A CONCISE REPORT ON THE EXPEDITION TO THE GILF KEBIR NATIONAL PARK

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NATURE CONSERVATION SECTOR
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Introduction. *This report summarizes the main findings and recommendations arising from the recent expedition to the recently declared protected area of Gilf Kebir. The formal protection of the area was the first step in the process of having it inscribed as a World Heritage Site*

The expedition was undertaken by the Nature Conservation Sector (NCS), of the Ministry of State for Environmental Affairs and its main purpose was to examine conservation issues in and around the Gilf Kebir National Park (GKNP) and to introduce appropriate conservation measures. The expedition involved representatives from various stakeholders and other concerned parties, such as local communities, desert guides, the Supreme Council for Antiquities, that are to be involved as partners in the future management

Ecological status. *Though hyper-arid, the GKNP contains a surprisingly diverse and important desert adapted fauna and flora typical of the Saharo–Arabian province. Although the overall biological diversity is low, its few tolerant elements make the components of a very fragile and sensitive ecosystem.*

The majority of habitats and the landscapes of the region still remain largely intact and largely pristine, though human impacts are highly localised at present they are growing. The expedition observed very little direct signs of deliberate human interference on the vegetation; the most often encountered includes disturbances such as car tracks, some cutting of trees and littering around places of interest and camp sites.

Priorities for Biodiversity Conservation. *From the floristic and faunal perspective, there are two areas of great importance within the region, which deserve and need protection: the wadis flowing north from Abu Ras Plateau (Hamra, Abd El Malik, Talh and other smaller unnamed wadis in the area) and the Egyptian portion of Gebel Ouenat including Karkur Talh and adjacent vicinity. From a conservation perspective the most significant resident mammals are the supremely arid-adapted Barbary Sheep or waddan (Ammotragus lervia) and the Dorcas and slender horned gazelles.*

Cultural status. *The Gilf Kebir National Park is particularly notable for the pre-historic artifacts that abound in the area; since the 1980's, more than 500 archaeological sites have been discovered and recorded; however it is evident that there are many sites that have yet to be documented These sites are testament to human adaptation to past climate change and some pre-historians believe it represents the area and environment from which the civilisation that eventually flowered along the Nile Valley first emerged. The Park also contains unquestionably one of the richest storehouses of prehistoric rock art in the world*

Contemporary history of the area is represented by Long Range Desert Group (LRDG) trucks and fuel depots from the Second World War, and the remains of travellers camp sites; all these testify to the area's recent past. They are important

memorials to the history of travel, exploration and warfare in the Western Desert and so should be properly conserved.

Priorities for cultural conservation. *The wide range and variety of prehistoric and historic sites - covering a time span from over 100,000 years until the recent past - will require individual forms of preservation and documentation, which must be developed on a case by case basis.*
Nowadays traces of human interference, vandalism or looting have become visible at many of these archaeological places.

Attention should particularly be directed to the rock art of the Gilf Kebir and the Jebel Ouenat, which has on the one hand a high scientific value and on the other hand an enormous attraction for future visitors of the Protected Area. The immediate need is for detailed conservation and site management plans for those important sites that are most at risk; this may include closing several sites to visitors such as Wadi Bakht or at Willmann's camp..

Major management issues. *Much of the Gilf Kebir NP is naturally protected through its remoteness and the steep escarpments, while extreme climatic conditions restrict periods when people can travel through the area. Even so the central concern for the GKNP is the extensive and growing impact of human activities in the area relating to desert tourism, hunting and smuggling.*

From observations made during this field survey, it was obvious that solid waste disposal, destruction of vegetation by careless driving and fire wood collection had the most serious negative impacts on the integrity of the ecosystems and the aesthetic values of the landscape. From the cultural and archaeological perspective the collection of Neolithic artefacts and driving over archaeological sites are the most significant and widespread issues though the increase in graffiti in sensitive sites is a growing problem.

Primary Causes. *It was the consensus of the expedition members that most of human impacts on the natural and cultural resources, and particularly the archaeological heritage, are a result of a lack of awareness of the importance of the heritage and correct behaviour by visitors, guides and drivers. This has serious consequences, as archaeological sites are being disturbed or looted before they are researched and the resilience of desert ecosystems are being compromised and the pristine desert environment is being degraded.*

There is also evidence that hunting takes place in the area and the impact of any hunting pressure on the reduced large mammal populations will be devastating. It is likely that most gazelles have disappeared due to hunting pressure

Visitor safety issues. *Besides general health and safety issues of travelling in a remote area there are mine fields scattered at several localities in the GKNP.*

Management approach.*The GKNP is a vast area that contains very diverse and scenic desert landscapes, containing highly adapted biodiversity elements and archaeological sites of global significance. Any management approach will have to be holistic in scope. The GKNP management plan will focus primarily on:*

1. *Landscape protection – i.e. controlled access and use to preserve the aesthetic qualities of one of the most scenic and diverse parts of the Western Desert.*
2. *Archaeological site management – i.e. the protection of all archaeological sites especially those of world significance.*
3. *Biodiversity conservation – i.e. the conservation of wildlife species, especially endangered mammals, and their habitats.*
4. *Visitor management and safety – i.e. ensuring visitors have enriching and safe experiences while mitigating any resulting impacts.*

There are no human settlements or other facilities inside or close to the GKNP and at present the NCS lacks adequate management resources in terms of staff and facilities. This presents the NCS with major challenges. It would anyway be impractical for NCS staff to be stationed in the GKNP so the conservation measures have to be implemented remotely and in cooperation with other legitimate "users". The management approach will be the concept of "mental fences" whereby the disciplined behaviour of guides, drivers and visitors will be the main control system. This "mental fence" approach will involve a number of measures including restricting access to certified and approved operators and guides, establishing a professional desert guide association, training programmes for drivers and camp managers, the development of visitor codes of conduct and instituting effective awareness and interpretative programmes.

The success of this initiative will be predicated on an Amendment to Article 5 of Law 4 of 1994.

PROPOSED IMMEDIATE MANAGEMENT INTERVENTIONS

Access restriction : *The upper reaches of Wadi Hamra and Wadi Abd El Malek should be physically closed to vehicular use to reduce disturbance and habitat degradation. Alternative vehicle access points will be located. Other hotspots for biodiversity need to be identified and properly zoned to reduce negative impacts from visitors.*

Monitoring: *An annual "health check" of the GKNP should be undertaken by a multidisciplinary team that would monitor the major sites visited and documented by the expedition members.*

Vehicle monitoring. *To ensure that tour groups do not enter restricted sites) in vehicles it has been suggested that all operator vehicles are fitted with a satellite tracking system. The feasibility of this option should be discussed with stakeholders.*

Management infrastructure needs*. The infrastructure needs will be primarily catered for outside the GKNP. The GKNP offices should be established in Dakhla which is the major departure point for the GKNP and these could be integrated with the proposed visitor centre. A program of spaces for the park offices and living quarters should be performed in consultation with the park staff.*

"Entrance" Gates. *The approach for proclaiming the park will be to construct three simple monuments or memorials at strategic locations in the park. These memorials will declare that the traveller is inside the GKNP.*

Public Awareness and Interpretive facilities. *Information and education are the most useful measures to protect the Gilf Kebir National Park. Before travelling into the National Park desert travellers should visit a Visitor Centre outside the Protected Area in Dahkla which should inform the guests about the main conservation topics and rules of conduct.*

Tour guides certification *It is proposed that tour operators and desert guides wishing to organize trips to the region should be jointly certified by the Ministries of Environment and Tourism, following a rigorous GKNP orientation program, which includes all the aspects of desert tourism. Only those certified and authorised guides and tour operators will be allowed access to the GKNP, and this would require the assistance of the Ministry of Defence which is responsible for issuing security clearances for GKNP trips.*

Code of conduct*. A code of behaviour will be developed that will function as an orientation guideline for guides, operators and officers as well as for their clients, who will be required to sign it.. It will contain some general rules and the main Park regulations; additional information will be provided through the training courses. The code should also inform visitors of GKNP regulations as well as Antiquities Law 117 of 1983 that mandates lengthy sentences and large fines for offenders or others who are complicit in the illegal collection or damage of artefacts.*

Implementation of plan. *To initiate the management recommendation it is proposed that a national workshop should be held (18th April) where all stakeholders and interested parties would be invited to discuss the management proposals for GKNP. The invitees to the workshop should include representatives from:*

1. *Ministries of Environment, Tourism and Defence*
2. *Supreme Council of Antiquities*
3. *Western Desert tour operators (free-lance and companies)*
4. *Italian Co-operation and other donors*
5. *UNDP*
6. *Expedition members including University of Cologne – Heinrich-Barth-Institute*
7. *Hans Seidel Foundation*
8. *Journalists*

1. INTRODUCTION

The following report summarizes the main findings and recommendations arising from the recent expedition to the recently declared protected area of Gilf Kebir. This report is a compilation of the initial reports prepared by members of the expedition and will be followed by more specific and detailed reports.

The expedition was undertaken by the Nature Conservation Sector (NCS), of the Ministry of State for Environmental Affairs, for the purpose of examining conservation issues in and around the Gilf Kebir and to elaborate a management plan framework for the area.

The Gilf Kebir has been provisionally proposed to be a National Park - GKNP. It is anticipated that the GKNP will eventually constitute part of a larger trans-boundary protected area shared with Libya and Sudan. Furthermore the Egyptian Government, together with the Heinrich-Barth-Institute of Cologne, is pursuing an initiative to have the Gebal Ouenat section of the GKNP inscribed as a UNESCO trans-boundary World Heritage Cultural Landscape shared by Egypt, Libya and Sudan.

The formal protection of the area was the first step in the process of having it inscribed as a World Heritage Site, but the development and implementation of a formal management plan is a pre-requisite for inscription on the list.

A recent UNESCO workshop on a "Strategy for the sustainable development of tourism in the Sahara" held in Khartoum (7^{th} and 8^{th} March 2007) has recommended that the Sudanese authorities declare the Sudanese section of Gebal Ouenat as a protected area and that the governments of Sudan, Libya and Egypt should accelerate the process for seeking the inscription of Gebal Ouenat as a World Heritage Site.

1.1 Purpose and specific objectives of the Expedition

The huge Gilf Kebir Protected area constitutes one of the world's largest conservation areas; furthermore it is located in a hyper-arid and very remote region where the nearest settlement of Dahkla is over 350 kilometers away (Figure 1). The conservation management of this area will present major challenges but at the same time it will provide an opportunity to explore innovative methods such as the desert operator and guide certification initiative that was recently started for the White Desert National Park in Egypt. This then may be an example for conservation areas elsewhere which requires similarly unique management arrangement to facilitate practical and effective management.

The expedition's main purpose was therefore to devise practical ways to introduce appropriate conservation measures for this new but remote National Park. This has involved documenting the various sites and features of conservation and visitor interest in the area and defining management issues and needs. A central interest of the expedition‘s members was on visitor management issues, in general, and specifically for those destinations of high visitor interest such as archaeological sites. The intention was to involve representatives from various stakeholders and

Figure 1. Map showing location and extent of Gilf Kebir National Park

concerned parties that would be involved as partners in the future management of the GKNP such as tour operators, the scientific community, security authorities and the local communities.

The expedition's objectives were as follows:

- Collect updated data and document the status of main resources in the PA
- Obtain an up to date picture of the main management issues facing the PA
- Elaborate preliminary management steps for the major issues
- Develop preliminary overall management setup for the PA (based on co-management concepts)
- Develop individual site plans for visitor management and interpretation at those locations of high visitor interest.
- Develop a schedule for practical activities to initiate management of the PA

1.3 Expedition members

The expedition was conducted by a multi-disciplinary team comprised of specialists in biodiversity, geology, protected area management, public awareness, pre-history and archaeology and informed local people. The team members were from the NCS and NCSCB project, the Supreme Council of Antiquities and the Heinrich-Barth-Institute (University of Cologne), Germany. In addition a number of Western Desert tour operators provided logistical support and guidance as well as offering co-management advice for the area. The team composition and task are described in Appendix 1 of this report.

1.4 Itinerary and route

The expedition started on the morning of 17th February from Dakhla Oases and arrived in Farafra in the early afternoon of the 4th March. The route of the expedition is shown in Figure 2 and a detailed itinerary is given in Appendix 2 of this report. The expedition covered approximately 2,050 kilometres off-road.

The NCSCB project[1] (which is financed under the Egyptian Italian Environmental Cooperation Program, Phase II) organized and funded the expedition on behalf of the NCS, in co-operation with the Heinrich-Barth-Insitute (HBI).

