



PROCEEDINGS OF THE TWIN WORKSHOPS ON HARMONIZATION OF AFRICAN WORLD HERITAGE TENTATIVE LISTS

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HOW WE ORGANIZED THIS WORKSHOP, WHY, AND WHAT WE EXPECT FROM IT

By

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The years 1970-1972 marked a historic turning point in humankind's long march towards a better future. Aspirations all over the world shifted from wealth procurement to the quest for health. The preparations for the Stockholm Conference of 1972 obliged many organizations to revise their mandates and their plans¹. New organizations sprang up². New international agreements and programmes were discussed and launched³. Two of these were within UNESCO: The Man and Biosphere Programme (MAB), launched in 1971, and the World Heritage (WH) Convention, launched the year after.

Fortunately for the WH Convention, its founding fathers treated natural and cultural heritage on the same footing. However, a larger number of cultural sites were submitted for inscription on the WH List than natural ones. The very word "property" used in the Convention text, reveals that innocent bias.

States Parties to the Convention cherished cultural creations by their ancestors more than God's natural creation. This attitude is still making natural sites a minority on the WH List.

For us in Egypt, boasting to harbour one third of the world's antiquities, every one understood that we should submit cultural sites in the first place, and so Egypt submitted 5 of her cultural jewels to the third session of the WH Committee, during its third meeting in Luxor, namely:

1. The ancient Abu Mena Monastery, west of Alexandria (on the Danger List since 2001)
2. The Pyramids area
3. Islamic Cairo
4. Luxor, and
5. Nubia from Aswan to Abu Simbel

These 5 sites were deliberately and intelligently chosen to be on a line from the Mediterranean to the Sudan border, and represent the 3 civilizations that came over Egypt in the 7 millennia of her existence: the Pharaonic, the Coptic, and the Islamic. They were thus comprehensive of both Egypt's geography and her history.

In the year 2000 Egypt submitted a sixth site, St. Catherine area in South Sinai, which was inscribed in 2002 as a cultural site only. And in 2003 Egypt submitted her first natural site of Wadi Al-Hitan (Whale Valley) which was successfully inscribed in 2005 in Durban.

¹ UNESCO in particular

² UNEP, SCOPE, *inter alia*

³ Ramsar, MAB, *inter alia*

We are now in the process of preparing two Nomination File for another site of two contiguous areas, one natural (fossils) and the other cultural (the Pharaonic basalt quarries). Both are in the Faiyum Province, north of Lake Qaroun.

The other Nomination File concerns the natural Dababiya site south of Luxor, where scientists discovered the best example of the Paleocene/Eocene boundary, showing what had happened on our planet during what they call the “Paleocene-Eocene Thermal Maximum (PETM)”. Its thorough study should indicate what may happen to us in the coming Global Warming.

But did the idea of a WH Convention come to UNESCO only in the early 1970's?

No! It began in 1959 by an international appeal launched by the late President Nasser in cooperation with the Sudan. Both countries designated UNESCO as the agency responsible for the organization of the work. The two governments asked UNESCO for assistance in safeguarding monuments that the construction of the Aswan High Dam threatened to submerge. This inspired *a major campaign* by UNESCO to safeguard cultural heritage.

The success of the Campaign inspired the development and adoption in 1972 of UNESCO's World Heritage Convention and the inscription of sites on UNESCO's World Heritage List on which the Nubian Monuments from Abu Simbel to Philae were inscribed in 1979.

To commemorate the 50th anniversary of the appeal by Egypt and Sudan to save the monuments of Nubia, a UNESCO International Conference entitled “Lower Nubia: Revisiting the Past, Envisaging the Future” was held at the Aswan Nubia Museum in Aswan (Egypt) in March 2009

In his message to participants, the Director-General of UNESCO, Mr Koïchiro Matsuura, recalled “the very real achievements of the International Campaign to Save the Monuments of Nubia – the spectacular dismantling and relocating of Abu Simbel, the safeguarding of Philae and numerous other temples, and the countless artefacts saved from the waters of the Nile...” noting that the first international safeguarding campaign launched by UNESCO was “unanimously recognized as an unprecedented technical feat of a scale that has yet to be equalled.”

Dr. Sarwat Okasha, Egypt's Culture Minister at the time, cooperated with the famous French Egyptologist, Mme. Christiane Desroches Noblecourt, «La Dame du Nil », was designated chief of this operation.

To justify the operation, Nubia monuments were described for the first time as « Humanity's Heritage », which was later transformed in the Convention into « World Heritage ».

In 2008, Mme. Christiane Desroches Noblecourt was decorated by the distinguished French Order of the « Legion d'Honneur ». In the name of the President of France, these words were addressed to her:

« Grâce à l'extraordinaire coopération du ministre égyptien de la culture, grâce aussi à l'appui en France d'André Malraux et à celui du général de Gaulle que vous n'hésitez pas à solliciter, vous arracherez aux flots du Nil ces monuments de Nubie, parmi lesquels les temples d'Abou Simbel. Vous avez consacré vingt ans de votre vie à ces travaux de sauvetage, à ces chantiers « pharaoniques ». Mais vous avez fait encore plus que ça. Votre appel à la solidarité internationale, depuis la tribune de l'UNESCO, fut l'acte de naissance du patrimoine mondial de l'humanité. »

And so Egypt is recognized as the originator of the WH Convention. This puts on our shoulder a great responsibility towards the world in general and towards African and Arab peoples in particular. We are determined to bear that responsibility with determination and resolution.

Box 1

"Thanks to the extraordinary cooperation of the Egyptian Minister of Culture, thanks to the support of France of André Malraux and that of General de Gaulle that you did not hesitate to ask, you wrested from the waters of the Nile the monuments of Nubia, including the temples of Abu Simbel. You have devoted twenty years of your life to this work of rescue, these 'Pharaonic' sites. But you did more than that. *Your call for international solidarity, from the podium of UNESCO, was the birth certificate of Humanity's World Heritage* "

Now we come to our first title question: How we organized this Workshop?

In the year 1995, when the WH Center was preparing for the Silver Jubilee of the Convention, it noted a gross imbalance in properties inscribed in Arab countries: 40 cultural, 3 natural and 1 mixed. The Center approached the Egyptian National UNESCO Commission to take up the charge of exploring potential natural heritage sites in Arab countries. Two experts from the Egyptian National MAB Committee (seen as the nearest to natural world heritage affairs) visited Arab Mashrek and Maghreb countries and came up with a combined list of 105 potential sites.

The Center then asked the Commission, and the MAB Committee, to organize a series of four one-week training courses for managers of Arab Biosphere Reserves and other types of nature reserves, once every year between 1996 and 1999. These courses helped to pave the way for a generation of young trainees aware of the advantages of the Convention and of WH sites.

