



## Geodiversity and Geotourism of Egypt: Siwa as an aspiring geopark

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### MINERALOGICAL / PETROGRAPHIC DIVERSITY

- bedrock geology
- superficial geology
- fossil evidence

### PALAEONTOLOGICAL DIVERSITY

- earth history
- evolution

## GEODIVERSITY

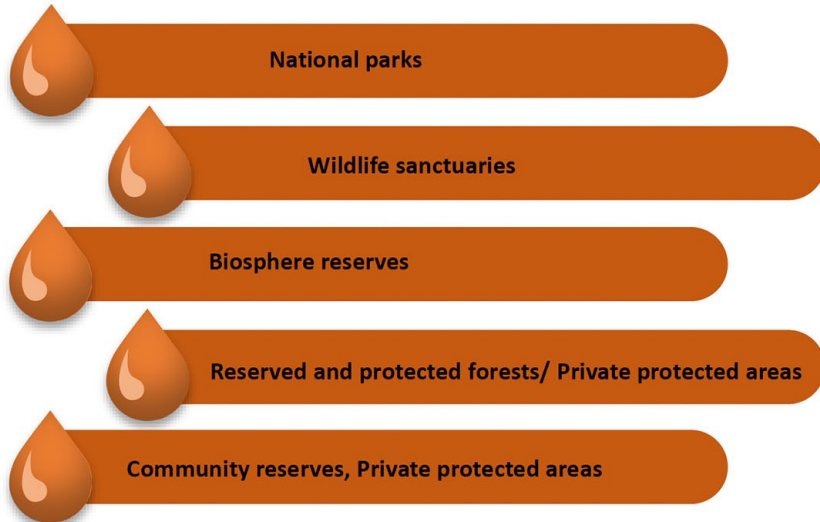
### STRUCTURAL AND TECTONIC DIVERSITY

- continental evolution
- structural history
- regional and local structure

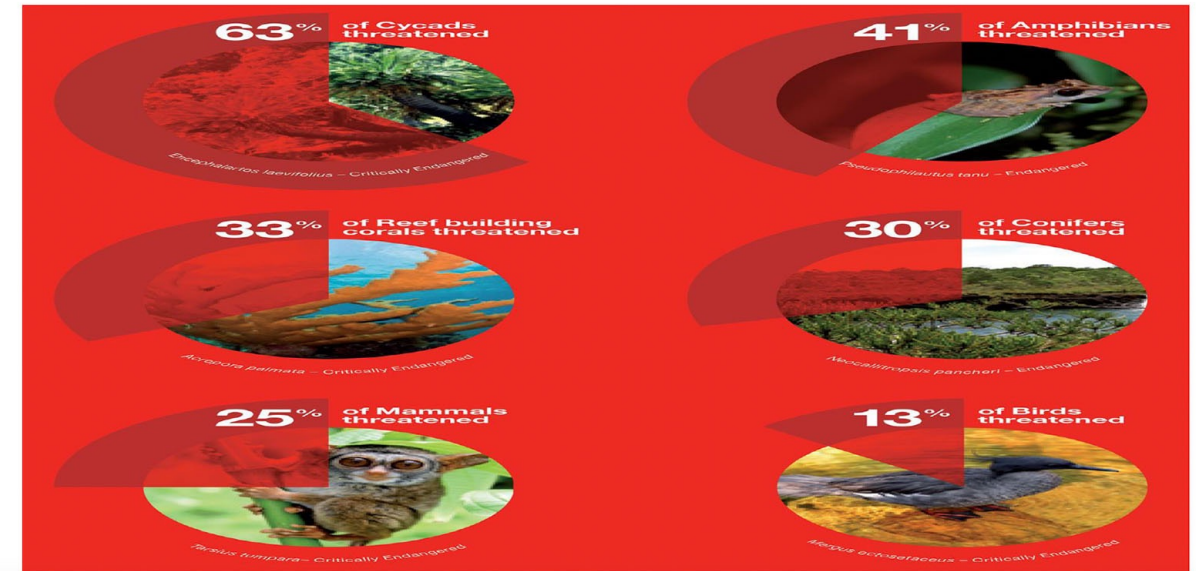
### GEOMORPHOLOGICAL AND PEDOLOGICAL DIVERSITY

- geological inheritance
- landform history
- landform and soil patterns
- landscape sensitivity to change

