak	′sho-bak	شُوبَـــــــك	walnut (*Juglans regia*)	
Sidr	′sid-r	سِـــــــدْر	a town on the Gulf of Suez. ‘*Zizyphus*”	
SleHia	sle-′Hi-a	سِلِحْيـــــــا	stock (*Matthiola livida*)	
Sonono al Sakhr al abiaD	so-′no-no al ′Saa-khr al ab-i-′aD	سُنُـونُـو الصَخْـــر الأبْيَـض	rock martin (*Ptyoprogne fuligula*)	
Suez, El Suez	e-su-′wes	السُويس	a city at the southern end of the Suez Canal	
SunT	′sun-T	سُنْـــــط	*Acacia*	
Taba	′Ta-ba	طابا	a town on the Gulf of Aqaba	
Tabgh	′tab-gh	تَبْـــــغ	a tobacco variety	
TamaTem	Ta-ma-′Tem	طماطِـــــم	tomato (*Lycopersicon esculentum*)	
Tamr	′tam-r	تَمْـــــــر	palm (*Phoenix dactylifera*)	
TariD El Bo^{c}aran, TariD El Gamal	′Ta-riD el-bo-^{c}a-′raan, ′Ta-riD el-′ga-mal	طـــارد البُعْـــران طـــارد الجَمَـــل	camel spider (*Galeodes*). “expeller of camels”	
Tarfa	′Tar-fa	طرْفـــــــة	tamarisk (*Tamarix*)	
Teen	′teen	تِيـــــــــن	fig (*Ficus*)	
Teen bari	′teen ′be-ri	تِيـــــن بَـــــرِّى	wild fig (*Ficus carica*)	

Tel El ᶜAmarna	′tel el ᶜa-′mar-na	تَـــل العَمارْنَـــــة	a town of Ancient Egypt on the Nile	
Teytal	′tey-tal	تِيتَـــــــــــــل	ibex (*Capra ibex*)	
Teeba (Thebes)	′Tee-ba	طِيبِـــــــــــة	capital of Ancient Egypt, near Luxor	
Thoᶜban	tho-ᶜa-′ban	ثُعْبِـــــــــــان	snake	
TofaH	to-′fa-H	تُفّـــــــــــاح	apple (*Malus domestica*)	
Um Geneib	um ge-′neib	أُم جْنِيـــــــــــب	a small snake that jumps when attacking	
Um Qweiq	um qu-′wei-q	أُم قُويـــــــــــق	frightening owl, eagle owl	
Unani	u-′na-ni	يُونانِـــــــــــى	‘from Greece’, a variety of haricot bean	
Wabar	′wab-r	وَبَـــــــــــر	hyrax (*Procavia capensis*)	
Wadi	′wa-di	وادِى	valley	
Wadi Abu Tueeta	′wa-di ′a-bu tu-′ey-ta	وادِى أَبُو تُويتا	valley of the mulberry trees	
Wadi Abu Waleya	′wa-di ′a-bu wa-′le-yah	وادِى أَبُو وَلِية	narrow steep valley	
Wadi Agala	′wa-di ′a-ga-la	وادِى أجالـــــــــــة	(meaning unknown)	
Wadi Baghabigh	′wa-di ba-′ghare-begh	وادِى بَغابِـــــــــــغ	isolated distant valley	
Wadi BaHariya	′wa-di ba-Ha-′re-yah	وادِى بَحَرِيـــــــــــة	named after a person ‘BaHariya’	
Wadi Dahab	′wa-di da-′hab	وادِى دَهَـــــــــــب	valley of gold	
Wadi El Arbaeᶜin	′wa-di lar-baᶜ-′in	وادِى الأرْبعِيـــــــــــن	valley of the forty (martyrs)	
Wadi El Aᶜwag	′wa-di el-ᶜa-′wag	وادِى الأعْوَج	twisted valley	
Wadi El Bouqiya	′wa-di el bou-′qey-yah	وادِى البُوقِيـــــــــــة	valley of the horn blast	
Wadi El Freiᶜ	′wa-di el ′frai-ᶜ	وادِى الفْريـــــــــــع	branching valley	
Wadi El Lega	′wa-di el ′le-ga	وادِى اللِيجـــــــــــة	rocky valley	
Wadi El MaTahar	′wa-di el ′mat-har	وادِى المَطَّهَـــــــــــر	wadi where the children were circumcised (old name for Wadi Razana)	
Wadi El RaafeDein	′wa-di el ′raa-fe-′Deen	وادِى الرافِضيـــــــــــن	wadi of the people who refused	
Wadi El Shaq	′wa-di e-′shaq (′shag)	وادِى الشَـــــــــــق	valley of the gorge	
Wadi El Sig	′wa-di e-′seeg	وادِى السِيـــــــــــج	valley of twisted tracks	
Wadi El Tellᶜa	′wa-di et-′tel-ᶜah	وادِى التَلْعـــــــــــة	long valley, or valley of the hill	
Wadi El Tellᶜa El Kebira	′wa-di et-′tel-ᶜah el ka-′bi-rah	وادِى التَلْعـــة الكَبِيـــرة	the large narrow valley, or valley of the large hill	
Wadi El TofaHa	′wa-di e-to-′fa-Ha	وادِى التُفّاحـــــــــــة	valley of apples	
Wadi El Zaᶜtar	′wa-di za-ʳᶜ-tar	وادِى الزَعْتَـــــــــــر	valley of oregano	