1.5 The Declaration of Gilf Kebir National Park

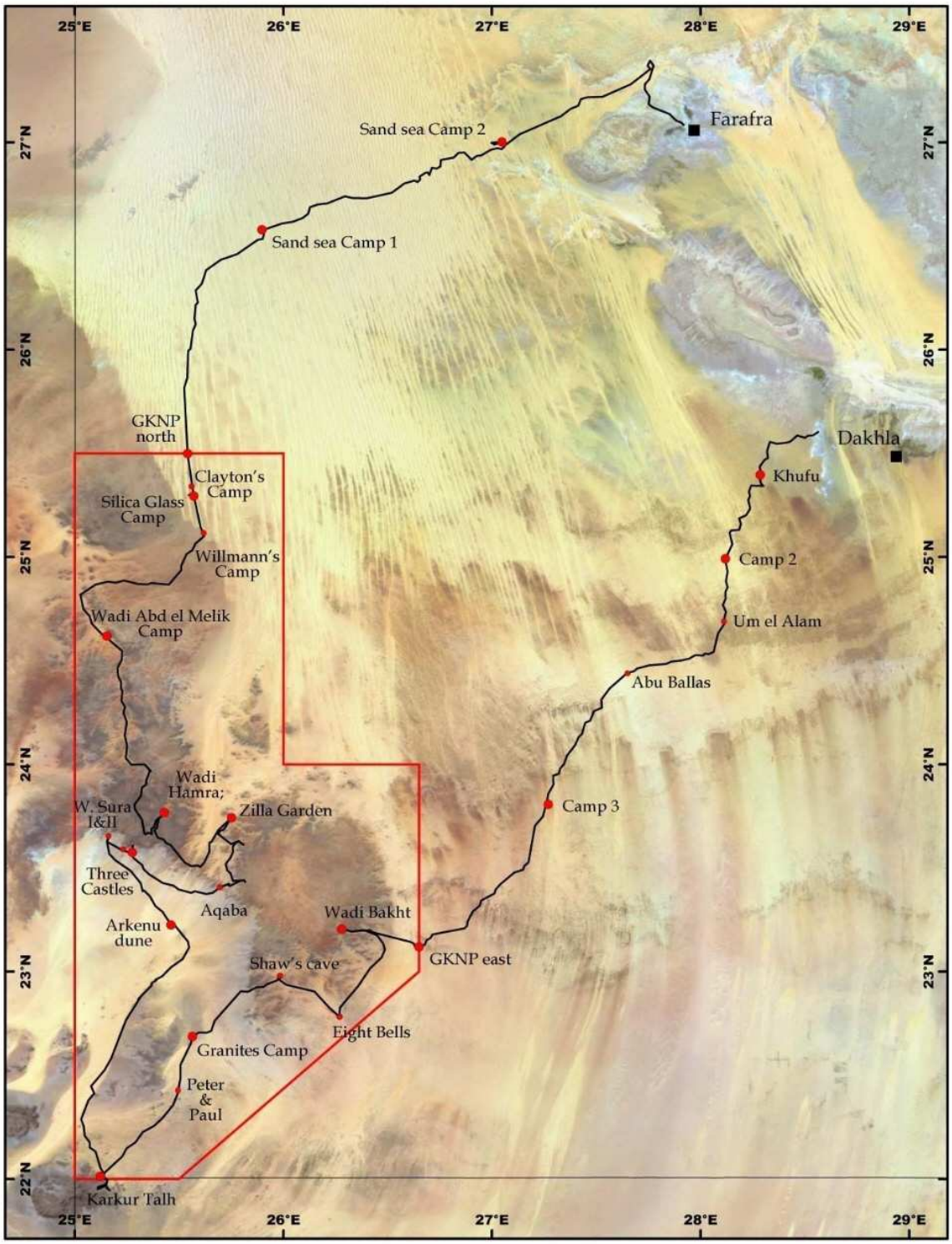
Although desert environments cover almost one fifth of the earth's surface they host very few National Parks or protected areas and most of these are situated in the less arid deserts of North America or Australia. In the Sahara, the world's largest expanse of desert, only 2.5% of its 8.6 million km^2 area is formally protected by parks or reserves, which belies its immense natural, cultural and spiritual values. In Egypt the Saharan desert is represented at its eastern extremity by the Protected Areas of Siwa (7,800 km^2), the White Desert (3,010 km^2) and Wadi Rayan (1,739km^2).

The most well known Saharan protected areas outside Egypt are the Banc d'Arguin NP (12,000 km^2) in Mauritania, the Aire-Ténéré NP (75,000 km^2) in northern Niger and the Ahaggar (45,000 km^2) and Tassili N'Ajjer (80,000 km^2) NPs in Algeria. Most of these areas are not readily accessible. Over the last 10 years there have been a number of proposals to have the Gilf Kebir established as a protected area; in 1996 the University of Assuit proposed the creation of a Geo-Biosphere Reserve of 60,000 km^2, centred on the Gilf Kebir (Soliman, 1996), and in 1998 the NCS presented a proposal and justification for the declaration of the Gilf Kebir Protected Area and the area was subsequently included as a candidate site in Egypt's National System of Protected Areas (NCS, 1998).

Decree No. 10 of 2007 which was signed on January 4th 2007 by the Prime Minister, H.E. Ahmed Nazif, formally recognizes the national and international significance of the Gilf Kebir and Jebel Ouenat area The Gilf Kebir NP extends over 47,940 km^2 of the Western or Libyan Desert, which represents almost 5% of Egypt's surface area, equivalent to one and a half times the size of Belgium. As Egypt's and the Sahara's newest protected area, the GKNP has substantially extended the conservation coverage of the Saharo-Arabian floristic province which had been poorly represented. The GKNP alone has increased the formally declared protected area coverage of Egypt by over 50%. The Prime Minister's decree increased the number of protected areas in Egypt to 26, covering over 143,833 km^2 which represents about 14.3% of the country.

[1] The declaration of the Gilf Kebir has been the culmination of a planning effort for protected areas that goes back over 10 years. In recent years this activity has been supported by the Italian Government for nearly 10 years, through the Italian Development Cooperation and the Italian Egyptian Debt Swap Programme under the Egyptian Italian Egyptian Italian Environmental Cooperation Program.

Figure 2. Route of 2007 NCS Expedition



2. PHYSICAL SETTING OF THE GILF KEBIR NP

The GKNP area includes the two most prominent landscape features of Egypt's south-west, the Gilf Kebir and Gebal Ouenat (Figure 3). In this remote corner of Egypt, the Gilf Kebir (the Great Barrier), is a huge residual sandstone plateau, that rises over 300 meters above the desert floor (1075 meters above sea level); its heavily eroded sides are deeply dissected by wadis that have been penetrated by incredible dune systems. In recognition of its high forbidding escarpment the Gilf Kebir was so named by the Egyptian explorer, Prince Kemal El Din, who approached it in January 1926 but did not penetrate it. The Gilf Kebir plateau extends over 7,700 km^2, approximately the size of Switzerland, and contains the Kebira Crater, a 950-meter wide impact crater dating to 50 million years ago and part of a huge meteor field that spreads over 4,500 square kilometers. The surface features of the Plateau bear remarkable similarity to features revealed on Mars and were investigated by scientists looking for terrestrial analogues for the Martian surface (Bagnold, 1978; Baz, 1978).

Gabal Ouenat, situated approximately 150 kilometers south of Gilf Kebir, is a large ancient (Precambrian) granite and sandstone massif rising like an island at the centre of the Libyan Desert, and shared between Egypt, Libya and Sudan. It rises to over 1,930 meters above sea level; the western part consists of a ring shaped granite intrusion, 25 kilometers in diameter, ending in three wadis towards the west, Karkur Hamid, Karkur Idriss and Karkur Ibrahim, The eastern section consists of ancient sandstones and terminates at Karkur Talh; in Karkur Murr there is the oasis of Ain al-Brins (Bir Murr) with its permanent spring.

The granitic part of Ouenat is located entirely in Libya, while the eastern sandstone part, a series of high plateaus, lie mainly in Sudan, while the northern flanks jut into Egypt. Ahmed Hassanein Bey, was the first to explore Ouenat and photograph the prehistoric rock art during his camel expedition from Siwa to Darfur in 1923. In the 1930s many expeditions, notably the Frobenius expedition under Hans Rhotert, extensively documented the rock art, and other expeditions continued after World War 2.

The exceptional geological features of the GKNP have attracted interest from the early days of reconnaissance surveys. The initial and ongoing interest was in the numerous circular geological structures as it is uncertain whether these are volcanic craters, meteor impact craters or erosional features. These were first photographed from the air by Clayton and Penderel in 1932 but are now more decipherable on satellite images. Clayton Crater, Peter and Paul are among the largest and best known circular structures; the expedition members examined a number of these craters including Crater 13 which has been recently confirmed as a meteor impact crater (Photo 1). The expedition also visited the 31 km diameter circular structure on the Libyan border which has been tentatively identified by El-Baz as the world's largest meteorite impact crater.

Figure 3. Map showing the prominent landscape features of Gilf Kebir NP (courtesy of A.Siliotti – Geodia ©)

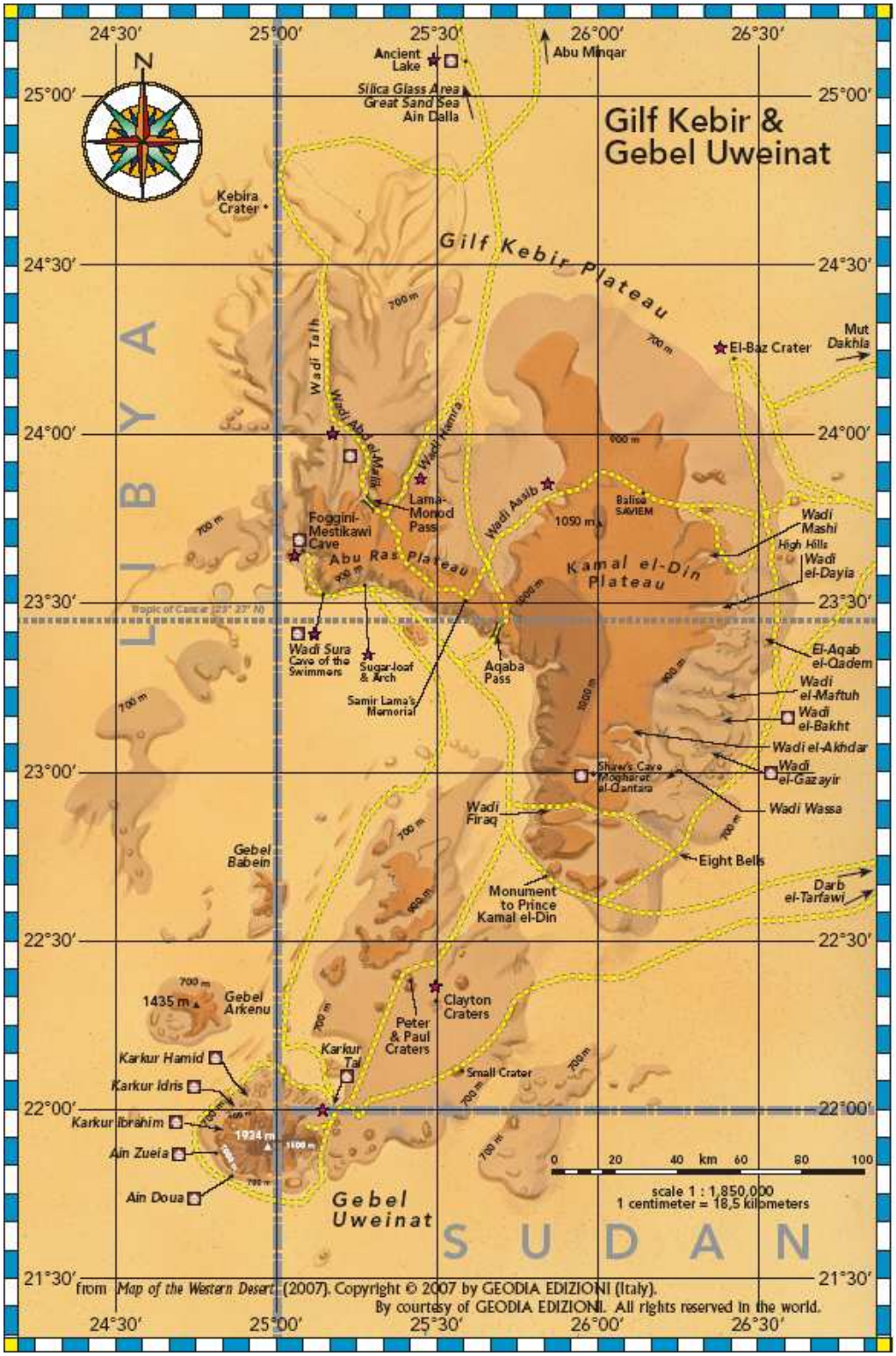


Photo 1. Clayton Crater – meteorite impact crater.

Included in the new protected area is the largest known deposit of a natural silica glass, (98% SiO2) on earth, which has no equivalent to other material anywhere else on earth (Photo 2). The silica, or desert, glass is distributed over an area approximately 130 km long by 50 km wide to the north of the Gilf Kebir. After its discovery by Clayton during his expedition across the Great Sand Sea in 1932, silica glass has become another unique phenomenon. The origin of the silica glass (or tektites) is uncertain but scientific dates of the glass give a mean of around 28 million years.

Photo 2. Silica Glass microlithic core

The composition and structure of the glass are consistent with a hypothesis that the glass was formed from melted desert dune sand and subsequently cooled in an Earth atmosphere – which suggests that meteor impact was the cause and the glass represents splash material from an impact. Silica glass was used by prehistoric man

as a material for tools and several flaking sites were examined by the expedition. Willmann's camp stretching over 400 meters on a raised playa deposit contains numerous microlith tools made from desert glass dating from between 10,000 and 7,000 years BP.

The unique provenance and qualities of silica glass and its association with the jewellery of Tutankhamen has made the glass a hugely prized item for jewellers and collectors and silica glass sells for $5 per gram on web sites. As a result the previously extensive surface deposits of silica glass have been widely collected in recent years, and some operators have resorted to burying pieces to preserve them.

3. ECOLOGY AND ENVIRONMENTAL CONDITIONS OF THE GILF KEBIR NP

Perhaps the most notable ecological feature of the Gilf Kebir / Ouenat region is its very extreme aridity. The eastern Sahara, where the GKNP is located, is probably the most arid region of the world where rainfall is practically none-existent with under 5mm/year. Under these conditions, vegetation is almost all accidental (Bornkamm 1990).

Though hyper-arid, the area contains a surprisingly diverse and important desert adapted fauna and flora typical of the Saharo–Arabian province. With the climatic conditions being equally very harsh throughout the region, land form and topography provide the main variables for the available habitats. Substrate texture, roughness of terrain, slope, size of catchment areas, presence or absence of cliffs and mountains are all landscape elements which provide opportunities for various creatures to survive. The following habitats could be recognized in the region: Sand sheets, dunes, hamada (gravel and pebble) plains, wadis, mountains, hills and steep cliffs.