Furthermore, the Egyptian Commission, and the MAB Committee organized in Feb. 2003 a Workshop for Arab nature protection experts to select and harmonize from the 105 potential sites, a suitable shorter list.

During the 25th session of the WH Committee in Helsinki in 2001, the Committee examined the Periodic Report for Arab States and noted various points that would need further work for strengthening the implementation of the Convention in the Arab region.

During the next 26th session of the Committee in Budapest in 2002, the Committee examined the Periodic Report for Africa and astonishingly noted the same that would need further work for strengthening the implementation of the Convention in the Africa.

Therefore the Egyptian Delegation proposed to strengthen cooperation between Arab and African States and this proposal was adopted by the Committee (Box2) As a response to this need, the Republic of South Africa graciously invited a number of African and international WH experts to a meeting at Somerset West, near Cape Town in March 2005, in which were laid the foundations for an African World Heritage Fund for all African countries.

Box 2**PERIODIC REPORTING: REPORT ON THE STATE OF CONSERVATION OF THE WORLD HERITAGE IN AFRICA***Document: WHC-02/CONF.202/16*

Budapest 2002

26 COM 20 The World Heritage Committee,

1. Expresses ...;
2. Noting ...;
3. Encourages Afro-Arab bi-regional co-operation and networking, based on the similarities of problems and suggested solutions revealed by this Periodic Report and the one for Arab States;

In December of the same year, the United Arab Emirates hosted a meeting for Arab WH experts at Abu Dhabi. The Proceedings of the meeting were published in English and the Egyptian Commission translated it into Arabic, with support from the Center.

In 2009, the AWHF became a Category 2 WH Center, while in the same year another regional Category 2 WH Center was created in Bahrain. According to the abovementioned WH Committee decision, cooperation and combined activities between the Centers are highly recommended.

Egypt felt that the time had come to propose to AWHF a Workshop for the harmonization of African Tentative Lists. It turned out that AWHF already had this in mind and had organized such activity on a regional basis for other regions of Africa. The one for North Africa was not yet prepared for, and so AWHF graciously approved the Egyptian request for the North Africa Workshop to be held here in Cairo.

To plan for this Workshop, as you know, we have two types of reports: National reports from the National Commissions of the invited African countries, and thematic reports from national and international heritage scholars. In the second type, we gave attention to categories of WH sites that are not represented in the African Tentative Lists, or are inadequately represented.

I wish to end this section by our view in Egypt about transboundary nominations. The idea is of course attractive and has its advantages in some particular geographical settings. It is successful beyond doubt in Europe, although they still meet with problems of insecurity. We incessantly receive proposals from well-intentioned international organizations for such 2-party or even 3-party reserves, but we are really unable to accept them. However, we are unable to in Egypt's case to accept them; the frontiers are more than 500 kms away from the nearest habitation. And so we cannot send our rangers into isolated places to live like monks. This is the responsibility of other Government Departments that are better equipped and trained than World Heritage site managers. This is why we do not give a listening ear to international organizations proposing to help us in their establishment. Nevertheless, this does not mean we are opposed to other forms of international cooperation. We have a very successful twinning agreement between our Wadi Al-Rayyan Nature Reserve (in which is located the Wadi Al-Hitan WH site) and the Italian Nature Reserve Gran Sasso. We advocate twinning, networking, and MoUs for cooperation with any World Heritage or

Nature Reserve site, not necessarily on the other side of the border, but at any distance.

However, the question of transboundary management remains. We cannot pass laws and spend money to protect the desert gazelle, for instance, and then find that it is not protected on the other of the border, whether that other side is protected or not. Such problems are better dealt with by comprehensive bi-national environmental agreements, not necessarily transboundary World Heritage sites.

Now the question Why?

Egypt welcomed the South African initiative and expressed her will to help make AWHF stand on its feet. This determination allows the Fund to implement its projects without hesitation.

Furthermore, and in response to one of the recommendations of the Abu Dhabi meeting, namely that each member country should elaborate a WH Action Plan and that the region should also elaborate a regional Action plan. We have edited a Draft Action Plan for African World Heritage, to be discussed by your goodpersons in later sessions.

A certain event must be mentioned here to show that we must work hand in hand. During the 29th session of the WH Committee in Durban, the death of a number of Park Guards in the Great Lakes area WH site, in a battle with poachers, was casually mentioned but no special commemoration took place to honour their sacrifice as WH martyrs, or any special arrangement made to help their bereaved families. What came up in the decision of the Committee was simply to ask the local authorities to take measures for the safety of the WH Center mission that could not accomplish its duties “due to the security situation in the region” (Box 3). This attitude goes far to prove once more that Africans must take their affairs in their own hands.

Box 3

29 COM 20 The World Heritage Committee,

Durban 2005

15. p 12 The World Heritage Committee

Adopts the Periodic Report

Regrets the mentoring mission to Kahuzi, Virunga, Okapi and Garamba could not take place due to the security situation in the region

And now Q 3: What do we expect from this Workshop?

We expect a lot. The crop is aplenty but the workers are few.

Having said that we Africans should deal ourselves with our problems and that foreign contributions are welcome but should occupy second place in our plans, not only for the conservation of our African heritage, whether of outstanding universal value or simply of outstanding African value, let us agree to two sets of conclusions:

- **Principles:**

1. African heritage is to be principally utilized for the benefit of Africans
2. It is principally the responsibility of Africans to study, select, nominate, and manage African heritage sites
3. Foreign aid is welcome as a supplement for African effort (scientific and/or financial)
4. Africans should make their own choices on the forms of transboundary cooperation in the management of their World Heritage sites, based on the particular conditions in each country
5. Cooperation among African countries is to be mediated through the AFWH

- **Actions:**

1. Launch the **African Action Plan for World Heritage**

Copies of a draft Action Plan is in your hands and we have a slot the programme to discuss it.

We think it is what all our partners wish us to adopt so that foreign aid can be channeled towards concrete and consolidated actions and projects to which we have all agreed.

The AWHF is kindly requested to have it discussed in the Workshops of the other 4 African regions, so that it is eventually declared our official Action Plan.

Harmonization of World Heritage Tentative Lists

AN INTRODUCTORY DOCUMENT

by

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Where Was "Harmonization" of Tentative Lists Mentioned?