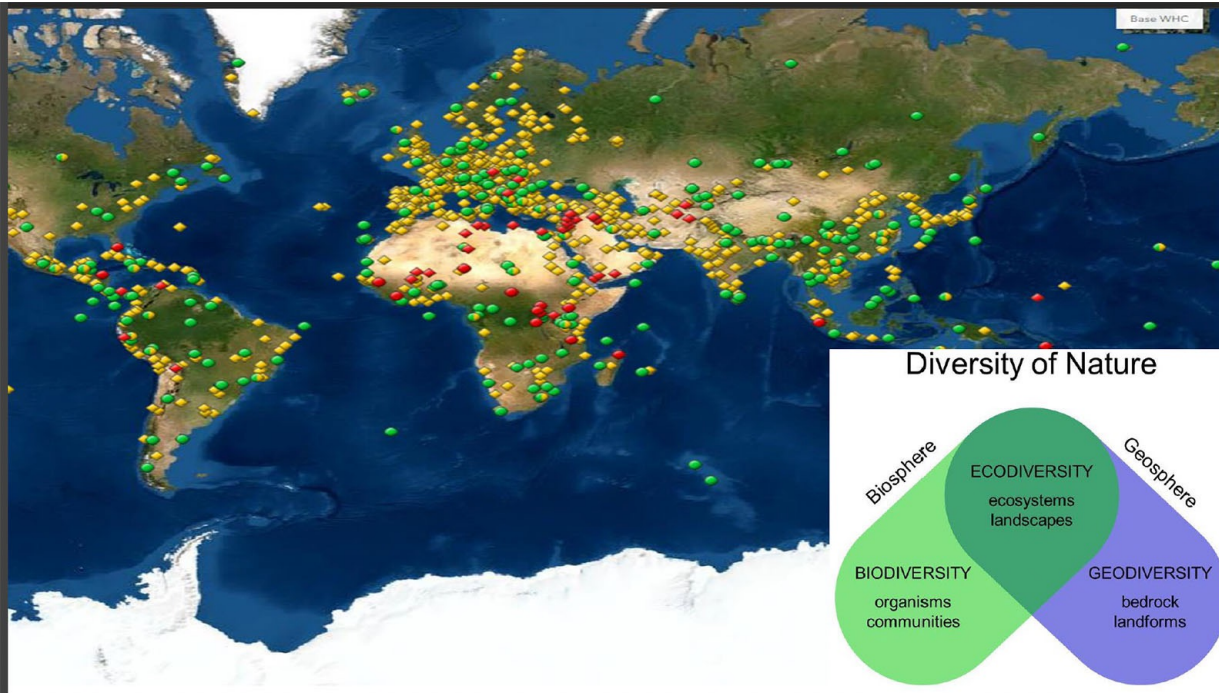
## Protected areas



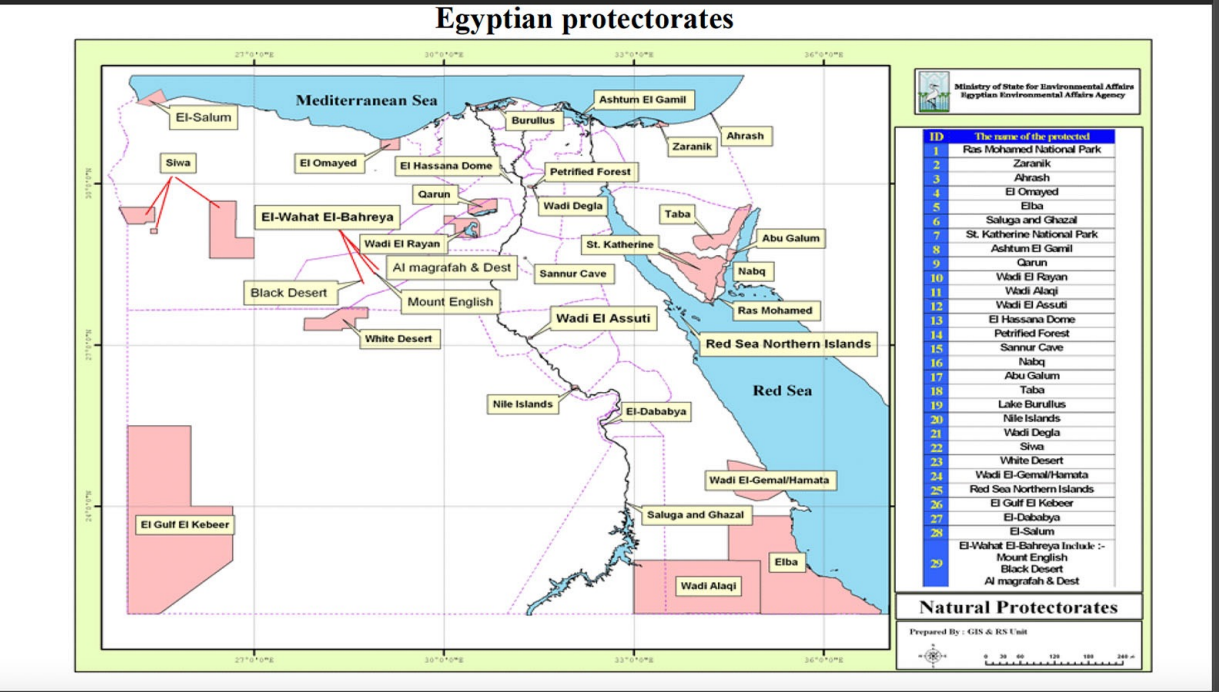
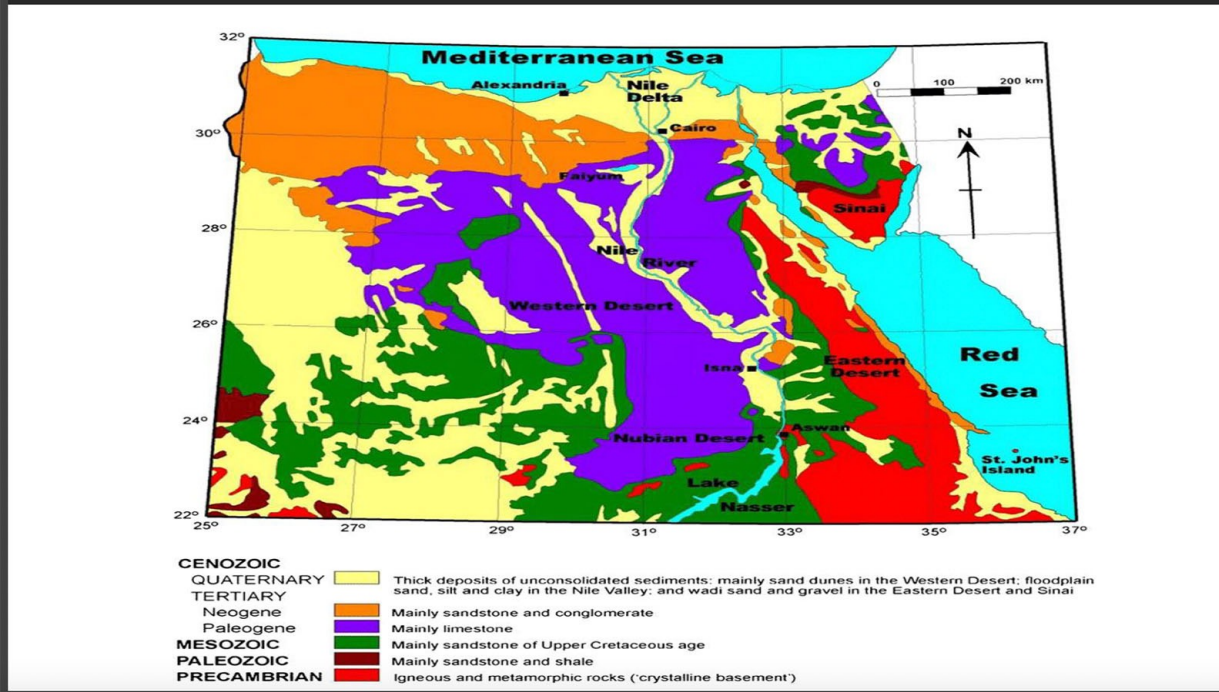
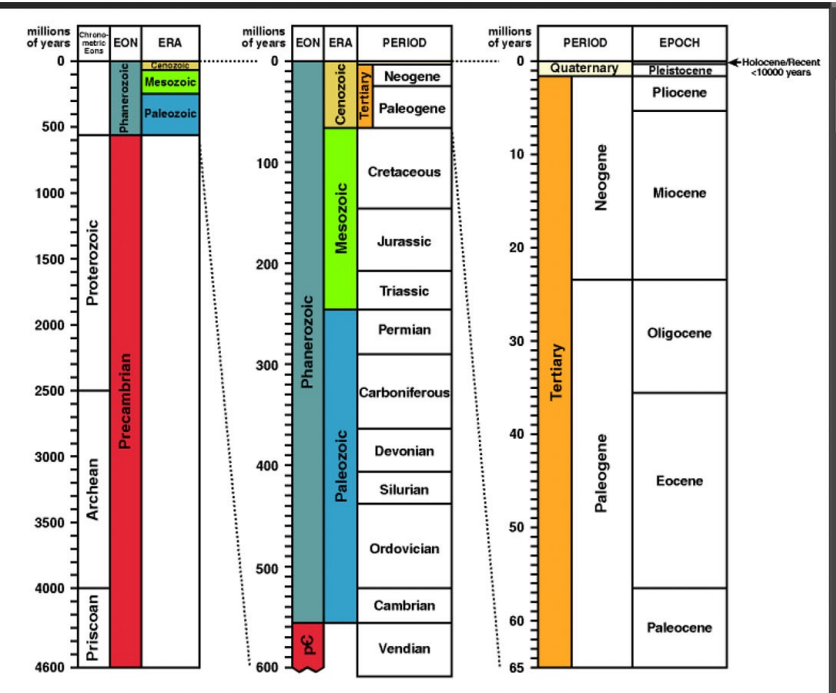
## IUCN Red List of Threatened Species