3.1 Flora

Until recently little was known of the flora of GKN because of its remoteness, vast area, inaccessibility and sporadic rainfall. Early travellers reported on plants (Bagnold 1931, 1939 and Shaw, 1936) but the area covered by the expedition has only been systematically studied by several botanists over the last few decades (Boulos 1980, 1981; Darius 1986, 2000, 2003; Alaily et al 1987; Bornkamm 1990; Monod 1995; Boulos and Barakat 1997). Boulos and Barakat (1997) list 41 species known from the Gilf Kebir and 71 species from the Gebal Ouenat, while Darius reported 87 species from Ouenat including the Sudanese and Libyan parts. (Darius, 2004); Darius notes that half of these 87 known phanerogamic plant taxa of Jebel Ouenat belong to only three families: Gramineae (26 %), Leguminosae (12 %) and Zygophyllaceae (10 %). The other half is distributed among 30 families

In total, 35 plant species were observed during the expedition trip which is almost half of the species number known to occur in this huge area and probably one third of the expected floristic diversity after completing more intensive surveys.

The vegetation is limited to a few of the larger wadis which have sizeable catchment areas. Some of the wadis, such as Karkhur Talh in Ouenat and Hamra and Abd El Malik in the Gilf Kebir, are well vegetated with *Acacia raddianna* trees, and shrubs such as *Zilla spinosa*, and *Fagonia thebaica*, which can remain

green for several years after rare rainfall events when other ephemeral plants appear (Photo 3). The density of the vegetation increases in the upstream portions of the vegetated wadis which is probably a result of the rarity of rain fall, which is only sufficient for supporting vegetation in only short parts of the wadis.

Photo 3. *Zilla spinosa* plants flowering after recent rainfall in 2000

The expedition botanist (Frank Darius), has surveyed the GKNP area on several occasions during the last 20 years on HBI expeditions to the Ouenat / Karkur Talh (2003 & 2004), the Gilf Kebir (1986, 2000), the Great Sand Sea (2000), and the Abu Ballas / Khufu region (1986, 2000-2002). On the basis of these periodic observations, the condition of the vegetation observed during the expedition appears to be similar to that of previous years; the perennial plants continue to survive in these marginal but natural conditions, as reflected in the biomass and the time and intensity of the last occurring rain events in the different parts of the GKNP.

The vegetation of Wadi Bakht, eastern side of the Kemal el Din plateau, consists of mostly dead and heavily degraded small hillocks of *Fagonia cf. arabica* and *Stipagrostis cf. acutiflora*. The distribution of the hillocks looked much the same as in the late 1980's suggesting that no significant rain fall has occurred in the locality for twenty years. The plant growth in the wadi is subject to impact from vehicles driving along the drainage lines up and down stream.

A significant phenomenon with potential adverse impact observed in Karkhur Talh was the excretion of a sugary sap by all the *Acacia raddianna*, on both mature and younger trees (Photo 4). This appears to be a response to widespread parasite attack on the Acacia trees as they appear to be heavily infested by a scale insect (*Coccidae* or *Pseudococcidae*,*Homoptera*), which thrives on the plant sap, thereby producing a large amount of honey dew. The sugary exudate coats practically every part of the tree and the energy demand on the trees to produce such quantities of exudates must be significant and may eventually cause mortality and threaten the whole *Acacia* population of Jebel Ouenat. It is noteworthy that earlier travellers did not comment on this striking phenomenon and it is possible that the reaction may relate to the

withdrawal of traditional husbandry practices of the Tibbu people who were expelled from the area.

Fortunately there are indications that an antagonist species (cf. *Rodolia cardinalis*) has reached the mountain, which may control the parasite in the future (UNESCO 2004). In any case, as this is a new phenomenon to Ouenat, the interaction between plant and animal species should be monitored carefully.

Photo 4. Exudates on *Acacia raddiana* trees in Karkhur Talh

The expedition observed very little signs of deliberate human interference on the vegetation; the most often encountered includes disturbances such as car tracks, removed biomass and littering around places of interest and/or camp sites. However during a previous NCS expedition in 1997 the accompanying operator cut dead wood for fires. It is interesting to note that even dead vegetation plays an important role in such a low productivity environment. For example the dead stumps and branches of Acacia found in Karkur Talh provide habitat for reptiles e.g. *Tropiocolotes steudneri,* and hosted a rich array of termites and wood boring insects, which probably constitute the primary food source for other fauna inhabiting the area, and represent a unique part of the local biological diversity in themselves.

3.2 Fauna

One of the most informative aspects of the current expedition to the Gilf Kebir PA is the possibility of comparing today's observations, with those made a decade ago by the same biologist (Sharif Baha El Din). In 1997 the EEAA expedition to assess the resources of the Gilf /Ouenat region and the potential for inclusion in the Egyptian PA system made extensive observations and photographic documentation

of the region. The report in Appendix 3 records the most significant changes that have occurred in the time between the two expeditions

3.2 1 Invertebrates Two dozen species of invertebrates were noted during the field visit – only 17 have been identified to date (see Table 1). Migratory insects were fairly widespread and observed in almost every stop made. Most common was the dragon fly *Anax parthenope* and the butterfly *Vanessa cardui* and Hawkmoths visiting the camp lights at night. These insects probably represent a very important source of biological matter in this part of the Sahara, with many migratory and resident birds, as well as reptiles and mammals depending on them as a major food source. The Mantis *Eremiaphila zetterstedti* (Photo 5) was the most common (visible) life form particularly in sand dune habitats, resting near dune crests waiting for prey items. These insects along with Silverfishes are probably one of the corner stone elements of this ecosystem. In the early morning flocks of migratory dragonflies were seen settled on dunes in the Great Sand Sea, unable to move due to very low temperatures. Such a bounty of food is a lifeline to local wildlife.

Table 1. Invertebrates recorded in the Gilf Kebir National Park (some species were identified with the help of Drs Francis Gilbert and Samy Zalat)**.**

Species	**Species**
Lepisma sp. Silverfish	*Schistocerca gregaria* Migratory Locust
Metasymphus corollae Hoverfly	*Aracridium aegyptiaca* Grasshopper
Muscidae sp. Housefly	*Anax parthenope* Dragonfly
Sphingidae sp. Hawkmoths	*Vanessa cardui* Butterfly
Chrysopidae sp. Lacewing	*Mesostena angustata* Darkling Beetle
Eremiaphila zetterstedti Mantis	*Cataglyphis bicolor* Silver Ant
Cataglyphis fortis Ant	*Trachyderma hispida* Darkling Beetle
Rhinotermitidae Termites	*Sparassus dufouri* Spider
Leirus quinquestriatus Scorpion	

Photo 5 *Eremiaphila zetterstedti* Mantis

3.2.2 Vertebrates. In the context of this expedition's findings the evaluation of vertebrate fauna has been used as an indicator to the overall faunal diversity in the region, as well as, an indicator for the general environmental conditions of the region. Direct observation and visual searching was the main instrument, but tracks were very important in the detection of various mammals, particularly the larger species, and also reptiles. Other evidence, such as scats, dead animals or parts of them, shedded skin, indications of browsing, burrows, etc. were also used to determine the presence of various species. Animal life is richest around vegetation, but living creatures can also be found hundreds of kilometres from the closest plant and water. Insects are the most abundant but the plants also support much larger animal species.

3.2.2.1 Reptiles. The south western corner of Egypt is herpetologically the least known part of the country, and there is only one publication which deals specifically with the herpetology of Ouenat and Gilf Kebir (Capocaccia 1977). In total 12 reptile species have been reported from the Ouenat / Gilf Kebir region to date (see Table 2). Reptiles occur in very low densities throughout the region due to its extreme aridity and very low productivity of its habitats. Almost all of the reptile species recorded from the region are widespread Saharan taxa, which are well adapted to life in extreme desert conditions. The most widespread species recorded during the field survey was the snake *Psammophis aegyptius* (Photo 6).

Table 2. Reptiles of the Gilf Kebir National Park.

Species	**Species**
Tropiocolotes steudneri	*Acanthodactylus scutellatus*
*Stenodactylus sthenodactylus**	*Mesalina guttulata*
Tarentola annularis	*Mesalina rubropunctata*
Pseudotrapelus sinaitus	*Scincus scincus*
Psammophis aegyptius	*Lytorhynchus diadema **
Cerastes cerastes	*Platyceps saharicus**

Species known from the region but not recorded during this field survey.

Photo 6 *Psammophis aegyptius*

Most of these specimens found were skeletons or dried remains. This snake inhabits the most inhospitable desert habitats, hundreds of kilometers from the closest living vegetation, apparently depending largely on migrant passerines (see birds below).The lizard *Mesalina rubropunctata*, (Photo 7) the skink *Scincus scincus* (Photo 8) and gecko *Stenodactylus sthenodactylus* share the same capacity of tolerance with *P. aegyptius*. The four make up the dominant components of the reptile community inhabiting the vast stretches of sever desert found in the Gilf Kebir / Ouenat region. *Scincus scincus* is the most widespread and numerous vertebrate in the extensive dune fields of the region. Other components of the reptile community were mostly recorded in the vicinity of live or dead vegetation. *Acanthodactylus scutellatus* was only found in close vicinity of live vegetation, while *Tropiocolotes steudneri* was exclusively found amongst the debris of dead vegetation.

Photo 7 *Mesalina rubropunctata*

Photo 8 *Scincus scincus*

3.2.2.2 Mammals. The few mammals that do manage to survive in this arid environment are scarce and usually nocturnal, such as various species of gerbils (*Gerbillus*) and jerboas (*Jaculus*) and Ruppel's fox (*Vulpes rueppeli*). In total nine mammal species were recorded during the expedition. An additional three species are known from the region from the literature (Osborne & Krombein 1969 and Osborne & Helmy 1980) (see Table 3). The most common and widespread mammal found throughout the Gilf Kebir / Ouenat region was *Gerbillus gerbillus,*. This species probably plays an important role in the ecology of this desert region. By its unique ability to harvest and utilize the meager resources in its environment, it makes available a food resource which is in turn utilized by carnivores. *Jaculus jaculus* and *Merionus crassus* are the only other rodents recorded during the field survey, but these were very much localized.

The fox *Vulpes rueppelli,* only detected from tracks during the expedition, is the only carnivore found throughout the GKNP. The ability of such a relatively large mammal to survive on the very scant resources available in the region is remarkable. Animals must travel vast distances every day to be able to encounter sufficient prey to satisfy its survival needs.

From a conservation perspective the most significant resident mammals are the supremely arid-adapted Barbary Sheep or *waddan* (*Ammotragus lervia)* and the Dorcas and slender horned gazelles. The earlier 1997 expedition had confirmed the existence of at least two separate populations of the Barbary Sheep one on the Abu Ras Plateau, the other at Gebel Ouenat where fresh tracks, pellets as well as carcasses were found in both areas. *Ammotragus lervia* is internationally endangered (IUCN 1996) and the local subspecies *A. l. ornatus* was thought to have disappeared from most of its former range and feared extinct. These 1997 observations were first in Egypt since the 1970s; subsequently the species' continued existence has been confirmed in the southern Red Sea mountains. The expedition confirmed that populations of Barabary sheep are still to be found in the two areas but the numbers appear to have declined. Notably fewer tracks and other evidence of this species were noted in 2007 compared with 1997. For example in Karkur Talh only one fresh track was seen, while in 1997 at least a dozen fresh tracks were evident, including a single animal that walked right through the camp during the night

Animals come down from their retreats in the steep hills and cliffs to feed in the wadis at night or very early in the mourning (as detected from their tracks). The main sources of food for the animals are in Karkur Talh (Gebel Ouenat) and Wadi Abd El Malek and Wadi Hamra (Gilf Kebir). The main food items consist of *Acacia raddiana, Merua crassifolia, Zilla spinosa* and *Fagonia* sp. Water is, with certainty, not available to these animals in any part of the Gilf Kebir, and is very limited in Ouenat region; thus they must depend on green vegetation for their water requirements. Tracks found traversing vast expanses of flat desert probably indicate that these animals make long range exploratory journey in search for better grazing grounds or in pursuit of recent rainfall. There are reports of Barbary Sheep moving between the Gilf Plateau and Gebel Ouenat, where one has been recently hunted by a geological survey expedition (report from local guide).

Tracks on top of Abu Ras Plateau indicate that they move between the various wadis of this area (Hamra, Abd El Malik, Talh, etc.). The animals are vulnerable when they are feeding in the wadis or passing through such open flat country and easy prey for hunters. Several carcasses and other remains of Barabary sheep were found by the expedition; some of the animals appeared to have died of natural causes, but finds of butchered legs show that there is significant hunting pressure on these animals (Photo 9). In 1997 Ahmed Mestekawy (pers. com.) stated that Libyan hunters from Kufra Oases illegally enter Egypt in this region to hunt for the species.

Photo 9 Horns and lower leg of Barbary sheep, Gilf Kebir.

No gazelle tracks or other indications of live gazelles were seen during the 2007 field survey. Both *Gazella dorcas* or *G. leptoceros* have been reported from the region previously (Osborne & Helmy 1980). An old weathered skeleton of the latter was found in Wadi Abd El Malik (Photo 10).

Tracks of a wild cat, most likely belonging to *Felis margarita*, were seen in Karkur Talh, which if correct would constitute a first record from the region.

Table 3. Mammals of the Gilf El Kebir National Park. Based on Osborne and Helmy (1980), Baha El Din (1997) and observations made during this field survey.

Species	**Species**
Gerbillus gerbillus #	*Vulpes rueppelli* #
Gerbillus campestris	*Poecilictis libyca* **T**
Gerbillus sp. **T**#	*Addax nasomaculatus*
Meriones crassus	*Gazella dorcas* #
Jaculus jaculus **T**#	*Gazella leptoceros*
Acomys cahirinus#	*Ammotragus lervia* **T**#
Procavia sp.** #	*Felis margarita* **T #**

species recorded during the 2007 field survey, ** species recorded for the fist time from the region. **T** species detected only through tracks.

Photo 10. Remains of a slender-horned gazelle, Wadi Abd El Malak

In Karkur Talh extensive old middens of Hyrax *Procavia* sp were noted (Photo 11). This is also the first report of the species in this part of the Sahara (C.f. Osborne and Helmy 1980), however there was no evidence of recent occupation and it is possible that the local populations have become exterminated. This does need further verification but the time available did not allow for further investigation but it is certain that Hyrax was a part of the local fauna at some time.