The term "harmonization of Tentative World Heritage Lists" started to appear in the early 1990s in a number of World Heritage documents, notably:

- The ICOMOS Tourism Handbook for World Heritage Site Managers of 1993 (paragraph 9), saying that it may be desirable for States Parties to make *comparative assessments* for the harmonization of tentative lists and nominated cultural properties,
- The Canterbury meeting for the Revision of the Operational Guidelines. has this to say (page 14) about this issue: Tentative Lists: [Note: reference to Article 11 of Convention, 7 & 8, reference to comparative assessment above, obligatory for cultural and natural properties - awaiting outcome of Working Group on the Representativity of the World Heritage List] – [Standard Format for submitting a Tentative List, Regional harmonization of tentative lists]
- The Report by the Intergovernmental Committee for the Protection of the World Cultural and Natural Heritage on its Activities, at the UNESCO General Conference, 31st Session, Aug. 2001, mentions that the Nordic World Heritage Office (NWHO) organized a meeting in Copenhagen to discuss the Nordic countries' follow-up to the *Nordic Report 1996*, which discussed the harmonization of tentative lists, among other things.
- IUCN was commissioned by the World Heritage Committee to present categorizations and comparative assessments of natural heritage sites. At the beginning a few hints about the methodology to be followed in that comparative assessment were discussed during the 26th session of the World Heritage Committee in Budapest, June-July 2002. Since then, a substantial number of assessments have been published.

Thus, it appears that so far, the simple explanation proposed by ICOMOS in its Tourism Handbook of 1993, *viz* . that harmonization means "comparative assessment" is still valid. However, almost nothing is mentioned about the purpose of the comparative assessment. We can ask:

- Is it for setting priorities at the regional level?
- Is it for IUCN and ICOMOS to better utilize their resources in their evaluation missions?
- Is it for the benefit of the World Heritage Committee to make better decisions when having to limit the number of sites inscribed on the World Heritage List?

- Or is it just to understand the relative importance of sites within a region, for the benefit of scientists and tourists?

It is evident that the methodology pursued in the comparative assessment will of course depend on its purpose or purposes. Furthermore, to our knowledge, there does not exist an internationally approved methodology for such comparative assessments by which sites proposed in Tentative Lists can be compared within regions or between different regions. This is a gap that we feel has to be filled.

During the 24th World Heritage Committee session in Cairns, Australia, in Nov.-Dec. 2000, the experts who had undertaken a Periodic Reporting activity of the Arab Region recommended a regional meeting to discuss, *inter alia*, the harmonization of the Tentative Lists of that region. Consequently, a first Arab Regional Meeting was held in Amman, Jordan, in May-2002, to discuss the modalities of the preparation of Tentative Lists and their harmonization, as well as preparing other documents related to the nomination process.

Following that, the second regional meeting was held in Cairo, Egypt, in February 2003 for the Harmonization of Arab Tentative Lists of Natural Heritage Sites. Delegates of invited Arab States Parties were asked to present the official Tentative Lists of their countries. All in all, 54 sites in Tentative Lists of 12 countries were presented. More sites were suggested by the international experts who were invited to present their own personal views and suggestions. These were compared, and categorized into 12 types. Moreover, it was important to note whether these sites include elements of cultural features.

Characteristics of the Comparative Assessment of the Arab TLs of 2003

Certain points should be stressed about this comparative assessment of Tentative Lists presented by Arab States Parties at the February 2003 Meeting in Cairo that was organized by the Egyptian National MAB Committee, in collaboration with the UNESCO World Heritage Center:

- These Tentative Lists are neither exhaustive nor final. Hence with each new addition to the Tentative List, which will include new sites not included in earlier Lists, a fresh comparative assessment has to be undertaken anew. This means that the comparative assessment is equally neither final nor binding to the State Party concerned, to the World Heritage Center or Committee, nor to the scientific community of experts in the field.
- The comparative assessment of Arab Tentative Lists was undertaken only at the regional level, and not at the global level. The "Outstanding Universal Value" of a given site may prove either higher or lower, when the comparative assessment is undertaken at the global level, as the case may be.
- The number of points ascribed to each site does not in any way indicate its Absolute Universal Value. For example, geological or fossil sites may gain a small number of points, due to their isolated character, and yet their importance as geological or fossil sites describing stages in the history of the earth may be undisputed.

- This comparative assessment is not in any way intended to belittle the value of sites proposed by any State Party, or to request a State Party to add a site to, or to withdraw a site from, the Tentative List it has proposed. Neither is it intended to request the State Party to modify the presentation of a site included in its Tentative List. It is not intended to pass judgement on which sites deserve to be inscribed on the World Heritage List and which do not. Moreover, it is understood that States Parties are free to make any modifications they would deem necessary in the Tentative Lists they presented in the February 2003 Meeting in Cairo, before presenting them officially to the UNESCO World Heritage Center, or even refrain from presenting them to the Center for any period of time. It is the responsibility of uniquely the State Party to propose the Tentative List it has drawn up to the World Heritage Center. It is only when these Lists are submitted by the State Party concerned to the UNESCO World Heritage Center that they become official. Hence, the Tentative Lists that were presented at the February 2003 Meeting in Cairo were not official in the sense of the Operational Guidelines adopted by the World Heritage Committee. They are not binding to the States Parties concerned, even when they were presented and/or published and sent by the Egyptian National MAB Committee to the UNESCO World Heritage Center as a Report on the outcome of the Meeting (or as material in the *Egypt MAB Bulletin*. Sites on these Lists were to be used at the Meeting solely for the purpose of harmonization, and only at the scientific level.

- The Tentative Lists by their very nature are devoid of many informative and necessary data. The information contained therein is usually cursory and of quite a general character, adding to the difficulty of such an assessment for a truly comparative nature.

Criteria for a true comparative assessment

Criteria for a true comparative assessment are multiple and fall into different levels. First we have the four criteria for recognizing the "Outstanding Universal Value" of Natural World Heritage sites that are spelt out in the body of the World Heritage Convention and reiterated by the Operational Guidelines. Then, we have to develop another set of criteria for carrying out a comparative assessment, based on the four criteria and elaborating on them. In a report to the World Heritage Center prepared by Ghabbour (1998) on the identification of potential natural heritage sites in Arab countries, 10 additional second level criteria were suggested for the purpose of priority setting, that can also be used for carrying out a comparative assessment. These are:

1. Availability of serious management, preferably according to a well conceived plan,
2. Availability of a suitable infrastructure for both management and benefit by the general public (labs, eco-museum, hostel, roads, souvenir shops, etc.),
3. Availability of effective legal protection,
4. Availability of research facilities,
5. Availability of sufficient interest by the authorities and visibility in the public eye, especially among the national scientific community.