Wadi El Zawateen	′wa-di za-wa-′teen	وادِى الزَواتِيـــــــن	valley of olives	
Wadi Ensheil	′wa-di en-′shiel	وادِى إنْشِيـــــــل	named after a person, Enshiel	
Wadi Eslaf	′wa-di e-′slaf	وادِى إسْـــــــلاف	valley of forefathers or ancestors	
Wadi Feiran	′wa-di fey-′ran	وادِى فِيـــــــران	valley of mice	
Wadi Gebal	′wa-di gi-′bal	وادِى جِبـــــــال	valley of mountains	
Wadi Gharaba	′wa-di ′gha-ra-ba	وادِى غَرَبـــــــة	western valley	
Wadi Hebran	′wa-di he-′bran	وادِى حِبْـــــــران	valley of wide land (the Bedouin explanation, but possibly means ‘valley of bishops’)	
Wadi ImleHa	′wa-di im-′le-Ha	وادِى إمْلِيحـــــــه	valley with salty stones	
Wadi Isla	′wa-di ′is-la	وادِى إسْـــــــلا	valley of the easy and lovely walk	
Wadi ITlaH	′wa-di-′Tla-H	وادِى إطْـــــــلاح	valley of fruit trees	
Wadi Kabrin	′wa-di kab-′rin	وادِى كابْرِيـــــــن	valley of ore-bearing rock	
Wadi Mandar	′wa-di ′man-dar	وادِى مَنْـــــــدَر	long wadi with many *Acacia*	
Wadi Me^{c}ar	′wa-di ′me-^{c}ar	وادِى مِيعَـــــــر	fallen wadi	
Wadi NaSb	′wa-di ′na-Seb	وادِى نَصَـــــــب	valley of set up or put up	
Wadi Noqra	′wa-di ′no-qra	وادِى نُقْـــــــرة	waterfall valley	
Wadi Razana	′wa-di ′ra-za-nah	وادِى رَزَنـــــــة	named after a family of the Awlad Sa^{c}id	
Wadi RemHan	′wa-di rem-′han	وادِى رِمْحـــــــان	valley of spears, named after the Nabaatiyiin (‘people of the plants’ - Nabateans) who made spears from pomegranate and eliosr (*Moringa*) trees. The Nabatean culture (capital city at Petra) lasted from 400 BC to 100 AD.	
Wadi Sa^{c}al	′wa-di sa-′^{c}al	وادِى سَعـــــــال	valley of coughing	
Wadi Saqr	′wa-di ′sa-qr	وادِى صَقْـــــــر	valley of the falcon	
Wadi Sheikh	′wa-di ′shei-kh	وادِى الشِيـــــــخ	valley of the old man (modified from Wadi El ShiH = *Artemisia*)	
Wadi Shreyj, or Shreyd	′wa-di ′shray-j	وادِى شْـــــــرِيج- وادِى شْـــــــرِيد	a small branch radiating from a much larger wadi	
Wadi Sidr	′wa-di ′sid-r	وادِى سِـــــــدْر	valley of *Zizyphus*	
Wadi Tinya	′wa-di ′Tin-yah	وادِى طِينِيّـــــــة	valley of muddy and fertile soil	
Wadi Tobouq	′wa-di To-′bouq	وادِى طُبُـــــــوق	valley surrounded closely by many mountains	
Wadi Watir	′wa-di wa-′tir	وادِى وَتِيـــــــر	valley of uniformity	
WaHashi	wa-′Ha-shi	وَحَشِـــــــى	wild	
Ward Bari	′ward ′ba-ri	وَرْد بَـــــــرِّى	wild rose (*Rosa arabica*)	
Widaan El Homar	wi-′daan el-′Ho-mar	ودان الحُمـــــــار	mullein (*Verbascum sinaiticum*). “donkey’s ears”	
Wideina	wi-′dei-na	ودِينـــــــة	spurge (*Euphorbia peplus*)	
Woraqa	wo-′ra-qa	وُرّاقـــــــة	*Fagonia mollis*. “with leaves”	