The geodiversity of Egypt ranging from Archaean - early Proterozoic times onwards till Holocene .





Protectorates declared in the framework of Law 102 of year 1983

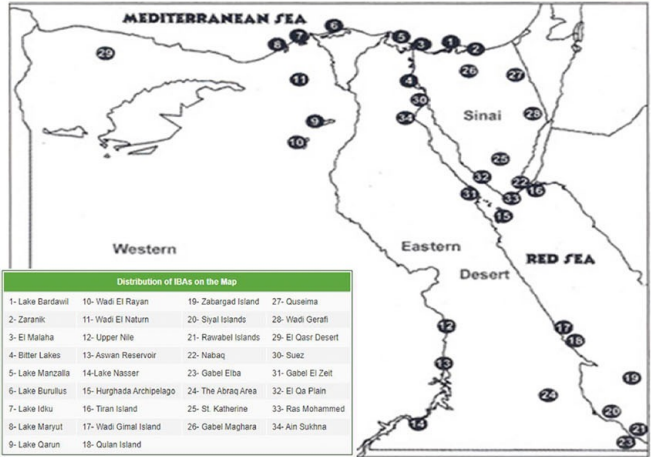
Protectorates Name	Declaration	Area (km²)	Governorate	Coordinates
Ras Muhammad National Park	1983	850	South Sinai	27.7222°N 34.2539°E
Azzaraniq Protectorate near Arish	1985	230	North Sinai	31°06'00"N 33°26'31"E
Azzaraniq Protectorate near Arish	1985	230	North Sinai	31°06'00"N 33°26'31"E
Ahrash Protectorate near Rafah	1985	8	North Sinai	31°17'31"N 34°13'13"E
el-Omayed Protectorate near Alamin	1986	700	Matrouh Governorate	30°49'05"N 29°09'44"E
Gebel Elba National Park	1986	35600	Red Sea Governorate	22°11'16"N 36°22'14"E
Saluga and Ghazal Protectorate	1986	0.5	Aswan	24°05'37"N 32°53'13"E
Santa Katrine National Park	1988	5750	South Sinai	28°33'20"N 33°58'34"E