Photo 11 White urine streaks indicative of Hyrax den, Karkur Talh

Until 70 years ago addax, (*Addax nasomaculatus)* a large desert antelope with graceful spiral horns, and the Scimitar-horned Oryx (*Oryx dammah*) could be found in the area and ostriches (see below) used to be relatively abundant until hunting pressure became unsustainable. During the expedition there was a report of baboons probably Hamadryas Baboons (*Papio hamadryas*) being seen in the Sudanese part of Ouenat.

3.2.2.3 Birds There are few permanent bird inhabitants in the GKNP. The most common, all across the Sahara, is the "Zarzur" or White Crowned Wheatear

(*Oenanthe leucopyga*), and white wagtails (*Motacilla alba*) are also relatively frequent. As important bird migration routes pass over the Libyan Desert, the GKNP's massifs attract numerous bird species on their spring and autumn migrations. During this expedition current field survey 30 bird species were recorded (see Table 4), most of which are either winter visitors or passage migrants.

Table 4. Bird species recorded during field survey.

Species	**Species**
*Ciconia ciconia**	*Falco* sp.*
Falco concolor (chick)*	*Accipiter nisus*
Anas querquedula *	*Anas acuta* *
Asio otus *	*Asio flammeus* *
Bubo ascalaphus **H**	*Ardea purpurea* *
Cursorius cursor **T**	*Coturnix coturnix* *
Streptopelia turtur	*Columba* sp.*
Hirundo rustica *	*Merops* sp.*
*Upupa epops**	*Apus apus**
Ficedula sp. *	*Phylloscopus* sp. *
Motacilla alba	*Alaemon alaudipes*
Oenanthe isabellina	*Anthus campestris* *
Oenanthe leucopyga	*Phylloscopus collybita*
Sylvia nana	*Sylvia cantillans*
Rhodopechys githaginea	*Passer hispaniolensis*

* birds found long dead, **T** tracks, vocalization **H**.

Many of the species recorded were based on desiccated carcasses of dead birds (see Photos 12 and 13).

Photo 12. Remains of Sooty falcon chick.

Photo 13 Carcass of White stork (*Ciconia ciconia)*

These are Palearctic migrants, which failed to complete their trans-Saharan journey. There are ten bird species known or thought to breed (or have done so in the past) in the Gebel Ouenat area and only one (*Oenanthe leucopyga*) in the Gilf Kebir area (Goodman *et. al.* 1986, Goodman & Meininger 1989, Misonne 1974) (see Table 5).

Table 5. Breeding birds of Ouenat & Gilf Kebir, based on Misonne (1974), Goodman *et al* (1986), Goodman & Meininger (1989) and observations made during the field survey.

Species	**Species**
Falco concolor *	*Cercomela melanura*
*Bubo ascalaphus**	*Oenanthe leucopyga* *
Ammomanes deserti	*Lanius excubitor*
*Alaemon alaudipes**	*Bucanetes githagineus**
Ptyonoprogne obsolete	*Emberiza striolata*

*evidence found during this survey

However, during the expedition evidence for the breeding of only four species (*Falco concolor*, *Bubo ascalaphus*, *Alaemon alaudipes*, *Bucanetes githagineus* & *Oenanthe leucopyga*) were found. The Pharaoh's Owl *Bubo ascalaphus* was heard calling at night at Karkur Talh. The long and severe drought which the region suffers from at the moment has doubtlessly greatly reduced the productivity of the local habitats. The ornithological observations of Misonne (1974) in 1968-69 were made during wetter conditions when much live vegetation, particularly the grain bearing *Pannicum turgidum* (important food source for seed-eating birds), was available, and thus food and water were more readily available. Many of the resident breeders reported earlier might have temporarily deserted the region, or have become locally extirpated. Most of the breeding species recorded here have a wide distribution in Egypt and the habitats available for them in the region are of no outstanding significance.

A number of migrants and winter visitors have been reported from the region in the literature. Most of these taxa however are of a transient nature, and although undoubtedly play an important role in the local ecology, they are not dependent to any extent on local habitats. Thus the conservation of natural habitats in the region are unlikely to be of little benefit to these transient bird populations.

Fragments of ostrich (*Struthio camelus)* egg shells were found often in association with archaeological sites. An almost complete, but well-weathered, egg was found in the sand-plain north of Ouenat near Peter and Paul (Photo 14). Ostriches were last recorded in the Western Desert in 1935 (Goodman *et. al.* 1986) and it is likely that conditions have become more arid since then as considered that the Gilf Kebir / Ouenat region, in its contemporary state, is far too dry and arid to support ostriches.

Photo 14 Almost complete ostrich egg shell found near Peter and Paul

4. GENERAL STATUS OF BIODIVERSITY

Although the overall biological diversity in the region is low, its few tolerant elements make the components of a very fragile and sensitive ecosystem. The idea that hot deserts constitute robust ecosystems is false, as is the notion that rainless deserts are lifeless. The relationships and balances between the various components of this extreme desert (allochthonous) ecosystem are in fact highly sensitive and finely tuned. The biodiversity conservation value for this extreme desert ecosystem might not be apparent but it should be regarded as a system it should receive its proper level of conservation management.

The majority of habitats and the landscapes of the region still remain largely intact and largely pristine, though human impacts are highly localised at present they are growing. The apparently stressed nature or senescence of some elements of the vegetation, particularly the Acacias, are probably due to natural processes, and

whether this is part of the natural cycle of life in the region, or a trend towards more arid conditions, has yet to be known.

4.1 Priority Areas for Biodiversity Conservation.

From the floristic and faunal perspective, there are two areas of great importance within the region, which deserve and need protection: the wadis flowing north from Abu Ras Plateau (Hamra, Abd El Malik, Talh and other smaller unnamed wadis in the area) and the Egyptian portion of Gebel Ouenat including Karkur Talh and adjacent vicinity. Within the framework of the GKNP, these two areas should become strictly controlled wildlife sanctuaries. The whole landscape, with its productive and non-productive elements, constitutes integral parts of the habitat of particularly larger fauna. The passage and circulation of animal stock between these "islands" is essential for the maintenance of natural gene flow.

5. CULTURAL VALUES

The Gilf Kebir area is particularly notable for the pre-historic rock art and artifacts that abound in the area and are testament to human adaptation to past changes in climate, and from where lessons may be learned as we confront the challenges of contemporary climatic changes. Research on these topics has been carried out in the Gilf Kebir area for many years by the Egyptian Geological Survey and the Universities of Assuit, Berlin and Cologne, Germany.

5.1 Archaeology

The large area of more than 47,940 km² protected by the Gilf Kebir National Park contains a broad spectrum of different archaeological sites, from sites with small numbers of artefacts or rock art, to complex prehistoric settlements and atelier sites with thousands of stone artefacts and pottery such as Willmann's Camp, the Silica Glass area or Wadi Bakht. Of special importance for the human heritage is the enormous amount of well preserved rock paintings and engravings in the area of the Gilf Kebir and the Jebel Ouenat, which provide a unique insight into the daily life of prehistoric societies.

The Gilf Kebir and Ouenat area is world renowned for its prehistoric engravings and rock paintings including those at Karkur Talh and Karkur Murr. These major eastern valleys of the Ouenat contain one of the richest concentrations of rock art known in the entire Sahara. Until this expeditions there were no rock art sites that were formally known or officially documented in the Egyptian section of Ouenat. However the expedition members saw and documented several sites in the northern section of Karkur Talh, including engravings and paintings (Photo 15).

The engravings mainly occur on sandstones, rather than the granites of Ouenat and are to be found mainly under overhangs or rock shelters. The pictures mainly depict hunting scenes and cattle, though in some places images of wild animals, such as giraffe, ostrich and antelopes abound. However in the main the rock art reflects the cattle period.

The age of the rock art is uncertain as little archeological research has been conducted in the area, however using general criteria the scenes of pastoral life and images of cattle suggest that the art was generated after 8,000 BP. The engravings

of camels and iron weapons are of much later origin – i.e. after the camel had been introduced into North Africa.

Photo 15. Pre-historic paintings north of Karkhur Talh, Gebal Ouenat

Wadi Sura lies in the northwestern Gilf Kebir and is where, the "Cave of Swimmers" (Wadi Sura 1) of The English Patient fame, is to be found (Photo 16).

Photo 16 Cave of Swimmers – Wadi Sura

Recent discoveries, such as the cave only discovered 3 years ago by Mistakawi/Foggini - Wadi Sura 2 (Photo 17), have revealed many other incredible sites dating back over 7,000 years, and there is certainly much more to be explored.

Photo 17 New Cave – Wadi Sura 2

The awesome natural setting of the GKNP contains unquestionably one of the richest storehouses of prehistoric rock art in the world and now pre-historians believe it represents the area and environment from which the civilisation that eventually flowered along the Nile Valley first emerged.

5.2 Contemporary historical interest.

The GKNP was part of the extensive north African theatre of operations carried out in the Libyan desert during the Second World War 2. Operations in the Axis occupied areas along the Mediterranean coast were carried out from bases in the GKNP area, by the Long Range Desert Group, which was in part constituted by some of the early explorers of the Western Desert such as Bagnold. The desert explorer Lazlo Almasy, who discovered the Cave of Swimmers, and the inspiration for the central character in the “English Patient” was also a major figure in WW2 activities in the Western Desert.

The contemporary history of the area is represented by Long Range Desert Group (LRDG) trucks (Photo 18) and fuel depots from the Second World War, the airfield at 8 Bells (Photo 19) and the remains of travellers camp sites; all these testify to the area’s recent past. They are memorials to the history of travel, exploration and warfare in the Western Desert and are of significant interest to historians and visitors and so should be treated with respect and also accorded conservation measures.

Photo 18. Relict of World War II truck

Photo 19 World War II airfield at 8 Bells

In the desert even relatively recent human remains are documents of its otherwise undocumented history of the area. This realisation should also apply to the recent relicts such as the abandoned campsite of the Tibbu people, who used to seasonally occupy the Ouenat area; these relicts should be regarded as archaeological sites and consequently should be protected from disturbance.

6. GENERAL CULTURAL STATUS

Since the 1980's, when the Cologne University started archaeological work in the Western Desert of Egypt, more than 500 archaeological sites have been discovered and recorded; however it is evident that there are many sites that have yet to be documented. Nowadays traces of human interference, vandalism or looting have become visible at many of these archaeological places. The situation is well exemplified by the condition of Abu Ballas, though this is out of the boundaries of the GKNP. At the solitary hill of Abu Ballas, a pottery hoard was originally estimated to be comprised of some 100 Late Old Kingdom jars when it was first discovered by John Ball in 1918. The jars were originally used to store water, brought by donkey from Dakhla, as Abu Ballas is considered to be a major watering station on the Abu Ballas Trail, an early trade route to Kufra.

Photo 20. Abu Ballas pottery hoard photographed in 1923 (Kemal El Din)

Photo 21 Abu Ballas pottery hoard photographed in 1981

Photographs, taken in 1923, 5 years after its discovery show the numerous excavated jars stacked around the base of the hill (Photos 20). During the

subsequent years a large number of people have visited the site and today the pottery hoard is almost completely looted with only a few broken vessels remaining (Photos 21 and 22). Visitors have also engraved their names into the relative soft sandstone at the foot of the hill and criminally next to Old Kingdom rock engravings.

Photo 22 Abu Ballas pottery hoard photographed in 2007

Another example is at Willmann's Camp in the Silica Glass Area, where nowadays countless car tracks cross through the archaeological site. Stone artefacts have been collected on a massive scale, especially those made of silica glass, or just as seriously, moved from their original location so that the archaeological context is destroyed (Photo 23). This may be done with good intentions as visitors may consider that collecting artefacts, such as grinding stones, in one place is assisting researchers. In addition to the loss of contextual information, there is always the possibility of the loss of any associated charcoal which might be preserved under stones within ancient hearths or fireplaces. Any possibility for radiocarbon dating and species determination would thereby be lost.

Photo 23 Destructive re-arrangement of artifacts at Willmann's camp

Archaeological site analysis is comparable to a complex puzzle, and it is crucial for the reconstruction of the former living environment to record all pieces in their original context.

The wide range and variety of prehistoric and historic sites - covering a time span from over 100,000 years until the recent past - will require individual forms of preservation and documentation, which must be developed on a case by case basis. As a matter of principle it should be accepted that all the evidence of people's activities in the GKNP, from pre-historic times to the recent past, has now become a legacy and a part of the Park's heritage. Whether it was silica glass, prehistoric tools or empty petrol tanks left by the British Long Range Desert Group, these valuable and sentimental items are more authentic, interesting and convincing within their natural and cultural landscape. Collecting such items for personal enjoyment by visitors is evidently indefensible, but removing them from the landscape context into museums could also be considered controversial and will need careful consideration and strong justification before such removal takes place.

6.1 Priority conservation needs for cultural resources

As well as the conserving and researching the archaeological materials, the study of the geo-physical settings of a site and its environmental interpretation, during the time of occupation, is a basic need for any systematic reconstruction of human adaptation to ecological constraints in arid zones. Attention should particularly be directed to the rock art of the Gilf Kebir and the Jebel Ouenat, which has on the one hand a high scientific value and on the other hand an enormous attraction for future visitors of the Protected Area. Because a lot of the rock art sites are very fragile, and also many are undocumented or properly investigated until today (e.g. Wadi Sura II), they require very careful protection.

Prehistoric sites located at old lake sediments (e.g. playa) such as in Wadi Bakht or at Willmann's camp should carefully be protected or even closed. Sediment remains, as well as traces of animals (e.g. the donkey trail at the Abu Ballas or hoof prints at Willmann's Camp) are often not easy to recognize for an amateur and need hence a special protection. The immediate need is for detailed conservation and site management plans for those important sites that are most at risk; this may include physically closing several sites if necessary.