Yamam	ye-′mam	يَمـــــــــام	laughing (palm) dove (*Streptopelia senegalensis*)	
Za^{c}tar	za-^{rc}-tar	زَعْتَـــــــــر	oregano (*Oreganum syriacum*)	
Zagat	′za-gat	زجَـــــــــت	*Poecilocerus* grasshopper	
ZagoaH	za-′go-ah	زَجُـــــــوح	toothwort (*Deverra tortuosa*)	
Zanzabeil	zan-za-′beil	زَنْـــزَبِيـــــــل	rosemary (*Rosmarinus officinalis*). Not originally a Bedouin word, but from Greek	
Zaitun	zey-′tun	زَيْتُـــــــــون	olives (*Olea europaea*)	
Thilla, Zilla	′thi-lah, ′zi-lah	ثِـــــلة	*Zilla spinosa*	
ZlonbeT	zlon-′beT	زلْوئبِيـــــــط	a large green variety of olive	
Zora	′zo-rah	ذُرَة	maize (*Zea mays*)	

Appendix VII: Arabic transliteration and prounciation

There are a number of difficulties in transliterating Arabic words into English. Arabic has letters which do not occur in English. Arabic script usually omits vowels, and many Arabic vowel sounds are in any case intermediate between English ones. Finally, Bedouin pronounce words differently from Egyptians, and there is also some variation among individuals in pronunciation. For example, the definite article 'the' in Arabic (ال) is transliterated either El or Al because the sound is sometimes more like an 'E' and sometimes more like 'A'. All of these make transliterations highly variable, even by the same person on different occasions.

We describe below how we have standardized some of these difficulties. In the tables above we have tried to aid pronunciation by showing where the stress falls, inserting the symbol ′ (an acute accent) **before** the stressed syllable. Take care to distinguish between this stress indicator and the apostrophe ('), used here to indicate a glottal stop (hamza).

Arabic letter	Arabic name	English	Pronunciation
غ	ghayn	gh	this letter is rather like the French 'r', a rolled 'r' sound pronounced in the throat rather than the mouth.
ع	ayn	ᶜ	this letter is unique to Arabic, occurring in no other language in the world. It is like an 'a' voiced with the throat.
ب	baa'	b	there is no letter 'p' in Arabic, even though many words are traditionally transliterated with either one or the other. Arabic speakers find the distinction between 'b' and 'p' very difficult
خ	kha	kh	transliterated by 'kh', this sound is similar to the Scottish sound of 'ch' in 'loch', and to the German consonant 'ch'.
ء	hamza	'	usually is associated with 'a', this letter is a glottal stop just like the way Londoners say 'it' without pronouncing the 't' but making a stop in the throat before the next word.
آ	long vowels		transliterated by double letters, such as 'aa', or diphthongs such as 'ei' or 'ou'
ق ، ك	kaaf, qaaf	k & q	There are two 'k' sounds in Arabic, often hard to distinguish when they are at the ends of words. A strong 'k' is the letter **qaaf**, pronounced like 'calf' but coming from the throat: we transliterate it as 'q'. Note that it lengthens the subsequent vowel. The normal 'k' is **kaaf**, pronounced 'kairf', with the 'k' just as the english 'k': we transliterate it as 'k'. To add to the confusion, in colloquial Egyptian Arabic, qaaf is usually omitted from pronunciation altogether, replaced by a glottal stop.
ج	geem	g	This letter is pronounced as an English 'j' sound by almost all arabic speakers including the Gebaliya and other Bedouin. However, Egyptians pronounce it as a hard 'g' (as in 'get'). This creates difficulties!
ية ، يا	'ia' endings	various	This ending in Arabic we transliterate by 'ia', 'iya' or 'eya' depending on the way in which it is pronounced, so that a non-arabic speaker can approximate the correct arabic sound.