Protectorates Name	Declaration	Area (km²)	Governorate	Coordinates
Ashtum El Gamil Protectorate	1988	180	Port Said	31°15'35"N 32°09'34"E
Lake Qarun Protectorate	1989	250	Fayoum	29°27'13"N 30°34'51"E
Wadi Elrayan Protectorate	1989	1225	Fayoum	29°08'52"N 30°23'33"E
Wadi Allaqi Protectorate	1989	30000	Aswan	20°20'N 32°40'E
Wadi el-Assuti Protectorate	1989	35	Assuit	27°12'44"N 31°20'21"E
El Hassana Dome Protectorate	1989	1	Giza	30°01'38"N 31°03'44"E
Petrified Forest Protectorate	1989	7	Cairo	29°58'49"N 31°27'27"E
Sannur Valley Cave Protectorate	1992	12	Beni Suef	28°37'23"N 31°17'11"E

Protectorates Name	Declaration	Area (km²)	Governorate	Coordinates
Nabaq Protectorate	1992	600	South Sinai	28°16'41"N 34°22'48"E
Abu Galum Protectorate near Taba	1992	500	South Sinai	28°52'25"N 34°27'31"E
Taba Protectorate	1998	3595	South Sinai	29°30'N 34°53'E
Lake Burullus Protectorate	1998	460	Kafr El Sheikh	31°29'N 30°52'E
Nile Islands Protectorates	1998	160	All Governorates on the Nile	Example: 29°59'03"N 31°13'35"E
Wadi Degla Protectorate	1999	60	Cairo	29°57'34"N 31°19'54"E
Siwa Oasis	2002	7800	Matrouh Governorate	29°11'N 25°33'E
White Desert	2002	3010	New Valley Governorate	27°03'30"N 27°58'12"E
Wadi el-Gemal near Hamata	2003	7450	Red Sea Governorate	24°17'10"N 35°22'45"E



1 رأس محمد	9 الجبل الكبير	17 جزر نهر النيل	25 الغابة المتحجرة
2 نبق	10 نيزك جبل كامل	18 سالوجا وغزال	26 وادي دجلة
3 أبو جالوم	11 جبل عنبه	19 وادي العناقي	27 شبة الحسنة
4 صلبا	12 الجزر الشمالية	20 وادي الريان	28 أشقثوم الجميل
5 سنت كاترين	13 وادي الجمال	21 بحيرة قارون	29 لبرس
6 الزنابق	14 اسلوم	22 كهف وادي سنور	30 الواحات البحرية
7 الدرش	15 سيوه	23 وادي السيهوتي	
8 الصدرات بالبرشاء	16 العميد الطبيعية	24 ادبابية	



Distribution of NAs on the Map			
1- Lake Bardawil	10- Wadi El Natun	19- Zanziged Island	27- Quseima
2- Zaranik	11- Wadi El Natun	20- Siyat Islands	28- Wadi Gerat
3- El Malaha	12- Upper Nile	21- Raurabel Islands	29- El Qass Desert
4- Bitter Lakes	13- Aswan Reservoir	22- Nabaq	30- Suez
5- Lake Marzalla	14- Lake Nasser	23- Gabel Elba	31- Gabel El Zeit
6- Lake Burullus	15- Hurgada Archipelago	24- The Abraq Area	32- El Qa Plain
7- Lake Idku	16- Tiran Island	25- St. Katherine	33- Ras Mohammed
8- Lake Maryut	17- Wadi Gimal Island	26- Gabel Maghara	34- Ain Sukhna
9- Lake Qarun	18- Qutian Island		