Though outside the GKNP boundaries there is an urgent need for a site management plan for the Abu Ballas site as well the associated Abu Ballas Trail with its many historic sites of an immense value, which forms an ancient route into the Gilf Kebir region. A more detailed description of the management requirements for individual sites is given in Appendix 4 of this report

7. MAJOR MANAGEMENT ISSUES FOR THE GKNP

From observations made during this field survey, it was obvious that solid waste disposal and fire wood collection had the most serious negative impacts on the integrity of the ecosystems and the aesthetic values of the landscape. The destruction of vegetation by careless driving is an increasing problem as vehicle numbers increase (Photo 24). From the cultural and archaeological perspective the collection of Neolithic artefacts and driving over archaeological sites are the most significant and widespread issues, though the increase in graffiti in sensitive sites is a growing problem.

Photo 24 Impact on vegetation; track through *Anastatica hierchuntica* community closed by expedition members

7.1 Increasing access to the area.

Much of the Gilf Kebir NP is naturally protected through its remoteness and the steep escarpments, while extreme climatic conditions restrict periods when people can travel through the area – i.e. the winter and spring tourism season. Even so the central concern for the GKNP is the extensive and growing impact of human activities in the area relating to desert tourism, hunting and smuggling.

During the course of the expedition only one other tourism group was observed, in Karkur Talh. However in recent years both the Gilf Kebir and Jebal Ouenat have become increasingly important premium destinations for the more adventurous travellers, not just for the rock art, but also for the sheer majesty and scale of the desert landscape. It will be important to obtain data on past visitor numbers to the GKNP to determine trends and general and site carrying capacities. Provisional information provided by the Tourism Development Authority indicate that between November 2005 and November 2006 there were 3,921 to the "western deep desert" (presumably the GKNP) and that 59 tour companies were involved

The likely trend for visitor numbers may be suggested by data provided by the New Valley Governorate shown in Table 6 which shows a 31% year on year increase in numbers and a 36% increase in visitor nights.

Table 6. Visitor data for the New Valley Governorate

Year	Visitor numbers	Visitor nights
2005	71,114	185,058
2006	93,507	252,922

7.2 Illegal entry

Libyan hunters penetrate the region from Kufra Oasis (only 200 km from Gilf Kebir); the hunters are interested in shooting the larger mammals, especially Barbary sheep and gazelles, and in trapping migrating falcons, and several old trappers' camps were found. .

The GKNP also falls along a main route for smugglers and traffickers moving between Libya and Sudan, as evident from the numerous truck tracks established across the flat country between Gilf Kebir and Gebel Ouenat. The tracks were so numerous that in places the desert resembled a highway (Photo 25). It is not known what impact the smugglers have on the local environment, besides leaving their tracks. It is likely that they have some other negative impacts on the local environment, such as fire wood collection, disturbance to wildlife and occasional hunting; but it is doubtful that they would get out of their way to be involved in extensive hunting activities, as the essence of their business is speed and mobility.

Photo 25. Tracks of trucks crossing GKNP between Gilf Kebir and Gebal Ouenat

7.2 Lack of awareness

It was the consensus of the expedition members that most of human impacts on the GKNP's resources, and particularly the archaeological and historical heritage, are a result of a lack of awareness of the importance of the heritage and correct behaviour by visitors, guides and drivers. This has serious consequences, as archaeological sites are being disturbed or looted before they are researched and the resilience of desert ecosystems are being compromised and the pristine desert environment is being degraded.

7.3 Impacts on biodiversity

From observations made during this and a previous field survey in 1997, it was obvious that hunting, firewood collection and disturbance had the most serious negative impacts on the integrity of the ecosystems visited, followed by unnecessary damage to vegetation by careless driving.

7.3.1 Hunting There is evidence that hunting takes place in both Gebel Ouenat and Gilf Kebir. The impact of any hunting pressure on the reduced large mammal populations will be devastating. It is likely that most gazelles have disappeared due to hunting pressure. The recently established Egyptian Army boarder patrol at Gebel Ouenat (since mid 1996), is also going to increase the disturbance (and probably hunting) pressure in the area.

7.3.2 Increased disturbance: The number of cars and visitors has dramatically increased in the past decade. This is indicated clearly by the number of fresh car tracks. Disturbance of critical habitats for wildlife (such as the very limited vegetated wadis) drives wildlife away from these crucial resources and thus further reducing their available resource pool. This eventually works with other factors to reduce and fragment populations eventually leading to their local extinction.

7.3.3 Collection of firewood: There was evidence that some of the dead trees have been completely removed for firewood and even some green branches were chopped for the same reason (Photo 26 and 1997 report). Because organic material is so rare in the Gilf region even dead vegetation has a great value to biodiversity and a host of invertebrates and small vertebrates inhabit dead vegetation, forming an important component of the local ecosystem.

Photo 26. Tree damaged for fuel wood collection for desert tourism groups.

7.3.4 Off road vehicles: Off road vehicles directly kill and crush animals and plants, and they further break-up and compact the soil and destroy the seed bank. Tourist, vehicles drive nearly everywhere sometimes over ancient sites (lakes, playa)where wheels leave visible tracks that shall not be easily removed by natural processes thus spoiling the landscape.

7.4 Impacts on landscape

7.4.1 Tracks: The number of vehicle tracks has dramatically increased in the last 10 years throughout the GKNP, indicating a much larger frequency and volume of visitors. The number of cars entering Karkur Talh and Wadi Abd El Malik, which are two of thee most important sites in the GKNP in terms of biodiversity and scenic value, has particularly increased. As well as the impact on natural processes the tracks have a negative impact on the scenic integrity of the desert landscape. It became clear during the expedition's 17 days in the desert that the principle to use only one defined track by all cars of a group cannot always be realised. Sandy areas are more resilient as they can "heal" through natural processes, but tracks over lag gravels are more permanent such as the wide main tracks on the Gilf Kebir plateau which can be readily seen on Google Earth images.
The problems in Darfur has led to increase traffic between Sudan and Libya with caravans of large trucks passing daily through the GKNP which has resulted in deep tracks extended over wide areas in the plain between Gilf Kebir and Ouenat.

7.4.2 Solid and liquid wastes: One of the main problems is rubbish, observed at many archaeological sites and other popular sites in the GKNP. During the last years several sacks full of rubbish like tins, cheese boxes, paper and plastic bottles were collected in the vicinity of important archaeological sites (Photo 27 (1997)) Such inappropriate disposal of waste, though a temporary problem in some respects, has a profound and lasting impact on the visitor's perceptions and experience of the GKNP as a wilderness.

Photo 27. Garbage left behind by tourists inside GKNP

7.4.3 Engine oil disposal: A serious problem is the maintenance of cars and especially the change of motor oil, often left behind, which will last for decades or even longer. Old oil dumps in sandy areas can often be distinguished as a raised hump as the oil has solidified the sand making it resistant to erosion (Photo 28).

Photo 28. Impact of engine oil change (indicated by arrow) in Wadi Sura

7.4. 4 Camp site management: In some parts separate camping grounds as well as toilet areas should be established because sites of particular interest with a high frequency of visitors will rapidly become dotted with "wild toilets" in their surroundings.

7.5 Impacts on archaeological sites

7.5.1 Collection of artefacts: The collection or disturbance of Neolithic artefacts is a widespread and serious problem and seems to be a common practice among almost all visitors to the area. The problem was summarised by Bagnold when he wrote " But, alas, human nature is such that the temptation to pick up and remove ancient artefacts seen lying on the ground is almost irresistible." (Bagnold 1982). The extent of the problem can be gauged from sites that have been well documented such as Abu Ballas, Wadi Gubba and Willmann's Camp. Visitors to archaeological sites often illegally collect and export prehistoric artefacts and also rearrange the artefacts (Photo 23 above) and thereby destroy contextual information in the distribution pattern of the site. Such practices, especially at sites where there has been no excavation, has been likened to the removal of pages from an unread history book which thereafter can never be understood with a consequent loss of memory and human knowledge of the desert. Antiquities Law 117 of 1983 make clear that such activities will carry a sentence of up to 25 years in jail and a fine from 50,000 to 250,000 LE. Other clients on a trip need to be made aware that they also personally might come into trouble since also helping others collect or smuggle artefacts can be punished with 15 years in jail and fines of LE 50,000 to 100,000.

7.5.2 Illegal excavation: The problem of artefact colletion is compounded by unauthorised and amateur excavations as at Wadi Sura II and Abu Ballas cave which causes physical destruction to the site and again disturbs its context.

7.5.3 Vandalism of Rock Art:. Damage to rock art sites is also a very serious concern.

Photo 29. Comparison of "Cave of Swimmers" - representation in1957 and 2007

Visitors have carved graffiti on rock surfaces close to or even over per-historic or Pharaonic rock inscriptions. The rock painting are also at risk from visitors who wet these images with water or sometimes oil to give then a more dramatic contrast or colourful appearance and so permanently damage them. Such practices not only was away the paintings mineral pigments but cause leaching of salts from the rock which further damages the paintings. There is also evidence that some pieces of rock art have been removed as indicated by earlier documentation of the sites (Photo 29).

7.5.4 Natural processes: The rock art is also subject to natural forces of erosion. Wind borne sand is slowly eroding some of the paintings and in places the weathered painted surface is extremely fragile. It is unknown whether this process is accelerated as a result of visitor use. In the future stone conservation measure may be needed to preserve the paintings in situ.

7.6 Visitor safety issues.

7.6.1 Mines: Besides the general health abd safety implications for visitor travelling in such remote areas there are individual mines and mine fields scattered at several localities in the GKN.. Though the minefields are few and the actual areas occupied by landmines are small, the uncertainty as to where they are located presents a ongoing danger to travellers. In 1996 a vehicle was destroyed by a mine in Wadi Wassa, on the south-west of the Gilf Kebir.

7.6.2 Emergency Rescue: The increasing numbers of visitors to this remote area also raised questions as to what emergency rescue and evacuation procedures need to be in place. Consideration may have to be given to ensuring that all desert operators have adequate medical emergency and rescue provisions in place, including helicopter evacuation, and the necessary insurance cover.

8. MANAGEMENT APPROACH FOR THE GKNP

The GKNP is a vast area that contains very diverse and scenic desert landscapes, containing highly adapted biodiversity elements and archaeological sites of global significance. Any management approach will have to be holistic in scope as the GKNP is not simply a collection of sites but a unique integrated natural and cultural landscape. This presents the Egyptian authorities with a major challenge as there are no human settlements or other facilities inside or close to the GKNP and at present by the NCS lacks adequate management resources in terms of staff and facilities.

8.1 "Mental Fences"

It would anyway be impractical to NCS staff stationed in the GKNP for any extended period so the implementation of conservation measures has to be conducted remotely and in cooperation with other legitimate "users". The management approach that will be adopted is the concept of "mental fences" for the protection of the GKNP's resources and values, whereby the disciplined behaviour of guides, drivers and visitors will be the main control system. The "mental fence" approach will involve a number of measures including restricting access to certified and approved operators and guides, establishing a professional desert guide association, training programmes for drivers and camp managers, the development of visitor codes of conduct and instituting effective awareness and interpretative programmes.

8.2 Legal Amendments

The establishment of a collaborative management arrangement, for both the Gilf Kebir and also the White Desert, will be predicated on an Amendment to Law 4 of 1994. At present Article 5 establishes that: "For the fulfilment of its objectives, the Agency (EEAA) may administer and supervise natural protectorates".

In order to incorporate the possibility of co-management agreements with other partners it is proposed that Article 5 should be amended as follows "For *the fulfilment of its objectives, the Agency (EEAA) may administer and supervise natural protectorates. To this end the Agency may conclude management agreement with other governments and non-government entities*".

8.3 Park Infrastructure requirements.

The Gilf Kebir National Park is the largest, most arid, remote, and most challenging protected area to manage in Egypt. At the same time these are the very qualities that attract the special type of visitors who are drawn to such wildernesses. The management approach with regard to infrastructure will be to maintain this sense of wilderness in the GKNP so only minimal infrastructure interventions will be permitted inside the Park and where it is needed non traditional approaches will be adopted.

This will maintain a sense of discovery by visitors in this untamed wilderness in which they are discoverers, in the tradition of the early explorers such as Hassanein Bey, Kamal El Din Hussien and Almasy. Although it is argued that this age has now passed, new and important sites are still being discovered by visitors such as the extraordinary prehistoric cave at Wadi Sura II and the numerous unrecorded prehistoric rock sites visited by our expedition. Any structure or signage can ruin

this feeling of undiscovered wilderness, therefore interventions must be minimal and only executed when strongly justified.

8.4 Management Planning for the GKNP

The GKNP management plan will therefore focus primarily on co-management arrangements by establishing appropriate and enforceable conservation measures and guidelines with partners, particularly desert guides in order to ensure:

1. Landscape protection – i.e. controlled access and use to preserve the aesthetic qualities of one of the most scenic and diverse parts of the Western Desert.
2. Archaeological site management – i.e. the protection of all archaeological sites especially those of world significance.
3. Biodiversity conservation – i.e. the conservation of wildlife species, especially endangered mammals, and their habitats.
4. Visitor management and safety – i.e. ensuring visitors have enriching and safe experiences while mitigating any resulting impacts.

9. PROPOSED IMMEDIATE MANAGEMENT INTERVENTIONS

9.1 Access restrictions.

The upper reaches of Wadi Hamra and Wadi Abd El Malek should be physically closed to vehicular use to reduce disturbance and habitat degradation. Alternative vehicle access points will be located. Other hotspots for biodiversity need to be identified and properly zoned to reduce negative impacts from visitors.

9.2 Research and Monitoring.

The management of GKNP will require good information obtained from monitoring and research. Monitoring generally involves the collection of data over time with the objective of detecting change in a particular situation. Monitoring is not an academic exercise, but a practical one that must produce data that can be interpreted and fed back into management mechanisms.