6. Availability of convincing cooperation with and participation of the local population in the management and sharing of benefits of the natural resources of the site,
7. Availability of well-studied and internationally recognized information about the biodiversity of the site and other relevant aspects.
8. Possibility of bi-lateral trans-boundary cooperation with a similar natural heritage site across the national borders,
9. Presence of archaeological vestiges and historic remains, and cultural features, that add to the interest of the site as a cultural heritage site as well, and
10. Presence of a diversity of contiguous habitats that allow\ the manifestation of phenomena associated with ecotones, corridors, and migration routes, etc., thereby enhancing the value of biodiversity conservation.

The Role of Biodiversity

Richness in biodiversity or certain characteristics of flora and/or fauna species are an important criterion for Natural World Heritage Sites. Only slight indications are given in Tentative Lists about important biodiversity features, such as number of plant or animal species, rarity, threats, or endemism. There are several indicators of biodiversity richness or uniqueness available, so that it is important to agree on how to use them. This is not yet settled, so that comparative assessment of the importance of biodiversity criteria in sites included in Tentative Lists, in their present structure, will inevitably remain arbitrary for some time to come.

Threats to biodiversity are mentioned only briefly in Tentative Lists. All such data are given in full only in Nomination Files. Comparative assessment of biodiversity is still, unfortunately, quite a subjective exercise, and without exact or nearly exact figures, it is quite impossible to carry out a reliable comparative assessment of biodiversity features in sites described in the TLs . Geological history of sites is also not detailed in Tentative Lists, even if the sites are proposed for a geological, a landscape, or a fossil feature.

An attempt that was made to undertake a comparative assessment of natural sites, based on richness in biodiversity, succeeded in quantifying some biodiversity criteria by attaching numerical values to each element thereof as scores. This procedure was adopted in a case study for the spatial analysis of one important biodiversity element, namely the endangered arboreal species in Egypt, modeled in a GIS-based database and overlaid on spatial data of Egypt's 31 declared and proposed protected areas at the time the study was undertaken. The objective was to identify significant areas that would require more conservation efforts, in a quantitatively assessed order of priority or preferences (Salem 2001).

This breakthrough study led to an analysis of the relative contribution, at the national level, of each protected area in conserving the biodiversity of the threatened arboreal species. Moreover, it was possible by adopting this method to assess the relation between three biodiversity constituents: (a) phytogeographical subdivisions. (b) the distribution of threatened arboreal species, and (c) internationally important bird areas in Egypt, by integrating their data in a common GIS-based system. These three biodiversity elements were selected because there were already available data about all of them:

threatened arboreal species, phytogeographical subdivisions, and internationally important bird areas. Obviously, such a study cannot be extended to other biodiversity constituents unless their data are there. It is a study that is never final and that has to be constantly developed and extended as long as data on more biodiversity constituents are made available by specialists working on these constituents.

Some Conclusions

It is therefore evident that neither of the above two methods could be applied for a comparative assessment of the 54 sites that were proposed in the Arab Tentative List, in the way that they have been presented in the Cairo February 2003 Meeting, simply because of lack of sufficient data. We can come now to the realization that the simple structure of the form for the proposal of Tentative Sites does not lend itself to a satisfactory comparative assessment, and that it has therefore to be modified for this purpose. This is contrary to the information that is required in official Nomination Files, which must provide detailed data on the sites to be inscribed; a true comparative assessment is only possible if based on an adequate set of data, as is more or less required in Nomination Files. The Nomination Files should therefore contain a data set as large and varied as possible to allow such comparative assessments. Tentative Lists are too simple and too preliminary to be loaded by a data set adequate for a comparative assessment of similar habitat types. Hence, harmonization of Tentative Lists, in the shape they are being prepared now, will be nothing more than an exercise of a superficial nature. Under present conditions, a true comparative assessment apparently has to wait until official Nomination Files are presented, since these are accompanied by adequate data sets of the biodiversity constituents and other attributes that impart to the sites in the Nomination File the alleged "Outstanding Universal Value".

To sum up

The difficulties encountered in the exercise of comparative assessments of sites proposed in Tentative Lists are due to the following four main defects:

- The structure of the Tentative List does not encourage inclusion of a full description of the site,
- The absence of a clear purpose sought from the comparative assessments of sites,
- Lack of an internationally approved methodology for comparative assessments, and
- Criteria and indicators of biodiversity to be used in comparative assessments are not agreed upon, or even utilized.

Consequently, the structure of Tentative Lists has to be improved so that they could be amenable to comparative assessments of sites. Otherwise, the assessment has to be deferred until *Draft Nomination Files* are presented by States Parties, or a Tentative List should be modeled after a template Draft Nomination File from the very beginning. The World Heritage Center, in collaboration with the World Heritage Committee, IUCN, and ICOMOS,

ought to fill out these four main defects in order to promote serious and effective comparative assessments of sites proposed in Tentative Lists at the regional or at the international levels. Until then, comparative assessments are bound to be of only a general character.

Data Treatment

Based on the above arguments, it is clear that carrying out a comparative assessment of sites proposed in Tentative lists is not really a feasible or a useful attempt, because the data and information provided in these lists are simply insufficient for such an endeavour. If we use the applicability of the four criteria for inscription of sites on the Natural World Heritage List that are embodied in the World Heritage Convention and its Operational Guidelines, we will find many sites with at least one applicable criterion, e.g., fossil sites. However, there may also be sites with two, three, or even all four criteria. We know that the applicability of only one criterion is enough for the inscription of a given site on the Natural World Heritage List enough to impart to the site its "Outstanding Universal Value. But does the applicability of two or more criteria impart a higher value to a given site?

There are two aspects in this question. First, we may say that this is doubtful. Why do we consider this doubtful? Because it seems that if more than one criterion is mentioned as applicable in the decision of the World Heritage Committee for the inscription of a given site on the Natural World Heritage List, this is only for the record. The common experience is that it has no major significance in considering a site with more than criterion is more valuable than another one having only one applicable criterion. On the other hand, the implication of ascribing more than one criterion in the inscription decision of a site, taken by the World Heritage Committee, is perhaps simply to be used in subsequent functions. These are: (a) monitoring the continuity of the applicability of that criterion after inscription, and (b) pointing out to the world public opinion an enhanced value of the site, notably for tourist and prestige purposes. Lately, a third aspect presented itself, after the motion to remove a site from the World Heritage List if it has lost the criterion for which it was inscribed. A site inscribed for more than one criterion can still remain on the List if it has lost only one criterion. The remaining criteria are a reserve stock for its sustainable position on the List.

What can we do then?