## St. Katherine Protectorate



## St. Katherine Protectorate

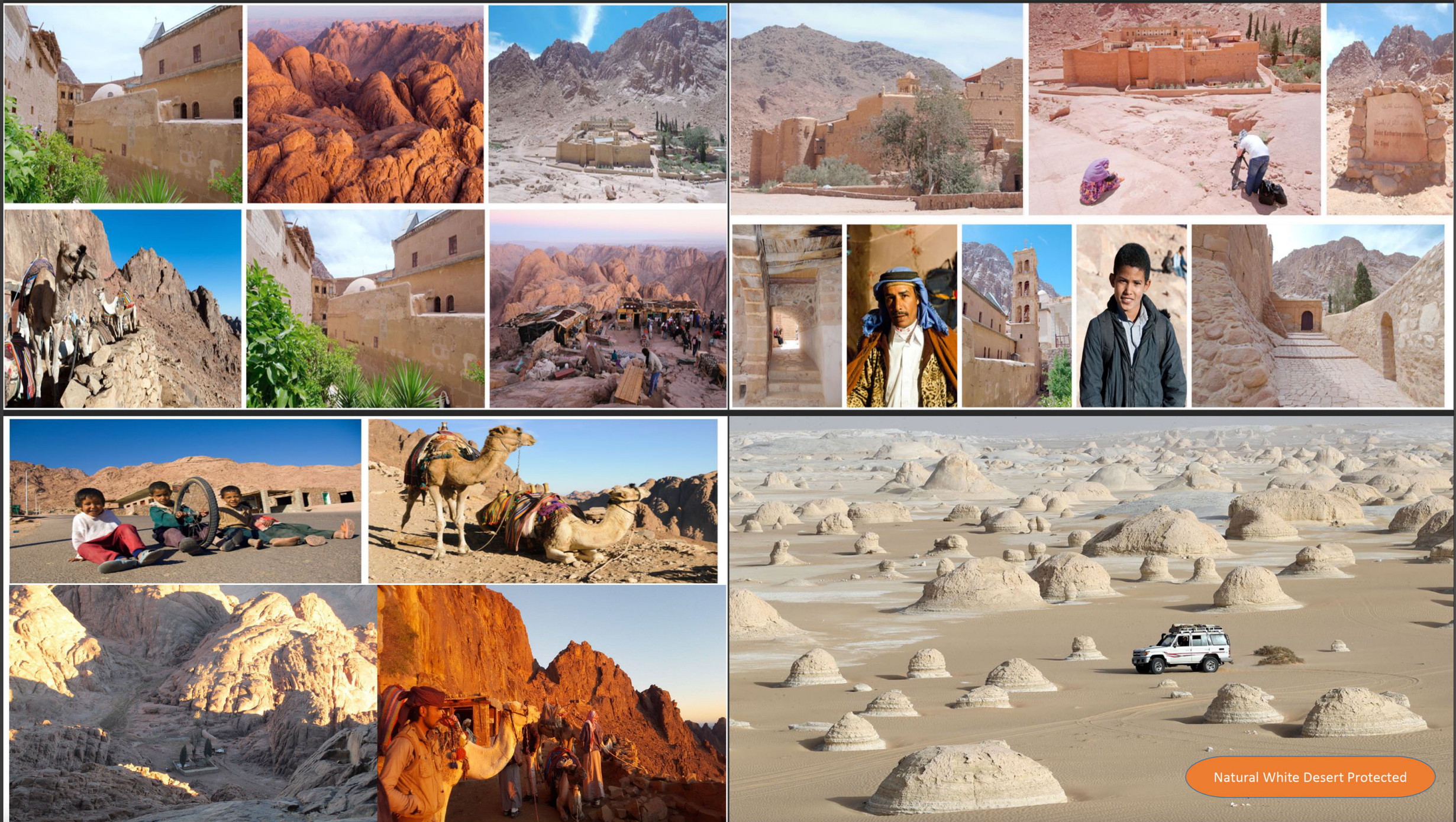
- a World Heritage Area was based on the cultural value of the monastery and its setting in the rugged landscape that inspired the early anchorites, including Mt Sinai, Mt St Catherine and the entire area encircled by the Precambrian circular volcanic dyke.
- High Mountain area of South Sinai, 4350 km<sup>2</sup> was designated a Protectorate in 1988 in recognition of the "area's conservation importance in terms of the geological formations, unique biological features and its internationally renowned religious, historical and cultural heritage".
- Bedouin character consistent with its management as a Protected Landscape.











Natural White Desert Protected



## Natural White Desert Protected Area in El Wady EL Gedid

**Date of Announcement:** 2002

**Area:** 3010 Km<sup>2</sup>

**Type:** Desert and landscape protected area

**Distance from Cairo:** 570 Km

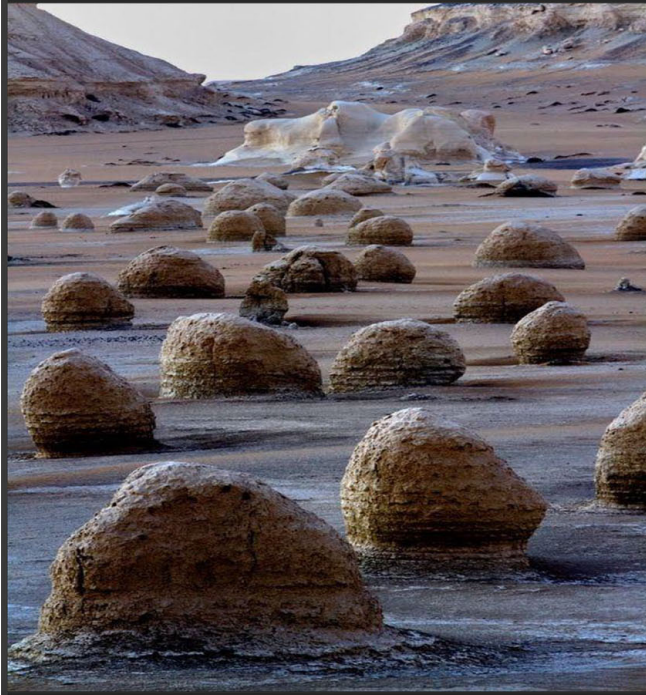
The importance of the white desert area is attributed to the fact that it is a unique model of the Karst phenomenon. It is an open museum for studying desert environments, geographical phenomena, fossils and wild life.

It has relics and tombs that date back to prehistory and include a group of rare tombs and caves remains of ancient mummies and carvings.

The area is distinguished with the beauty of the sand dunes. Geological formations of bright white limestone rocks and distinctive fossils.

The white desert area has a ground of white chalk where the geological formations are spread in the shape of snowy white chalk columns formed by the act of wind and sloppy hills, a matter which gives the area a unique nature and geological position.