9.2.1 Park monitoring: An annual "health check" of the GKNP should be undertaken by a multidisciplinary team that would monitor the major sites visited and documented by the expedition members. The team would be comprised of individuals with a similar expertise profile as the members of the 2007 expedition and would monitor the condition biodiversity and archaeological resources.

9.2.2 Archaeological Research and Monitoring: Until today it is likely many rock art sites in the area of the Gilf Kebir National Park possibly remain undiscovered. However exploration or systematic rock art surveys should only be allowed by officially sanctioned persons and institutions, which can be combined with a monitoring programme and sustainable education system for students. Only a number of famous sites such as Magharet el Kantara, Wadi Sura I and II will be available/promoted to the public, whereas smaller and especially new sites will be protected for scientific research and future generations.

An immediate research and documentation and documentation programme should be started of sites with paintings and engravings. This has to be followed with a frequent monitoring of all sites to react immediately to any impact – human or by

nature. The proposed annual "health check" for the GKNP should include important and heavily visited archaeological sites.

9.2.3 Vehicle monitoring: To ensure that tour groups do not enter restricted sites (such as Wadi Hamra and Wadi Abd El Malek) in vehicles it has been suggested that all operator vehicles are fitted with a satellite tracking system that could be monitored in the PAMU office. The feasibility of this option should be discussed with stakeholders.

9.3 Management infrastructure needs.

For the reasons outlined above, it is recommended that most of the infrastructure needs are met outside the GKNP. The lack of water and the remote and difficult terrain also preclude the erection of any sizable structures. Substantial visitor and ranger facilities will be located at Dakhla which is the major departure point for the GKNP. Quality visitor and awareness materials including printed publications, film and the web are of paramount importance in orienting, educating and managing visitors, especially in the absence of facilities inside the NP.

9.3.1 Park offices and living quarters: The GKNP offices should be established in Dakhla for the park staff. These offices could be integrated with the proposed visitor centre. Although the management will aim to hire rangers from the local community, there still remain needs for living quarters for senior staff drawn from other governorates or for visiting EEAA staff members and scientists.

A program of spaces for the park offices and living quarters should be performed in consultation with the park staff.

9.3.2 Logistical support to GKNP Rangers: Ranger outposts which have become a standard means of supporting rangers in their duties in many protected areas are not suitable in GKNP due to the very large area that needs to be covered and the logistical difficulty of supplying and maintaining such outposts.

A standard practice used by safari operators and scientific missions in the region consists of stashing supplies of water and fuel in containers in strategic locations. Thus the GKNP staff should also have supplies stored in suitable containers in several strategic locations in the park for theirs or other visitors' emergency use. These GPS coordinates of these locations would be shared with qualified safari operators and legitimate visitors to the park for use in case of emergency.

9.3.3 "Entrance" Gates: The GKNP is entered by safari operators from many directions. This makes it impractical for constructing any entrances to the park. Furthermore, it would look odd to construct an entrance deep inside the desert at some random point on the lengthy border of the GKNP or even at Dakhla as visitors enter from several directions and it would be both difficult and unreasonable to change this arrangement.

An alternative approach for proclaiming the park is to construct three simple monuments or memorials at strategic locations in the park. These memorials will declare that the traveller is inside the GKNP. The date of the declaration of the GKNP and its protected status could also be engraved. This would follow an established tradition for way marking in this region dating back over centuries from pre-historic times to the Pharaonic periods as illustrated by the 18th Dynasty structure Umm el Alam (Photo 30) The tradition has been continued to present

times with the Prince Kamel El Din Hussein's memorial, and the latest memorial constructed for Samir Lama, the pioneer desert tour operator, erected in 2002 (Photo 31). Over time these memorials will gain more appeal and become part of the historical legacy of this remote desert region.

Photo 30. *Umm el Alam* 18th Dynasty *alam* - traditional way-marking

The three GKNP monuments are proposed to be located as follows: one at the eastern edge of the Gilf Plateau – the side from which most groups arrive; one at the vicinity of the swimmers cave - the most popular single destination in the GKNP; and one at on the south-western edge of the great Sand Sea in proximity to the silica glass area and the WW2 barrels and fuel can dump (Photo 32).

9.3.4 Track demarcation: Different surfaces demand for different driving. In sand the cars have to find the best passages on their own, and this generally will not cause any harm to the landscape. On hard surfaces however one main track should be used and left only where necessary, since here traces are long lasting and might destroy geological features. On hard surfaces drivers will stick to existing tracks that the leading car must follow, tracks will be marked at strategic points with "*alams*" and all routes will be plotted using GPS waypoints that guides will be expected to follow. In areas of higher visitation which show negative impact, such as Wadi Sura I and II, the trails have to be lined with stones for approximately 2 km before reaching the site. Once at the site, parking areas should also be identified and marked with stones. A buffer around the actual cave site should be closed to vehicles using rocks or boulders.

Photo 31. Memorial to Samir Lama

Photo 32. World War Two barrel and fuel can camp.

9.4 Code of conduct.

As an immediate step towards establishing protective measures a code of behaviour will be developed that will function as an orientation guideline for guides, operators and officers as well as for their clients. It will contain some general rules and the main Park regulations; additional information will be provided through the training courses. The code should also inform visitors of GKNP regulations as well as Antiquities Law 117 of 1983 that mandates lengthy sentences and large fines for

offenders or others who are complicit in the illegal collection or damage of artefacts.

An outline of the main elements to be included in the code is given below. This code will be given to every visitor/client who will be expected to sign it prior to departure into the Western Desert.

Suggested elements for inclusion in a series of "Codes of conduct" to be developed for guides, drivers and visitors are given in Appendix 4.

9.5 Visitor safety.
The mine fields are to be will be immediately and unambiguously located, marked and fenced off by the military authorities. In future the military authorities should clear all mines from the area.

The issue of whether all operators will need to have emergency medical evacuation insurance for their clients as part of the certification process should be considered.

9.6 Public Awareness and Interpretive facilities.
Information and education are the most helpful measures to establish and protect the Gilf Kebir National Park. Before travelling into the National Park a Visitor Centre outside the Protected Area in Dahkla should inform the future guests about the main topics and rules of conduct. Here maps, satellite images, main overviews and historical backgrounds should be exhibited and booklets displayed. Possibly the intended Dakhla Museum would function in this manner. A brief on the museum functions and its proposed location is given in Appendix 6. Over and above this, special information programs should be implemented in schools to train and educate the next generations on their national heritage.

The usage of signage for interpretation or visitor behaviour must be utilized sparingly as it would interfere with the visitor's sense of discovery and intrude on the romantic desolate landscape. Intensely visited sites which are starting to show negative impacts by visitors should have simple but well thought of behavioural signage which does not impede on the landscape and must be maintenance free. Interpretive signage on the other hand should not be utilized in the GKNP. This role should be left to the visitor centre and other public awareness efforts such as trained guides and brochures.
The question is whether signage that might draw attention to vulnerable localities such as Wadi Bakht and other artefact rich localities should be installed or not? This has to be resolved in consultation with other partners.

The numerous, unique and splendid rock art sites for which the region is renowned, such as the cave drawings in Ouenat, are not suitable for interpretive exhibits or signage. However heavily impacted sites like in Wadi Sura I and II would prbably benefit from low key behavioural signage.

9.7 Outline of Public Awareness Materials for GKNP.
It has been agreed by the expedition members that interpretive facilities of any sort would not be suitable or needed inside the GKNP. A reference point in the guide book or the map and a qualified guide would suffice. Some vulnerable sites, especially vulnerable ones with prehistoric tools should not be included in tour

itineraries or described in visitor publications.

Since enforcement of regulations and visitor facilities within the park are practically scarce, quality public awareness and information materials are of key importance to the preservation and promotion of conservation in the park's natural and cultural resources. At the present time there is very little practical information about the region and none for this newly declared park. The following is a proposed list of awareness materials needed in several languages, further research should be undertaken in order to further access and outline a more detailed listing:

1. A guide with maps of the GKNP: this would be on important tool for eco-tourism, cultural and environmental consciousness raising and can be widely distributed. A high standard of excellence in writing, graphic design and photography, with vivid images that express the wonders of the GKNP must be maintained.
2. The web is a major component which should be utilized, as it would be most accessible to targeted visitors from abroad who rely to a large degree on the web for collecting information before they embark on their trip. An attractive and informative website for the GKNP would form a major component in bringing the wonders of the GKNP to the wider public while promoting sound ecotourism on a global level.
3. A documentary film presenting the GKNP would be displayed at the visitor centre and sold to the public to further promote conservation. Stunning visuals, compelling stories and engaging features entice viewers of all ages to experience documentaries that are enjoyable yet educational.
4. A poster is needed for the promotion of the GKNP in safari operator's offices, government offices and others. Posters require attention to detail and are carefully researched so that the information presented is accurate. Generally, a brief block of text is included and typically it is scientifically based but written in an accessible manner that can be read in a few moments.
5. A CD-ROM would also be displayed at the visitor centre and sold to the public. Through the eyes of the photographers and a user friendly script, users can interactively visit the most inaccessible places of the GKNP.

9.8 Tour guides certification.

Because of the region's extreme remoteness it would be very impractical to station any personnel in the GKNP for management and monitoring purposes. Since most ongoing and future activities in the GKNP region will be tourism based, and since any direct control of traffic in the GKNP cannot be practically enforced, a more pragmatic approach is to involve the tour operators and guides in order to insure their compliance with Protected Area rules as they also have a vested interest in maintaining an enriching desert experience for their clients.

It is proposed that tour operators and desert guides wishing to organize trips to the region should be jointly certified by the Ministries of Environment and Tourism, following a rigorous GKNP orientation program, which includes all the aspects of desert tourism. The orientation would extend from driving techniques and etiquette that aims at reducing damage to the landscape, to garbage disposal, fuel management, basic desert ecology, navigation, safety, etc. Only those certified and authorised guides and tour operators will be allowed access to the GKNP, and this

would require the assistance of the Ministry of Defence which is responsible for issuing security clearances for GKNP trips. It is proposed that the numbers of certified guides should be strictly limited as this would ensure quality control, allow operators to maintain prices and ensure that the GKNP remains as a premium destination.

This approach would be the practical implementation of the "mental fence" concept described above. It is proposed that some of the certified desert guides should also be appointed as "honorary" or "special" rangers that would be able to report directly to the NCS; their reports on conditions (e.g. monitoring indicators), incidents or violations would then be treated in the same manner as if they originated from official NCS field staff.

9.9 Driver training.

Training courses for desert drivers have already started last year for drivers from Bahariya and Farafra; these should be continued, but structured more effectively. An adequate curriculum has to be developed, supported by training guides dealing with the respective topics like medicine, navigation, geology, botany, zoology, archaeology etc. Examinations and the issuing of certificates should follow clear rules under the control of EEAA where only drivers and tour operators with this license would be allowed to enter the GKNP.

Such regular training of tour guides and local people working for the National Park should be continued to encourage a professional pride and conduct. Tour operators participating in training programmes and following the "Code of Conduct" would obtain an official status which would benefit them for commercial and advertising purposes. Regular meetings for guides, rangers, scientists and local people should be established to discuss problems and exchange information.

Inter- ministerial cooperation. As a precondition of implementing any protective measures a close co-operation between the Ministries of Environment, Culture, Tourism and Defence is a per-requisite. The Ministry of Defence (Coast Guard) has a pivotal because it is the agency that issues security clearances at present and is therefore the main point of control for the desert tourism activities. It is proposed that security clearances should be issues in consultation with the environmental and archaeological authorities so that only approved and certified tour operators will receive a permit. But it is equally important that this does not become a highly bureaucratic and cumbersome process.

In addition the escorting officers have to be trained and instructed to use their position as guardians of the national heritage. It might be an advantage for all concerned parties if the Ministry of Defence would establish a special environmental unit, whose officers would receive a special training and by the time collect exceptional experience and knowledge that also could be advantageous under military aspects.

10. ISSUES FOR MANAGEMENT IMPLEMENTATION

To initiate the management recommendation it is proposed that a national workshop should be held (18th April) where all stakeholders and interested parties would be invited to discuss the management proposals for GKNP. The invitees to the workshop should include representatives from:

1. Ministries of Environment, Tourism and Defence
2. Supreme Council of Antiquities
3. Western Desert tour operators (free-lance and companies)
4. University of Cologne – Hartmut Barth Institute
5. Italian Co-operation and other donors
6. UNDP
7. Hans Seidel Foundation
8. Journalists

The issues for review and discussion should include:

1. General management proposals for GKNP including closure of sites to vehicles and restriction of general access to certain archaeological sites.
2. Coordination between various concerned Government authorities and implementing proposals to restrict security clearances to authorised guides
3. Suggestions for amendments to Law 4 to facilitate co management/collaborative agreements
4. Developing awareness programmes for all parties - guides, drivers and including military personnel accompanying groups. The military has to be integrated in training sessions to instruct them in the value of the protected area
5. The certification of Western Desert guides and the establishment of a professional guide association
6. Restricting client/guide ratios for desert groups – i.e. maintaining high standards of client attention and supervision.
7. Driver training courses and certification (continuation of White Desert programme)
8. Code of conducts for drivers and visitors
9. Camp site and garbage management (prohibition of burning, use of net bags etc)
10. Establishment of a museum and visitor centre in Dahkla
11. Disseminating awareness materials through strategic outlets (hotels, camp sites and tour operators offices)
12. Other issues – recommendations stemming from recent UNESCO meeting in Khartoum.

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Appendix 1a: Team composition and expedition methodology

The field team was composed of personnel from different backgrounds and different institutional affiliations representing the following focal areas:

- Archaeology and site management (Khaled Saad, R. Kuper, K.Kindermann)
- Geology (Ahmed Salama),
- Zoology and general biodiversity (Sherif Baha El Din)
- Botany and paleo-botany (Frank Darius)
- Park infrastructure and Awareness (Gabriel Mikhael)
- Site restoration/protection (W. Mayer)
- Park and visitor management (John Grainger)
- Routes and visitor interest (Mohamed Nour El Din,)
- Local community involvement (Ashraf Lutfi,),
- Photographic documentation (Beatrix Kuper)

Each focal area had one or more key responsible person as indicated above, but the group also consulted amongst its members on issues to address cross cutting issues. Each member of the team was tasked with providing a report on his focal area detailing significant observations, notes and recommendations, along with accompanying photographic documentation and maps whenever possible.