What can we do then under the present circumstances of the inadequacy of data and information contained in Tentative Lists? Perhaps the best thing to do would be to classify the proposed sites according to their primary types of habitats, as was done in 2003 (see below). We can arrange sites, moreover, in the order of how many criteria are applicable to each site. Here fossil sites will be at a disadvantage because they may have only the one criterion of showing stages in the earth's history, which is quite important on its own, but that can rarely be associated with criteria of biodiversity or landscape beauty. We may also arrange them in the order of the number of attributes they possess, e.g., how many secondary habitat types does each site include? Fossil sites in this case, will again falsely seem at a disadvantage, and this should always be borne in mind when examining, classifying, comparing, or assessing Tentative Lists. Eventually, with better and more

detailed data and information on proposed natural heritage sites, of the level of elaboration required in Nomination Files, comparative assessments can be usefully made by using suitable statistical methods. These methods range from the simple discriminant and principal component analyses, to the more complex correspondence analysis and ascending hierarchic classification. These analyses can give clear and more accurate indications of the comparative quality of sites and of their resemblances (or similarities), provided the classification criteria and the conceptual assumptions are objectively identified from the start, as much as possible.

The ecosystems of the 57 natural heritage sites proposed in the Tentative Lists of the 12 Arab States Parties that participated in the Cairo February 2003 meeting were categorized into 12 habitat types, which were:

- Mountains: 31
- Wadis: 13
- Oases: 11
- Forests/Scrub: 21
- Wetlands: 15
- Islands: 7
- Coral reefs: 6
- Coastal zones: 14
- Sea turtle nesting sites: 7
- Bird migration routes: 15
- Fossil sites: 4
- Biodiversity rich sites: 39
- Landscape beauty sites: 43

In the above listing of sites according to their characteristics, these remarks should be made: Sites already declared as nature reserves, should have management plans, while some of them can be bi-national transboundary World Heritage sites, which is a type exempt from the upper limit of 30 sites that may be examined in one year by the World Heritage Committee. It is evident that there is a high proportion of landscape, biodiversity, mountain, and forest/scrub sites. On the other hand, there is a dearth of fossil, island, coral reef, and sea turtle nesting sites. There are certainly more sites of these habitat types that the Arab region possesses, especially fossil sites. The association of geologists and palaeontologists with biologists should be a common practice when Tentative Lists are to be proposed, modified, or prepared into Nomination Files.

Additionally, presence or absence of management plans and cultural features are included as differential criteria, since they too are important both as nomination criteria and/or for comparative assessment. We prefer to consider that any site already declared as a national nature reserve is supposed to have a management plan. Of the 57 sites 31 had management plans, while 33 had cultural features. This means that about half of the proposed sites in the Arab Tentative Lists presented at the Cairo meeting of February 2003 are already declared as nature reserves and also almost half of them are combined with cultural features. The number of attributes possessed

by the 57 sites varied from 2 to 11. The highest score (11), was for Jebel Samhan in the Sultanate of Oman, followed by the Mountain Chains of Egypt and Socotra Island and Archipelago in Yemen (a score of 9). Sites having a score of 8 were: Ahaggar in Algeria, the Northern Oases and Bird Migration Routes in Egypt, Dimaniyat Islands in the Sultanate of Oman, and Belhaf-Burum in Yemen. Three sites had a score of 2: Barqash in Jordan, Khor El-Eidid in Qatar, and Al-Hauf in Yemen. It should be stressed that these low scores may not be due to a reality of site characteristics, but rather to lack of data in the Tentative Lists.

These results are not astonishing, since Arab countries are known to have a rich variety of landscapes coupled with a long history of successive cultures that were obligatorily associated with rare water resources, whether surface or underground, which did also favour a high degree of biodiversity and endemism. The important thing is to spell out the values of a World Heritage site right from the very moment its proposal starts to materialize into a Tentative List.

This essay by S. I. Ghabbour was published in *Egypt MAB Bull.* 2004 Numbers 1/2: 28-37. It was written as a post-scriptum to the *Proceedings of the Arab Expert Meeting for Harmonization of WH Tentative Lists*, Cairo, Feb. 2003.

**Guidelines for submissions on revision of Ireland's Tentative
List of UNESCO World Heritage Sites,
By Expert Advisory Group**

12 November 2008

Review of Tentative List

Sites nominated for inclusion on the Tentative List should ideally be on the Record of Monuments and Places or on a local authority Record of Protected Structures or within a Special Area of Conservation or Special Protection Area etc.

The Department of the Environment, Heritage and Local Government has prepared a guidance document 'Tentative List and World Heritage Status' to outline the approach being taken and to inform the process. This guidance document will assist persons to propose only those sites/properties/themes which meet the appropriate UNESCO World Heritage List criteria. The guidance document includes details on UNESCO World Heritage criteria, a definition of what constitutes Outstanding Universal Value in a World Heritage context, an explanation of authenticity, integrity, and significance on a global basis.

"Tentative List and World Heritage Status"

Introduction and Background:

The World Heritage Convention (The Convention concerning the Protection of World Cultural and Natural Heritage) was adopted by the General Conference of UNESCO on 16 November 1972.

Outstanding Universal Value is defined in the UNESCO Operational Guidelines [1.] as *'cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity'*.

The World Heritage Convention is a unique legal instrument, based on the idea that some cultural and natural heritage sites are of such outstanding and universal importance that they need to 'be preserved as part of the world heritage of mankind as a whole' (World Heritage Convention, 1972). It is the only international legal instrument for the protection of both cultural and natural sites encouraging cooperation among nations for the safeguarding of their heritage. As such, only the very superlative examples of cultural and natural heritage are considered for inscription on the World Heritage List and must clearly demonstrate the Outstanding Universal Value for which it is being nominated.

UNESCO also demands high levels of protection for nominated sites and requires a structured management plan or a documented management system for each site before it will be considered for inscription on the World Heritage

List. The Tentative List is the first step in the process of identifying sites for nomination to the World Heritage List and is the right stage for filtering out sites which do not possess the potential to go forward, as well as highlighting the limited number of sites that do.

Outstanding Universal Value:

Article 1 of the World Heritage Convention, defines “cultural heritage” as:

- ***monuments***: architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of Outstanding Universal Value from the point of view of history, art or science;
- ***groups of buildings***: groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of Outstanding Universal Value from the point of view of history, art or science;
- ***sites***: works of man or the combined works of nature and man, and areas including archaeological sites which are of Outstanding Universal Value from the historical, aesthetic, ethnological or anthropological point of view.

Article 2 of the Convention defines “natural heritage” as:

- **natural features** consisting of physical and biological formations or groups of such formations, which are of Outstanding Universal Value from the aesthetic or scientific point of view;
- **geological and physiographical formations and precisely delineated areas** which constitute the habitat of threatened species of animals and plants of Outstanding Universal Value from the point of view of science or conservation;
- **natural sites or precisely delineated natural areas** of Outstanding Universal Value from the point of view of science, conservation or natural beauty.