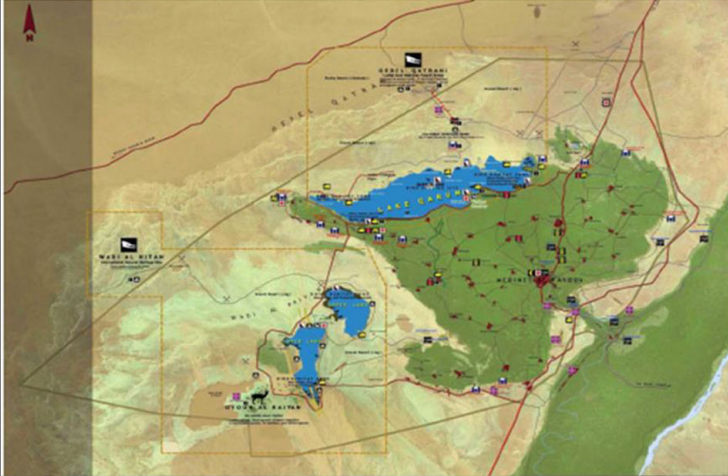
Al-Farafra fall crosses the white chalk layer which is a part of an obviously spread rocky unit known as the chalk unit.





## Qatrani area

It contains superlative natural phenomena and locations of exceptional natural beauty and aesthetic importance within these geosites which are representing historic, cultural, Natural and Intangible cultural attractions.



## Important Quarries of the Qatrani area

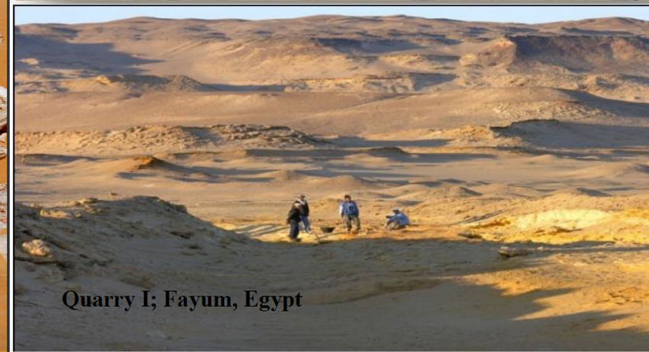
Birket Qarun 2; Fayum, Egypt



Quarry L-41; Fayum, Egypt



Quarry I; Fayum, Egypt



Quarry M; Fayum, Egypt







Location of the inspiring Geopark site and geological description



## Siwa Oasis

- is one of the areas rich with distinguished tourists attractions including monuments tourism, therapeutic tourism, safari tourism and desert tourism, due to its distinctive monuments area such as Amoun temple as well as the scriptures and paintings of kings offering sacrifice to Gods.
- The hall of crowning Alexander the Great, the Dead Mountain in Dakroul area, which has some ancient mummies and tombs from the Roman age, having a group of coins and old jewelry .
- There is also Deheba area which includes tombs engraved in the rocks from the Greek Roman era, and also Khamisa area including a group of tombs dating back to the Greek age.
- The biological variety of Siwa is characterized by the existence of more than 40 species of wild plants including medical, pastoral and other plants that help stabilize sand. Some of them have significant genetic origins, besides mimosa and Athl trees.
- Moreover, there are around 28 species of wild mammals, some of them are threatened with extinction like hyena, Egyptian deer, white deer, red fox and, in addition 32 reptiles and around 164 species of birds besides numerous invertebrates and insects.