ض ، د	daal & Daad	d & D	Arabic has two letters for the ‘d’ sound in English. The equivalent for the english letter is ‘d’; they have a more emphatic ‘strong d’, which we transliterate as ‘D’, pronounced further back in the mouth. Note that ‘D’ lengthens the subsequent vowel. Unfortunately place names in English without capital letters at the beginning look decidedly odd, and hence reluctantly we have used capitals in these cases, regardless of the correct arabic letter.
ص ، س	sa & Saad	s & S	Arabic has two letters for the ‘s’ sound in English. The equivalent for the english letter is ‘s’; they have a more emphatic, more sibilant ‘strong s’, which we transliterate as ‘S’, pronounced further back in the mouth. Note that ‘S’ lengthens the subsequent vowel.
ط ، ت	taa’ & Taa’	t & T	Arabic has two letters for the ‘t’ sound in English. The equivalent for the english letter is ‘t’; they have a more emphatic ‘strong t’, which we transliterate as ‘T’, pronounced further back in the mouth. Note that ‘T’ lengthens the subsequent vowel.
ث	tha’	unvoiced ‘th’	this letter is ‘th’, and is pronounced as in ‘thin’, not as in ‘the’. Colloquial Egyptian usually pronounces it as ‘s’.
ذ	thaal	voiced ‘th’	this letter is ‘th’, pronounced as in ‘the’, not as in ‘thin’.
ظ ، ز	zaa & Zaa’	z & emphatic voiced ‘th’	Arabic has two letters where we have used the letter ‘z’ in the english transliteration. A small ‘z’ is used for the equivalent sound ‘z’ in English. A capital ‘Z’ is used for the emphatic ‘th’ sound in Arabic, pronounced as in ‘the’ (not as in ‘thin’). Colloquial Egyptian varies in the way this letter is pronounced: as ‘d’, ‘t’, or voiced ‘th’. Note that ‘Z’ lengthens the subsequent vowel.
ح ، هـ	ha & Haa	h & H	Arabic has two letters for the ‘h’ sound in English. The equivalent for the english letter is ‘h’; they have a more emphatic ‘strong h’, which we transliterate as ‘H’, which is more pronounced, with greater aspiration. Note that ‘H’ lengthens the subsequent vowel.

Further reading

The main sources of information in the literature about the Gebaliya Bedouin are the papers by Perevolotsky (1981), Perevolotsky et al (1989) and Rabinowitz (1985), and the book by Hobbs (1995). Some of the background information about the vegetables and fruits was obtained from Vaughan & Geissler (1997) and Davidson (1999). Plant names follow Mabberley (1990).

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Samy Zalat is an academic biologist at Suez Canal University in Egypt. He was the first biologist to work in Sinai after its return to Egypt in 1979, and specializes in the fauna of the southern mountain massif, in particular on the taxonomy of wasps, and in insect-plant interactions in the wadis. He was awarded the 2002 Egyptian National Prize in Biology for his work.

Francis Gilbert is an academic biologist at Nottingham University in the UK. He specializes in evolutionary ecology, the biology of hoverflies, and statistical approaches to ecology.

With British Council funding these two have worked together in Sinai for many years, organizing academic exchange programmes for students, researchers and academics from Egypt, the UK and Europe. This collaboration has led to many publications, the creation of the Egyptian-British Biological Society with its peer-reviewed journals, and continues with the BioMAP project (http//:www.biomapegypt.org)

About the book

The Gebaliya Bedouin in the mountain massif of South Sinai, enclosed within the St Katherine Protectorate in an area now declared as a World Heritage Site. St Katherine is one of the world's most important protected areas for its special historical, cultural, religious and environmental heritage.

The Gebaliya have a unique history, and their intimate relationship with their harsh environment is the subject of this book. In the arid, rocky landscape within the great Ring Dyke, they have created their own orchard agriculture, growing fruit and vegetables in irrigated walled gardens.

Joseph Hobbs wrote that the "Gebaliya orchard is a paradise", and we concur. This book introduces (from their own observations) the gardens and the unique culture and heritage of the Gebaliya, the vegetables and fruits they grow, and the mammals, birds, lizards, insects and other invertebrates associated with their gardens and environment. The book is fully illustrated with photos and the unique paintings of Ahmed Gheith.