With these definitions in mind, any cultural, natural, or “mixed” heritage property that is deemed by the government of the nation (the “States Party”) to be of ‘Outstanding Universal Value’ can be put forward for nomination to the World Heritage List. The concept of OUV is assessed by ten criteria devised by the World Heritage Committee for this purpose; [2] there are six criteria for cultural and four for natural properties.

To be deemed of outstanding universal value, a property must also meet the conditions of integrity and/or authenticity and must have an adequate protection and management system to ensure its safeguarding (Operational Guidelines paragraph 78). In essence, the nominated site has to be accepted by the World Heritage Committee as being the most outstanding from an international viewpoint.

In its assessment of each site, the World Heritage Committee relies on a technical report by either (or both) of two international non-governmental scientific unions, known as the Advisory Bodies:

- The World Conservation Union (IUCN) for natural sites, and
- The International Council on Monuments and Sites (ICOMOS) for cultural sites.

Mixed sites are assessed jointly by IUCN and ICOMOS. In the case of cultural landscapes the nomination will be evaluated mainly by ICOMOS with input by IUCN. IUCN's role is to ensure that the important natural values found in many cultural landscapes are properly identified and managed. There is a third Advisory Body to the World Heritage Committee; the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM). The specific role of ICCROM in relation to the Convention includes: being the priority partner in training for cultural heritage, monitoring the state of conservation of World Heritage cultural properties, reviewing requests for International Assistance submitted by States Parties, and providing input and support for capacity-building activities.

Ireland's Tentative List:

One of the key strategies of the new programme concerning Ireland's participation in the World Heritage Convention is that a review of the current Tentative List be carried out and that a revised list, with an agreed programme of applications to UNESCO, should be finalised by the end of this year. A Tentative List is an inventory of those properties which each State Party intends to consider for nomination to the World Heritage List in the next five to ten years. A Tentative List is a list of properties which the State Party considers to fulfill the requirement of 'Outstanding Universal Value' (OUV), assessed by ten criteria as outlined in Appendix 1.

Furthermore, to be deemed to be of Outstanding Universal Value cultural properties must fulfill the condition of Authenticity, [3] while both cultural and natural heritage are subject to the condition of Integrity, [4] a measure of the wholeness or completeness of a property. Only sites on the Tentative List can go forward for nomination and such sites will only be successfully inscribed on the World Heritage List if they are shown to be formally protected by the State Party in question, either in the form of a structured management plan or, as is often the case in non-European cultures, a documented management system. [5]

UNESCO recommends that a State Party's Tentative List be updated every ten years, and as Ireland's current Tentative List dates back to 1992, a review is long overdue.

After the successful inscription of Bru Na Boinne and Skellig Michael, no further attempts were made to put forward for nomination any of the remaining sites on the Tentative List, despite their apparent cultural and natural heritage significance. This approach has resulted in Ireland being under-represented on the World Heritage List in relation to some other European countries, a position which is in direct contrast with Ireland's international reputation of being a land of great culture and full of places of outstanding cultural and natural significance. This period is sometimes considered to be a missed opportunity for Ireland to have its vast heritage recognized on a global level, something which the Minister for the Environment, Heritage and Local Government is now seeking to rectify through his newly announced UNESCO World Heritage Programme.

Tentative List compilation:

Much has changed since the drawing up of the Tentative List for Ireland, in terms of how the concept of World Heritage has evolved to include newly recognized categories of heritage, such as industrial and modern heritage sites as well as cultural landscapes, but also in terms of the process of nominating sites to the World Heritage Committee. More stringent constraints are now required by UNESCO on the part of States Parties than before, and these may become even more stringent in years to come. At the time of submission of Ireland's Tentative List in the early 1990s, the development of Tentative Lists was purely a matter for States Parties with very little control being exercised by the UNESCO World Heritage Centre. Consequently a number of the sites nominated at that time would no longer be considered suitable or in line with the strict conditions of Authenticity and Integrity now in place for nominations.

Management plans were also not a formal requirement at the time and in fact, management plans for many of the sites nominated in the early days are only now being submitted. Due to these practices over time, the World Heritage List has become somewhat unbalanced with a high representation of certain types of cultural properties as well as a higher amount of nominations and inscriptions in developed countries, and in Europe in particular. The World Heritage Centre has been concerned about imbalances on the List since the beginning of the World Heritage Convention, which it cites as a result of the relatively long time it has taken some countries to ratify the Convention and the predominance of an essentially Western concept of heritage, focused on monuments.

Natural sites are also considered to be under-represented on the List, with certain categories of natural heritage such as tropical grasslands, lake systems, tundra and polar deserts not well represented on the List, as well as sites of importance for palaeontology and evolution.

Nowadays, the submission of a Tentative List is a formal requirement for States Parties in order to be able to nominate a site for inclusion on the World Heritage List. A Tentative List is not a definitive or exhaustive account of heritage in a State Party's jurisdiction that would be suitable for inclusion on the World Heritage List (hence the name "Tentative"), but rather they should be seen as work in progress, with new cultural properties being added as more evidence emerges. There is also a need for Tentative Lists to be updated on a fairly regular basis to ensure that they reflect the evolving nature of the World Heritage process. States Parties should submit Tentative Lists preferably at least one year prior to the submission of any nomination and then these should be re-examined and resubmitted at least every ten years.

States Parties are also encouraged to provide a description of the process of preparation and revision of the Tentative List, e.g. has (have) any particular institution(s) been assigned the responsibility for identifying and delineating World Heritage properties, have local authorities and local population been involved in its preparation? If so, exact details should be provided. Being on the Tentative List only means that a site appears to meet the criteria for inclusion on the World Heritage List and that it may be nominated – it does not guarantee that a site will be nominated or listed. Only the State Party has the authority to submit sites for nomination and the World Heritage

Committee is then responsible for making the final decisions on which sites are to be designated World Heritage Sites.