Desert sand dunes - south Siwa

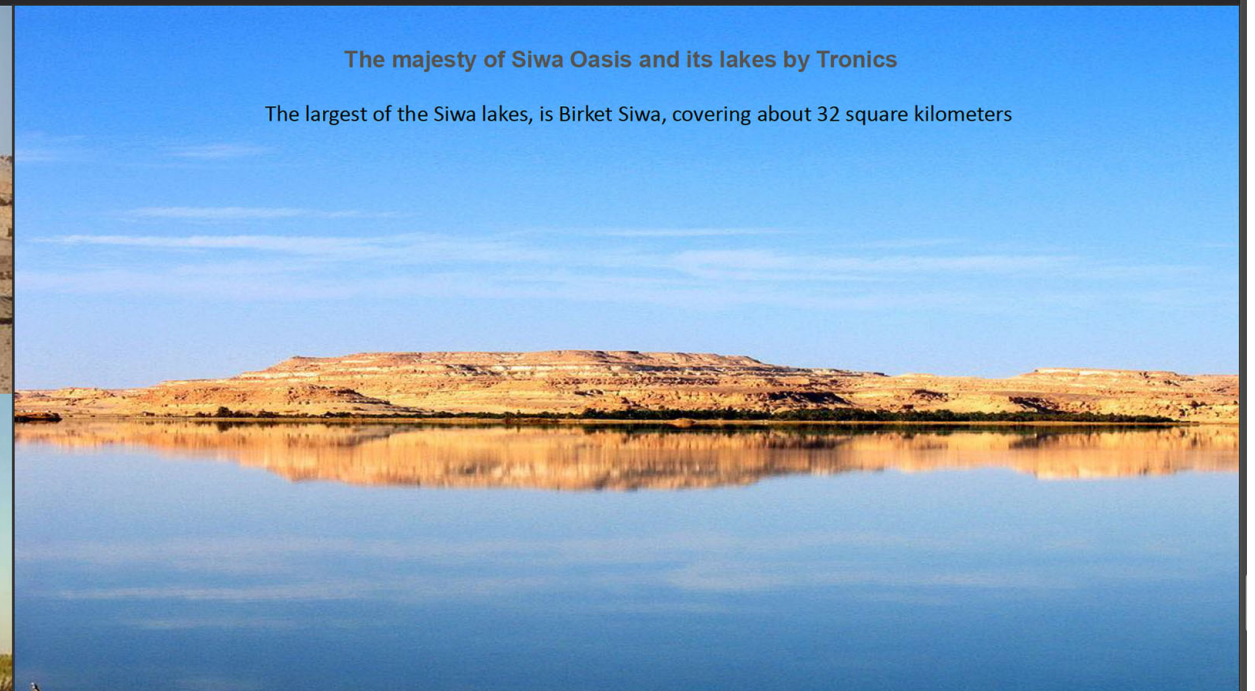


Gabal Hamra



## The majesty of Siwa Oasis and its lakes by Tronics

The largest of the Siwa lakes, is Birket Siwa, covering about 32 square kilometers



Sabkha at Siwa lake, Maraqi area



Gabal Dakrur



Gebel Dakrour (Dakrour Mountain)



Siwa Road





*The freshwater oasis in the middle of the Great Sea of Sand in the Western Desert*



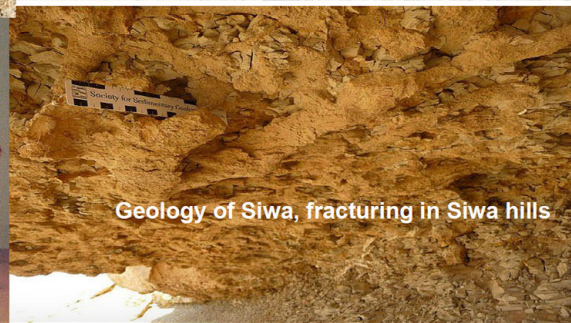
A number of fresh water springs run into salt water lakes, making the water mostly useless.  
The salt content of the saline lakes of Siwa rivals that of the Dead Sea in Jordan.  
They are so salty that the bottom of the lake is largely comprised of crystallized salt.

#### Outline of Birket Maraqui salt lake in the oasis of Siwa, Egypt

To the west is Birket al-Maraqi lake, which takes up about nine square kilometers.



crocodiles, turtle shells, bony fishes, shark and ray dentitions



Geology of Siwa, fracturing in Siwa hills



Siwa oasis, Egypt "Adrere Amellal Ecolodge hotel"





fortress-of Shali



Cleopatra's Spring



Bir Wahed

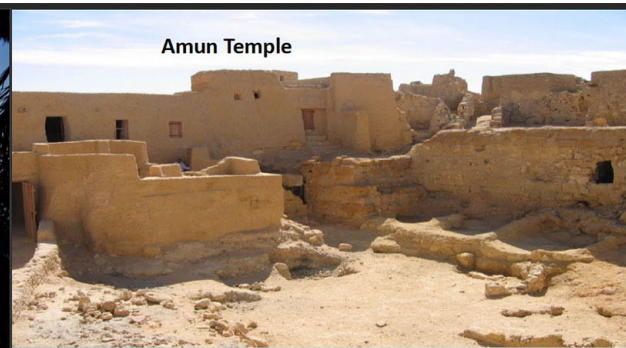




Fatnas Island



Amun Temple



Temple of the Oracle





Mosque at Aghurmi



## Biodiversity

- The Siwa Oasis is located in a very dry area with a continental climate.
- In June, the temperature rises to 43 ° C on average.
- The winter temperature drops to 3.6 ° C in January.
- around 28 species of wild mammals, some of which are threatened with extinction, such as the hyena, the **Egyptian deer**, the **white deer** and the **red fox**
- In addition to 32 types of reptiles and around 164 species of birds besides numerous invertebrates and insects.



Tibagagh/ Eastern Sector



Shaita / Western Sector



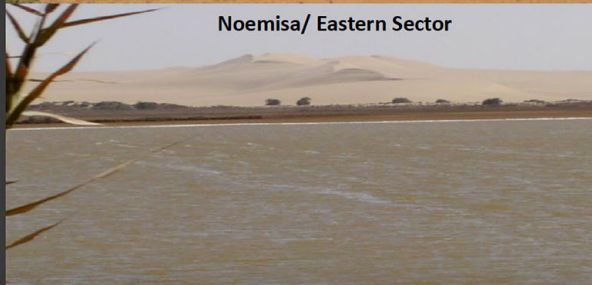
El Araj/ Eastern Sector



Bahrain / Eastern Sector



Noemisa/ Eastern Sector



jerba / Western Sector



Sutra/ Eastern Sector







Date palm : Freihi is the second most important clonal variety accounting for 20% of Siwa's date production (580 feddan).

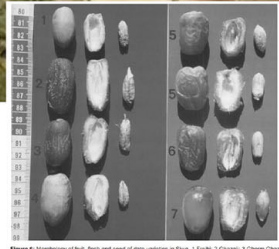


Figure 6. Morphology of fruit, seed and seed of date varieties in Siwa. 1. Freihi, 2. Ghazal, 3. Ghazal Ghazal, 4. Ghazal Ghazal, 5. Ghazal Ghazal, 6. Ghazal Ghazal, 7. Ghazal Ghazal, 8. Ghazal Ghazal, 9. Ghazal Ghazal, 10. Ghazal Ghazal.