Outputs to be realized from the Expedition

- Reports by participants responsible for each focal area
- Preliminary zoning and routing maps and maps of the main resources along with preliminary sensitivity maps.
- Comprehensive report integrating the results from all topical reports, with general recommendations (this would form the core of the PA management plan).
- Documentary photographic library of Gilf Kebir PA to be used for promotion purposes
- Initial nomination file for the tentative listing of Jebel Ouenat as a World Heritage Site

Expedition organization and leadership

In order to achieve the expedition's objectives, and as the team was rather large with 18 members (including support personnel) and 7 cars, the responsibility for the expedition's organization and overall leadership of the team was formulated as follows:

1. Scientific team leaders: - Dr. S. Baha El Din and Dr. R. Kuper
2. Logistics and route planning leader:- Mohamed Nour El Din (navigator)

In consultation with other expedition members the scientific and technical team leaders agreed on the general route and schedule of the expedition and any alterations that were required according to changing circumstances and needs.

Appendix: 1b.

List of expedition participants and responsibilities

Name	Focal area	Secondary focus areas	Outputs and deliverables
Rudolph Kuper HBI Scientific co-leader	Archaeology	Site management/interpretation	Report on heritage value and status see IUCN TORs
Beatrix Kuper HBI	Photography	First Aid	200 high quality photos
Khaled Saad SCA	Archaeology		Report
Sherif Baha El Din NCSCB Scientific co-leader	Biodiversity	PA planning and tourism mgt	Report on status of biodiversity + 50 topical photographs
John Grainger NCSCB	PA planning	Tourism management and interpretation	Report on management concepts for the of the PA + 50 topical photographs
Ashraf Lutfi Astakhar as sahara NGO	Co- management	Tour operator codes and standards	Report on co-management recommendations
Gabriel Mikhail Image House	PA Infrastructure (Dakhla museum)	Photography and communication	Report on infrastructure needs and 100 topical photos
Mohamed Nour El Din Technical co-leader	Navigation and route planning	Visitor management issues	Report on and itinerary maps
Ahmed Salama NCS/EEAA	Geology	PA management planning	General report and features of special interest.
Karin Kindermann HBI	Archaeology	Site planning/interpretation	Report and topical 50 photos
Frank Darius HBI	Botany	Visitor management issues	Report and topical 50 photos
Wolfgang Mayer HSS	Site conservation	Visitor site planning	Report on conservation/restoration needs of sites and 50 topical photos

Appendix 2: Itinerary of Expedition

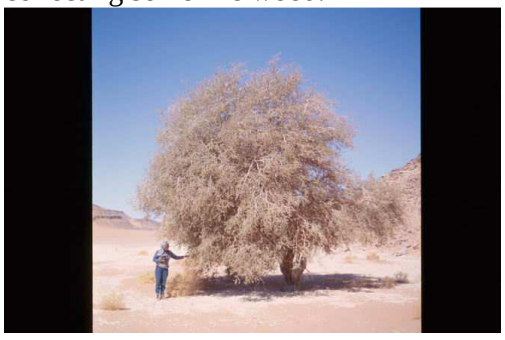
Day	Leg	(km)	Main locations
17.2.	Balat – Chufu	(89)	Chufu 01/01
18.2.	Chufu – Camp 2	(155)	Camp 2
19.2	Camp 2 – Camp 3	(189)	"Umm el Alam"
		(253)	Abu Ballas
		(341)	Camp 3
20.2.	Camp 3 – Wadi Bakht	(414)	Crater 13
		(452)	GKPA eastern boundary
		(505)	Wadi Bakht dune
21.2.	Wadi Bakht – Granites	(575)	Eight Bells
		(615)	Magharet el Kantara
		(675)	Granites Camp
22.2.	Granites – N-Ouenat	(705)	Peter & Paul crater area
		(767)	North Ouenat Camp
23.2.	N-Ouenat – Karkhur Talh	(825)	North Ouenat Camp
24.2.	N-Ouenat – Arkenu Dune	(995)	Eastside Arkenu Dune Camp
25.2.	Arkenu – Three Castles	(1047)	Wadi Sura II
		(1058)	Wadi Sura I
		(1085)	Three Castles Camp
26.2.	Three Castles – Zilla	(1153)	Aqaba Pass
		(1222)	Zilla Garden Camp
27.2.	Zilla – Wadi Hamra	(1302)	Wadi Hamra Camp
28.2.	W.Hamra – W. A. el Melik	(1451)	Wadi Abd el Melik N. Camp
01.3.	W.A.el.Melik – Glass area	(1524)	Willmann's camp
		(1582)	Silica Glass Camp
02.3.	Glass area - Sandsea 1	(1591)	Clayton's Camp
		(1611)	GKPA northern boundary
		(1753)	Sand sea camp 1
03.3.	Sandsea 1 – Sandsea 2	(1918)	Sand sea camp 2
04.3.	Sandsea 2 – Farafra	(2050)	Farafra

Appendix 3: Documenting Change Over A Decade

Over the past decade the Gilf Kebir PA has under gone substantial change in some aspects, while others seem amazingly stable and resilient. These pictures taken by Sherif Baha El Din in both February 1997 (pictures on the left) and February 2007 in identical or very closely similar localities illustrate some of the change (or lack of it), which can take place in this remote and hyper arid environment under the ever increasing influence of man.


Karkur Talh: most trees look identical, except one in the background which in 2007 had collapsed.

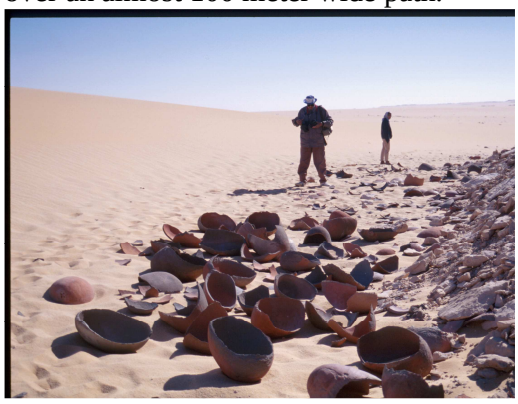

Karkur Talh: Younger tree in foreground has grown, while older tree in background has lost a few limbs and seems to be in a diminished condition, but still live. Individual shrubs seem to have endured in the same condition! This illustrates the traumatic impact that man could have on such a structure by a simple act of collecting some fire wood.




Wadi Abd El Malik: The “Fairwell Tree” *Merua crassfolia* appears almost identical, but shrubs are lacking and car tracks are abundant, in addition to some garbage in 2007.


Karkur Talh: Barbary Sheep tracks abound in 1997 (seven fresh tracks can be seen in this shot), while in 2007 only one fresh track was seen in the Egyptian section of the Wadi. This is likely an indication of a substantial population reduction. Evidence of slaughtered animals in the area substantiate a hunting pressure.


Top of the Gilf Plateau: In 1997 only very few car tracks are evident, which are concentrated in a narrow path (where a Barbary sheep has taken a dust bath [in foreground]), while in 2007 a much larger number of tracks are noted, which spread over an almost 100 meter wide path.




Abu Ballas: Not much comment is needed!

Appendix 4: Initial conservation and preservation proposals for individual archaeological monuments:

Kufu Hill

Since its discovery six years ago, the Khufu hill and its environment experience an ever increasing pressure by visitors and scientists leading to an extended network of car tracks. Though outside the GKNP boundary it is likely to be increasingly visited as it is one of the most significant and isolated Pharaonic monuments in Egypt with an ongoing excavation from Cologne University,. and will likely to be added to tour itineries to the GKNP in the future. Only "off-road" tourists can access the site which makes active protection difficult. Since the main vegetation type occurring in this region is the Fagonia-Stipagrostis community, which is almost exclusively bound to sand dunes and sand sheets, most of the destruction resulting from car traffic by-passes the plant habitats. There are in fact remains of relict and modern woody plant species in some of the depressions, which are of great scientific value for the reconstruction of former (e.g. Mid-Holocene) landscapes and which are threatened by the mentioned tourist activities. Visitors will have to be guided by "silent" walk lines and information about the history of the site and what is the value of the surrounding and how to behave. Cars should not be allowed to drive closer than 200 meters to the site.

For an urgent fine restoration of the site, here in especial the stone conservation, a work plan has to be done. In a medium term perspective consideration should be given to having the larger area surrounding Chufu site attached as an extraterritorial part to the Gilf Kebir National Park. This would help extend formal recognition of the site's unique significance in regard to the relation between history and prehistory and its remarkable landscape features.

Abu Ballas

This site is also outside the GKNP boundary but it lies on the popular route to the Gilf Kebir and Ouenat and is of high visitor interest. Comparing the site of today with photos from 1923 and even the last decade, we notice a nearly total loss / damage of the historic artifacts from the time, when the place was an important water-station on the Abu Ballas Trail. The Abu Ballas, the surrounding sandstone hills and the embedded sand sheets are heavily disturbed by the activities of visitors and military personnel, which is noticeable by innumerable tracks, a plethora of rubbish including motor oil dumps, and the destruction and looting of archaeological remains.

Tourists have been collecting the pottery of Pharaonic time, partly destroyed them or placed them on other sites. For whole Abu Ballas site as well for the new discovered Abu Ballas Trail with many historic sites of an immense value a site management plan has to be worked out. For the remaining pottery it is proposed to bring these original to the planned museum in Dakhla and to place copies of the original amphoras on the historic site like one can see on the photo of 1923. Similar to the site of Kufu, there is a need of an information plate about the history of Abu Ballas and the Abu Ballas Trail

All of those signs have to be done in a high standard – on material as well as in the information / text.

Wadi Hamra

For Wadi Hamra, which has some interesting prehistoric engravings it was proposed that it will be physically closed to all vehicles, including motor cycles, as the prehistoric sites can be reached by foot. The action will also help protect this important refuge for the relict Barabry sheep population. that finds

Wadi Sura

The two rock art sites in Wadi Sura have to dealt with individually. However at Wadi Sura I and II, the approach trails have to be lined with stones for approximately 2 km before reaching the site. Once at the site, parking areas should also be identified and marked with stones. A buffer around the actual cave site should be closed to vehicles using rocks or boulders.

Wadi Sura 2, discovered 3 years ago, has to be scientifically documented as soon as possible; there are signs that unauthorised and probably amateur excavations of the sand has been done recently. Next to this detailed documentation an excavation should be carried out to have more information about the site and its use. A discrete information plate should give information to the value of the site and the damages people would do if they remove the sand. The documentation has to be part of a coming monitoring of the site as it will surely be one of the main tourist attractions of Gilf Kebir.

Within the coming year a site management plan has to be implemented to stop cars entering the sensitive site with all the remains belong to this historic site.

Wadi Sura 1, is a well known site with the drawings of the swimmers, mentioned in the novel and movie “The English Patient “ needs an immediate rescue restoration / conservation, as there are many serious problems with the integrity of the rock art. Some of the paintings are in a serious danger of cracking and with more tourists coming to the site, the impact to the site, the monument will rapidly increase.
Next to a site management plan this fine restoration work should be start as soon as possible. More details to a coming fine restoration with some guidelines will be in the second report.

Wadi Bakht

Wadi Bakht surely is one of the most important pre-historic sites at the area. The place gives a lot of information to pre-historians and archaeologists, but it possibly should not be a location for general desert tourists.

It has to be decided whether the place should promoted for tourists or reserved for visits by specialists. Anyhow, for the site there should be clear signs where to stop with the car and as well a sign with information about the site, its value for a coming research and remarks to the responsibility of any person visiting the site. In any case visitors should be guided by a marked path in order to avoid more

destruction of the dune settlement and to protect the extremely sensitive fossilised roots alongside the playa gorge (Photo).

Silica Glass Area

The Silica glass area in the Great Sand Sea is already very well known and with the popularity of the material and all the mythology of the glass there will be always tourism coming to the site for collecting artefacts. This can only be limited by training the tour guides and making clear to everybody, taking an artefact from a protected area is a crime and will be punished by the Egyptian Government. All this information has to be given in training courses to the tour operator and a small booklet, which every tourist going off-road, has to given.

Appendix 5: Elements For Codes Of Conduct To Be Developed For Guides, Drivers And Visitors

General

- Please realise that the desert is a very fragile and sensitive ecosystem. The idea that hot deserts constitute robust ecosystems is false, as is the notion that rainless deserts are lifeless. Enjoy your time in this extraordinary and unique landscape and leave it as you found it for others who come after you may also have an enriching experience.
- Follow the instructions of the tour guides at all times.

Driving and vehicles

- Stay on the existing tracks. Driving off track damages the desert crust, destroys vegetation and increases the chance of damaging archaeological sites.
- Engine oil must never be dumped and be taken out of the desert for proper disposal

Camp organisation and Management

- Separate your garbage into organic biodegradable and non biodegradable waste; organic food remains can be buried; all other litter (tins, plastic bottles, food and drink packaging) must be carried out. Toilet paper should be burnt and human waste buried. While smaller amounts of organic waste might be left on the surface for wildlife to consume in very remote places this practice should be avoided at more frequently visited sites, especially since this may encourage following groups to leave non organic rubbish.
- When choosing the camp site an appropriate toilet area has to be held in mind and clearly defined when camp is arranged. Also a local tour leader has to make his European clients familiar with the suitable behaviour (burning of toilet paper etc.)