The Global Strategy for a Balanced, Representative and Credible WH List:

Tentative List compilation has now become a highly structured process with an emphasis on the importance of comparative analyses and harmonization of Tentative Lists at regional levels. Discussions have been taking place in the World Heritage Committee regarding the need to use Tentative Lists as planning tools at a global level, in order to ensure that a representative sample of properties are being put forward for nomination by States Parties, as well as filling any further ‘gaps’ in the List. Used in this way, Tentative Lists allow the World Heritage Committee and the Advisory Bodies to compare nominated sites with similar ones that might be nominated in future so that they can select only those of Outstanding Universal Value, as well as helping States Parties to identify those sites suitable for nomination. This strategy has gathered great momentum as best practice in the process of nominating sites to the World Heritage List since the adoption of the Global Strategy. [7]

The Global Strategy is an action programme which highlights the need to address imbalances on the World Heritage List in terms of chronological-regional (across time and space), thematic and typological representativity. The Global Strategy advocated two initiatives to be undertaken concurrently:

- the rectification of the imbalances on the List between regions of the world, types of monuments, and periods,
- and at the same time, a move away from a purely architectural view of the cultural heritage of humanity towards one what was more anthropological, multi-functional and universal.

With the move away from the monumental conception of World Heritage to a more anthropological conception, new heritage themes have been identified; for example, “Human Coexistence with the Land” and “Human Beings in Society” are two themes which have been highlighted by the World Heritage Committee as being underrepresented. As part of the Global Strategy, States Parties are encouraged to consult the analyses of both the World Heritage List and Tentative Lists prepared at the request of the Committee by ICOMOS and IUCN to identify the gaps in the World Heritage List. These analyses enable States Parties to compare themes, regions, geo-cultural groupings and bio-geographic provinces for prospective World Heritage properties. [8]

In addition, States Parties are encouraged to also harmonize their Tentative Lists at regional and thematic levels. Harmonization of Tentative Lists is the process whereby States Parties, with the formal assistance of the Advisory Bodies, collectively assess their respective Tentative List to review gaps and identify common themes. [9]

The outcome of harmonization can result in improved Tentative Lists, new nominations from States Parties and co-operation amongst groups of States Parties in the preparation of nominations. Such co-operation in the harmonization of Tentative Lists has taken place between the Nordic Countries (1996), the Caucasian countries (2002), the Baltic Region (2003) and Central America (2004) to name only a few.

States Parties are also encouraged to consult the specific thematic studies carried out by the Advisory Bodies. These studies are informed by a review of the Tentative Lists submitted by States Parties and by reports of meetings on the harmonization of Tentative Lists, as well as by other technical studies performed by the Advisory Bodies and qualified organizations and individuals. [11]

Studies by ICOMOS have encompassed a variety of themes including a study on the Modern Movement (1997), a study on railways as World Heritage sites (1999), one on Southern African rock art sites (2002) and one on Orthodox monasteries in the Balkans (2002) [12].

As recommended by the 1994 report on the Global Strategy, regional thematic expert meetings have been organized in all the UNESCO regions. These have included, for instance, thirteen international meetings held on cultural landscapes, a category adopted by the World Heritage Committee at its sixteenth session in 1992, which demonstrates the nature–culture continuum. Themes have included cultural landscapes in Africa (Expert Meeting, Tiwi, Kenya, March 1999), cultural landscapes in the Andes (Arequipa and Chivay, Peru, May 1998), sacred mountains in the Asia–Pacific region (Wakayama City, Japan, September 2001) and vineyards cultural landscapes in Europe (Tokaj, Hungary, July 2001).

Other regional expert meetings focused on identifying potential World Heritage properties in regions under represented on the World Heritage List. Examples include the First Global Strategy Meeting in Africa (Harare, Zimbabwe, 11–13 October 1995) or the Second World Heritage Global Strategy Meeting for the Pacific (Port Vila, Vanuatu, 24–27 August 1999). Since 1998, Regional Action Plans have also been developed, based on specific objectives, targets and activities to help establish a more balanced and representative World Heritage List. As also recommended by the 1994 experts group on the Global Strategy, thematic and comparative studies have been initiated by ICOMOS. These studies evaluate proposed World Heritage properties in their regional, global or thematic context. What is “under-represented” on the World Heritage List is then partially derived from thematic studies conducted by the Advisory Bodies and the harmonization of Tentative Lists, particularly within the same region.

The Cairns Decisions

The ‘Cairns Decisions’ are a number of resolutions adopted by the World Heritage Committee at its twenty-fourth session held in Cairns (Australia) in 2000. These decisions are aimed at improving the representativity, balance and credibility of the World Heritage List and managing the workload of the Committee, Advisory Bodies and the World Heritage Centre. One of the decisions adopted by the Committee in 2000 was to limit initially to thirty the number of new nominations it will review, exclusive of nominations deferred or referred at its previous sessions.

At its twenty-eighth session in 2004, the Committee decided that, from 2006 onwards, the number of nominations it will annually review will be limited to forty-five, inclusive of nominations deferred and referred by previous sessions of the Committee, extensions, transboundary nominations, serial nominations and nominations submitted on an emergency basis.

In 2000 it was also agreed that, in the event that the number of nominations received exceeds the maximum number set by the committee, the following priority system will be applied each year:

(i) nominations of properties submitted by States Parties with no properties inscribed on the List

(ii) nominations of properties from any State Party that illustrate unrepresented or less represented categories of natural and cultural categories.

(iii) other nominations. [13]

At its twenty-eighth session in 2004, the World Heritage Committee decided that the order of priorities for the examination of new nominations shall remain as decided at its twenty-fourth session in 2000. This measure will hopefully help to limit the number of nominations submitted by European States Parties and encourage those States Parties that do not yet have any sites inscribed on the World Heritage List to submit nomination dossiers. At the Cairns meeting, the World Heritage Committee also decided that, from 2002 onwards, it will only examine one nomination dossier per State Party at each of its sessions.

In 2004, at its twenty-eighth session, the Committee decided that, from 2006 onwards, States Parties could submit up to two complete nominations, provided that at least one of such nominations concerns a natural property. It is hoped that this measure will help to reduce the numerical imbalance between natural and cultural heritage sites on the World Heritage List.

In 2007, the World Heritage Committee set the following priorities for the review of nomination dossiers, should the annual limit of 45 nominations be exceeded;

1. nominations of properties submitted by States Parties with no properties inscribed on the List;
2. nominations of properties submitted by States Parties having up to 3 properties inscribed on the List,
3. nominations of properties that have been previously excluded due to the annual limit of 45 nominations and the application of these priorities,
4. nominations of properties for natural heritage,
5. nominations of properties for mixed heritage,
6. nominations of transboundary/transnational properties,
7. nominations from States Parties in Africa, the Pacific and the Caribbean,
8. nominations of properties submitted by States Parties having ratified the World Heritage Convention during the last ten years,
9. nominations of properties submitted by States Parties that have not submitted nominations for ten years or more

This updated order of priorities of assessing nomination dossiers is especially pertinent for Ireland, which has less than three World Heritage sites and has also not submitted a nomination within the last ten years.