Mud-brick houses in Shali



Geotourism & Ecotourism







## THE SUSTAINABLE DEVELOPMENT GOALS (SDGs)



national parks, wilderness areas, community conserved areas, nature reserves and so on are a mainstay of biodiversity conservation, while also contributing to people's livelihoods, particularly at the local level.

Protected areas are at the core of efforts towards conserving nature and the services it provides us food, clean water supply, medicines and protection from the impacts of natural disasters.

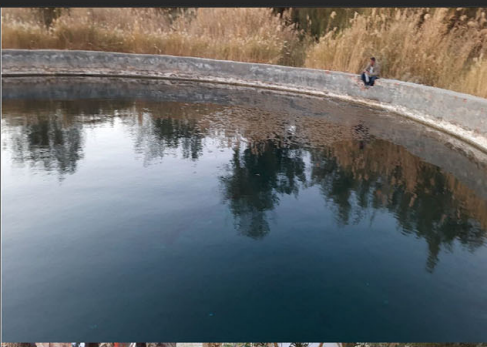
**Their role** in helping mitigate and adapt to climate change is also increasingly recognized; it has been estimated that the global network of protected areas stores at least 15% of terrestrial carbon.



Visit Siwa's famous eco-lodge Adrere Amellal







The Local eco tricycles for a tour



Great Sand Sea Safari



Rent a bike for transportation

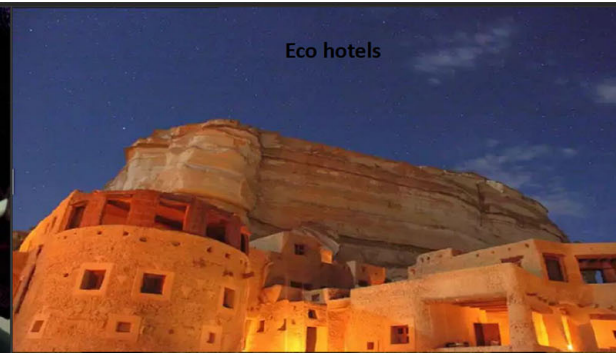




Medical tourism



Eco hotels



Museum of Siwan Traditions



Siwa House Museum

Located in a traditional Siwan house, the museum boasts traditional Siwan objects such as silver jewelry, music instruments, wedding costumes, baskets and ceramics. Inspired by a Canadian diplomat who feared that Siwan culture and its mud-brick houses would disappear someday; the small but interesting Siwa House Museum was built to preserve and display artifacts depicting the various aspects of the Siwan life.





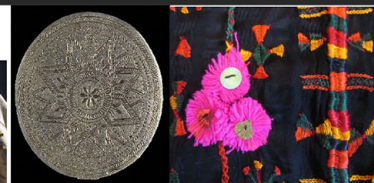
Girl wearing the traditional dress of Siwa Oasis grinding salt



Bijou Egyptian



Traditional & art craft







Tagellan Inteni



Figure 5: Tagellan inteni is a unique Siwan dish made from ground dates and wheat flour.



## Festivals



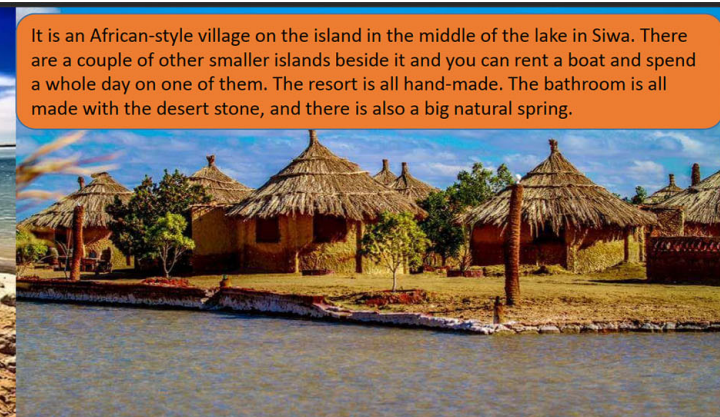
## ATTEND A SUFI DHIKR CIRCLE







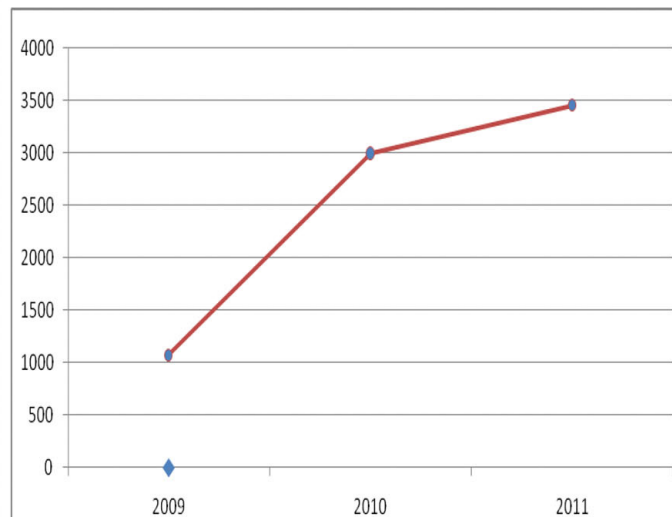
Taghaghien Touristic Island



It is an African-style village on the island in the middle of the lake in Siwa. There are a couple of other smaller islands beside it and you can rent a boat and spend a whole day on one of them. The resort is all hand-made. The bathroom is all made with the desert stone, and there is also a big natural spring.



Tour Map for the two areas



Education and research