Biodiversity

- Avoid trampling desert plants – living plants waiting for rain may appear dead and they are very vulnerable at this time.
- Do not use dead plants for firewood - dead vegetation plays an important role in such a low productivity environment.
- Please do not disturb, collect or hunt animals

Archaeology

- Please don’t collect or move any artefacts – by doing so you destroy contextual information in the distribution pattern of the site and make them useless for research and so knowledge is lost. When visiting a site no original arrangement of the artefacts should be disturbed and each artefact that has been lifted (perhaps for photographing) has to be replaced exactly to its spot.
- Please admire the extraordinary rock art but do not touch or wet the paintings or inscriptions as this causes damage.
- Unknown prehistoric sites are not easily recognised by drivers negotiating desert terrain. If a driver gets aware that he has hit such a site he should warn the following cars. In sandy areas any scatter of stones that obviously

are lying on the sand should be avoided because they might represent prehistoric occupation

Regulations

- Visitors should be aware that the GKNP is established under Law 102 that forbids actions leading to the destruction or deterioration of the natural environment, biota or which would detract from the aesthetic standards of the protectorate. The Law expressly forbids the destruction, transfer of plants or geological features, pollution of land air or water It regulates recreational activities in protectorates to protect natural resources and establishes control systems to enforce regulatory measures. Offenders are liable to prosecution under this law.
- Antiquities Law 117 of 1983 and make clear that such activities will carry a sentence of up to 25 years in jail and a fine from 50,000 to 250,000 LE. They have to be aware that they also personally might come into trouble since also helping will be punished with 15 years in jail and LE 50,000 to 100,000.

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البنية التحتية :

لابد أن تكون البنية التحتية خارج نطاق محمية الجلف الكبير ويجب أن تكون المكاتب بواحة الداخلة والتى تعتبر نقطة الانطلاق لفريق العمل بالمحمية ، كما أن مركز الزوار المقترح سيكون مركز للتوعية لسكان الواحات.

بوابات السيطرة : سيتم إنشاء ثلاث بوابات بسيطة كنصب تذكارى فى مواقع استراتيجية بالمحمية والتى تعطى إنطباع للزوار أنهم فى محمية طبيعية.

الوعى البيئى :

المعلومات والتعليم تعتبر من التدابير اللازمة لحماية الجلف الكبير وزيارة مركز الزوار قبل القيام برحلة إلى محمية الجلف الكبير والذى سيعطى للزائر انطباع عن هذه المحمية ونظام الممارسة وقواعد السلوك بهذه المحمية.

شهادة لمرشدى السياحة :

حصول مرشدى السياحة على شهادة من وزارة البيئة ووزارة السياحة التى ترغب فى زيارة الجلف الكبير بعد الحصول على برامج وتعليمات وتوجيهات تشمل حميع جوانب التعامل مع محمية الجلف الكبير والتى ستمنح هؤلاء الصلاحية لدخول هذه المنطقة والتى تحتاج إلى مساعدة القوات المسلحة التى تمنح التصاريح .

نظام ممارسة السلوك :

نظام ممارسة السلوك الذى سيوضع سيكون بمثابة توجيه للمرشدين والمشغلين وضباط حرس الحدود فضلاً عن العملاء والتى يتطلب التوقيع عليه وستضم بعض القواعد والأنظمة الأساسية لمحمية الجلف الكبيروستقدم معلومات إضافية عن طريق الدورات التدريبيةوهذا النظام سيخبر الزوار عن تعليمات المحمية بجانب قانون الأثار رقم 117 لسنة 1983 .

تنفيذ الخطة :

لتفعيل توصيات الإدارة يقترح عقد ورشة عمل يوم 18 /2007/4 حيث سيتم دعوة الجهات المعنيه والاطراف المهتمه لمناقشة مقترح إدارة محمية الجلف الكبير ويجب ان تضم ورشة العمل ممثلين من :

- وزارتى البيئة والسياحة والدفاع .
- المجلس الأعلى للآثار.
- الشركات والأفراد العاملة بالسياحة بالصحراء الغربية.
- التعاون الايطالى والجهات الأخرى المانحة.
- مؤسسة هانذيدل.
- برنامج الأمم المتحدة الانمائى.
- الصحفيون.

قضايا تأمين **الزوار :**

بجانب قضايا الأخطار الصحية العامة عن تأمين الزوار فى المنطقة النائية ، هناك حقول الالغام المنتشرة فى عدة مواقع بمحمية الجلف الكبير.

منهج الإدارة :

حيث أن محمية الجلف الكبير منطقة ذات مساحة شاسعة جداً تضم تنوع للمناظر الطبيعية الصحراوية وعناصر التنوع البيولوجى ومواقع أثرية ذات الأهمية العالمية.فلابد أن تكون إدارة المنطقة شمولية حيث لاتوجد مستوطنات بشرية أو مرافق أخرى داخل أو على مقربة من محمية الجلف الكبير حيث أن قطاع حماية الطبيعة يفتقر إدارة الموارد من الموظفين والتسهيلات وهذا يعتبر تحدى كبير لقطاع حماية الطبيعة.وبالتالى فإن خطة إدارة محمية الجلف الكبير ستركزأساساً على مايلى :

حماية المناظر الطبيعية : مراقبة عملية الزيارة واستخدام المنطقة مع الحفاظ على الخصائص الجمالية كأحد المناطق الجمالية بالصحراء الغربية.

خطة إدارة المواقع الأثرية : حماية كل المواقع الأثرية وخصوصاً ذات الأهمية الدولية.

صون التنوع البيولوجى : صون الحياة البرية وخاصة الأنواع المهددة بالانقراض من التدييات وموائلها.

إدارة تأمين الزوار : ضمان السلامة للزوار وإثراء الخبرات لتجنب أى تأثيرات ناتجة.

وعلى أى حال من الصعب لقطاع حماية الطبيعة وضع عاملين بمحمية الجلف الكبير ولهذا عملية الحماية والإدارة ستطبق من بعيد وبالتعاون مع مستخدمى المنطقة وإدارة الموقع ستكون من خلال مفهوم (Mental fences) حيث تقويم السلوك لدى المرشدين والزوار السائقين وتحديد محاور حركة الزوار وإنشاء جمعية مهنية لأدلة الصحراء وبرامج تدريب للسائقين ومديرى المخيمات وإعداد نظام ممارسة للزوار وبرامج توعية فعالة ، وهذا يعتمد على تعديل المادة (5) من القانون 4 لسنة 1994.

التدخلات الفورية المقترحة للإدارة :

تحديد مداخل إلى منابع وادى حمراء ووادى عبد الملك يجب غلقه للسيارات وذلك لتقليل الاضطرابات و تدهور البيئات وسيتم وضع نقطة وصول بديله وأيضاً سيتم تحديد مناطق التنوع البيولوجى وتقسيمها وذلك لتقليل الأثار السلبية من الزوار.

الرصد :

قيام فريق عمل سنوياً من تخصصات مختلفة لرصد المواقع الرئيسية للزوار بمحمية الجلف الكبير.

رصد السيارات :

التأكد من أن الزوار لايقومون بالدخول إلى المناطق المغلقة ويقترح أن تكون كل سيارة مزودة بجهاز تتبع ويمكن مناقشتها مع الجهات المعنية.

النيل .والمحمية بلاشك تعتبر واحدة من أغنى المواقع للفن الصخرى لإنسان ماقبل التاريخ فى العالم المعاصر.

وتتميز المحمية أيضاً بسجل للتاريخ المعاصر (ممثل بمجموعة طويلة المدى بالصحراء LRDG) لتحركات الشاحنات ومستودعات الوقود من الحرب العالمية الثانية ومواقع مخيمات الرحالة وكل هذه المظاهر تمثل أسطورة فى إكتشاف المنطقة خلال القرن الماضى ، والمنطقة تحمل ذكريات مهمة و أوسمة تذكارية فى تاريخ الرحالة واستكشاف الصحراء والتحركات خلال الحرب العالمية الثانية فى الصحراء الغربية ويجب الحفاظ عليها سليمة.

أولويات حماية التراث الثقافى :

تتميز المنطقة بتنوع فى مواقع ماقبل التاريخ والمواقع الأثرية من حيث النقوش والرسومات التى تحكى التغيرات المناخية خلال فترة زمنية أكثر من 100 ألف سنة حتى الماضى القريب والتى تتطلب الحفاظ عليها وتوثيقها بأشكال محددة كما أنه يجب العمل على تطوير كل حالة على حدة ، كما ينبغى توجيه الأهتمام إلى الرسوم الصخرية بمنطقة الجلف وجبل عوينات والتى تعد ذات قيمة علمية من ناحية أما من الناحية الأخرى تعد من أهم المناطق ذات الجذب لزوار المحمية مستقبلا وفى الوقت الراهن يظهر آثار تدخل الإنسان والتخريب والنهب والتى أصبحت ظاهرة فى العديدة من هذه المواقع الأثرية ، ومن المطالب الضرورية وضع خطط إدارية وتفصيلية للصون للمواقع الهامة التى تتعرض للخطر وقد يشمل ذلك إغلاق عدة مواقع للزوار مثل وادى بخت أو معسكر وليم.

القضايا الإدارية الهامة:

نظراً لأن محمية الجلف الكبير تفع فى منطقة نائية بعيدة وصعبة ذات هضاب وجروف حادة وظروف مناخية شديدة تحد من تنقل البشر خلالها ومع ذلك فإن المقلق على الجلف الكبير هو تأثير الأنشطة البشرية ذات العلاقة بالسياحة الصحراوية والصيد والتهريب . وقد تلاحظ بوضوح أثناء هذا المسح الميدانى أن من أهم القضايا التى تواجه هذه المنطقة هى التخلص من النفايات الصلبة وتدمير الغطاء النباتى وجمع الحطب والذى يعد أكثر سلبية وخطورة على سلامة النظم البيئية والمناظر الطبيعية. أما من حيث القضايا التى تتعرض لها المحمية من المنظور الثقافى والأثرى هى تجميع أدوات إنسان ماقبل التاريخ وقيادة السيارات فوق هذه المواقع دون الشعور بقيمتها وتزايد الكتابة بالجرافيت على جدران الكهوف والتى تتزايد وتتنامى.

ولقد أجمع أعضاء البعثة على أن معظم الآثار البشرية على الموارد الطبيعية والثقافية وخصوصاً التراث الأثرى ناتجة عن عدم الوعى بأهمية التراث وسلوكيات الزوار والمرشدين والسائقين وهذه نتائج وخيمة فهناك مواقع أثرية نهبت قبل أن يتم دراستها وواضح أن النظم البيئية تتعرض للتدهور حيث هناك دلائل على الصيد فى المنطقة والذى أدى إلى انخفاض كبير فى عدد الثدييات ومن الواضح أن معظم الغزال قد اختفى بسبب الصيد.

ملخص تنفيذى

يلخص هذا التقريرأهم النتائج والتوصيات الرئيسية المنبثقة عن قيام بعثة من قطاع حماية الطبيعة بزيارة محمية الجلف الكبير المعلنة حديثاً ، حيث أن الخطوة الأولى فى عملية تسجيل الموقع ضمن مواقع التراث العالمى هى إعلان المنطقة محمية طبيعية ،وقد صدر فرار الأستاذ الدكتور رئيس مجلس الوزراء رقم 10 لسنة 2007 بإعلان منطقة الجلف الكبير والجزء الواقع من جبل عوينات بمصر محمية طبيعية فى إطار القانون 102 لسنة 1983 بشأن إعلان المحميات الطبيعية، وقد قام قطاع حماية الطبيعة – بوزارة الدولة لشئون البيئة بتنظيم هذه البعثة والتى كان هدفها الأساسى هو التعرف على قضايا الصون بمنطقة الجلف الكبير وماحولها وتطبيق تدابير الحماية المناسبة للمنطقة. وقد شارك فى البعثة ممثلى الجهات المعنيه والأطراف المعنيه بالمنطقة مثل المجتمعات المحلية ومرشدى سياحة الصحراء والمجلس الأعلى للأثار والبعثات العلمية العاملة فى هذه المواقع ممثلة فى جامعة كولونيا الألمانية والذين سيتعين أشراكهم كشركاء فى المستقبل للحفاظ على مكونات هذه المحمية.

الحالة الأيكولوجية (البيئية):

ورغم أن المنطقة شديدة القحولة إلا أن منطقة الجلف الكبير تحتوى على تنوع فى الحيوانات والنباتات الصحراوية الهامة والممثلة لأقليم الصحارى العربية ، وبالرغم من أن التنوع البيولوجى بالمنطقة منخفض ومع ذلك فإنها تضم نظم وعناصر ومكونات ذات حساسية بيئية هامة وأغلبية النظم البيئية والمناظر الطبيعية للمنطقة مازالت بحالة جيدة مع أن هناك آثار واضحة للتدخل البشرى فى هذه المواقع حديثاً وتزداد يوماً بعد يوم ، وقد لاحظت البعثة هذا التدخل البشرى والتغيرات الناتجة عن مسارات السيارات وقطع بعض الأشجار وانتشار القمامة حول المواقع الهامة والمخيمات.

أولويات صون التنوع البيولوجى :

من ناحية التنوع البيولوجى (الحيوانات – النباتات) هناك منطقتين ذات أهمية كبيرة من منظور الحماية والتى يجب العمل على حمايتها ، حيث يتواجد بها أهم الثدييات المقيمة فى هذه المناطق القاحلة وهى الكبش الأروى – الغزال العفرى – الغزال الأبيض) والمنطقة الأولى تضم الأودية التى تتجه إلى الشمال من هضبة أبو راس وهى وادى حمرا – وادى عبد الملك – وأخرى صغيرة ليس لها أسماء) أماالمنطقة الثانية تضم الجزء الواقع فى مصر من جبل العوينات وكركور طلح والمناطق القريبة منه والتى تنتشر بها أشجار الطلح.

حالة التراث الثقافى :

محمية الجلف الكبير تتميز بالأخص بإنتشار أدوات إنسان ماقبل التاريخ ومنذ عام 1980 تم اكتشاف حوالى عدد 500 موقع أثرى وتم تسجيلها إلا أنه من الواضح أنه يوجد مواقع عديدة لم يتم توثيقها وهى أدق شاهد على تكيف الإنسان مع تغير المناخ فى الماضى وهى التى بزغت منها بعد ذلك حضارة نهر