New approaches to World Heritage site nomination:

Due to the need to maintain the credibility of the World Heritage List by only inscribing the most superlative examples of heritage properties around the world, many countries are now exploring the possibilities of working with other countries in linking up themes or types of sites and putting forward 'transnational' nominations.

A transnational nomination is any nomination involving properties on the territory of more than one State Party. The term was adopted by the World Heritage Committee in 2005, after the former term 'transboundary' was found to be inadequate to designate properties that need not share any common boundary. Such nominations can be adjoining properties, straddling a common national boundary; or can consist of two or more physically unconnected areas (serial properties). Any form of transnational nomination requires cooperative management between the States Parties on whose territories the transnational nominations lie. The World Heritage Committee has provided an incentive to the preparation of transnational nominations by deciding to exempt them from the limit of one cultural and natural nomination per State Party per year, which means that each State Party participating in the transnational nomination is not limiting their own individual chances of nominating sites for that year.

Serial nominations can also occur within the territory of a single country as well as across two or more countries. It is an extremely popular form of nomination and attempts to link up similar sites into one listing in order to mitigate the over-representation of certain types of heritage on the List. It reduces the amount of competition between countries trying to nominate similar sites and instead is a way of fostering international cooperation. Serial nominations have a high rate of successful inscription as it is the series as a whole – and not necessarily the individual parts of it – which are of Outstanding Universal Value. [14]

This position was under discussion at the 32nd meeting of the World Heritage Committee in Quebec in 2008, as some believe that it may damage the credibility of the World Heritage List to include on it properties which do not merit inscription by themselves. An upcoming expert working group meeting on this topic may lead to the revision of Paragraph 137 of the Operational Guidelines, as well as a closer examination of the role of the World Heritage Centre in promoting and coordinating such nominations. Whether Paragraph 137 is revised or not, serial nominations are not easy options but pose great challenges both in the preparation of the nominations and in their on-going management.

An example of a serial listing is the Struve Geodetic Arc; this is a transnational World Heritage Site which has sites spread out across ten countries from Norway in the north, down to the Black Sea. The sites are points of a survey, carried out between 1816 and 1855 by the astronomer Friedrich Georg Wilhelm Struve, which represented the first accurate measuring of a long segment of a meridian. This helped to establish the exact size and shape of the planet and marked an important step in the development of earth sciences and topographic mapping. It is an extraordinary example of scientific collaboration among scientists from different countries, and of collaboration between monarchs for a scientific cause. Discussions are underway in the World Heritage Committee regarding the serial listing of sites which are already separately inscribed on the List. France is currently considering this option to combine several of its cathedrals into a single serial nomination. By linking up individual World Heritage sites into one World

Heritage serial listing, the European numerical bias of the List could be reduced by sinking the amount of World Heritage listings, while not reducing the actual number of protected sites under the World Heritage Convention. This measure would not reduce the cultural/natural significance of each individual site nor diminish the prestige value of the listings.

The nomination of cultural routes is another way of linking similar sites into one serial listing. This type of World Heritage site should be based on historical cultural routes such as the Route of Santiago de Compostella in Spain, inscribed on the list in 1993. Cultural routes also have great potential as transnational nominations. France has its own Routes of Santiago de Compostella World Heritage site, inscribed since 1998. Discussions are now progressing between the two States Parties to join up these two separate sites into one listing in the form of a transnational cultural route property. The linking of routes on a transnational level is also occurring between other States Parties; discussions about potential routes such as The Great Silk Road linking China to the Mediterranean or the Slave and Salt Routes in Africa. As yet, no complete nomination of a transnational cultural route has been presented.

Approximately twenty-three proposals for routes (or portions of routes) are currently on States Parties' Tentative Lists. New approaches to World Heritage nominations are therefore based on new thematic frameworks and also the shared heritage of nations. These new approaches assist States Parties in preparing nominations by using a thematic framework for identifying relevant sites and a methodology for preparing appropriate transboundary and transnational cooperation mechanisms. Transnational nominations are increasingly being encouraged by the World Heritage Centre, especially in the case of countries whose heritage is under- or unrepresented on the List or who lack the resources or knowledge necessary to capably demonstrate the OUV of their properties. By linking up with more experienced States Parties, such unrepresented countries can build their capacity by drawing on past experiences in the process of nominating sites to the World Heritage Committee. This form of capacity building is one of the main thrusts of the Global Strategy as well as one of the five strategic objectives for promoting the implementation of the World Heritage Convention (or the five 'C's) as outlined in the Operational Guidelines (paragraph 26).

Four of the five strategic objectives were outlined in the Budapest Declaration on World Heritage, adopted by the World Heritage Committee in 2002.

A fifth 'C' of **Community** was added in 2007 to the already established 'C's of **Credibility** (of the World Heritage List), **Conservation** (of World Heritage Properties), **Capacity-building** and **Communication** (increased awareness-raising, involvement and support for World Heritage). New Zealand proposed the adoption of the fifth 'C' in order to place "humanity at the heart of conservation" and in the belief that each of the original four 'C's are all intrinsically linked to the idea of community (WHC 2007). These strategic objectives have importance for the compilation of Tentative Lists as they underline the evolution of the World Heritage List in recent years.

Stakeholder and Local Community involvement:

As can be seen from above, one of the most important strategies being emphasised at this time is the active involvement of local stakeholder interest groups and local communities and the need for State Parties to get their support in the nomination process, which includes the drawing up of Tentative Lists, and also in the management of World Heritage sites. Paragraph 123 of the 2008 Operational Guidelines indicates that ‘participation of local people in the nomination process is essential to enable them to have a shared responsibility with the State Party’.

States Parties have long been encouraged by UNESCO to prepare their Tentative Lists with the participation of a wide variety of stakeholders, including site managers, local and regional governments, local communities, NGOs and other interested parties and partners; however this may soon change from being a recommendation to a requirement of nomination. More rigorous mechanisms for the compilation of Tentative Lists were discussed in Quebec at the 32nd Session of the World Heritage Committee which will make drawing up of the Lists a much more scientific and analytical exercise, entailing a lot more pre-nomination documentation at the Tentative List level.

These mechanisms will also necessitate greater involvement of local communities and other stakeholder interest groups than what has been required up until now. Buffer zones of World Heritage sites have also been highlighted as a means of involving local communities and stakeholders in World Heritage site management. The International Expert Meeting on World Heritage and Buffer Zones which took place in March 2008 expressed the importance of the use of buffer zones as a mechanism to share the benefits of World Heritage designation with local communities and stakeholders and to enhance the sustainable use of World Heritage sites.

Authenticity and Integrity:

Also discussed at the World Heritage Committee in Quebec was the evolving nature of the concept of Outstanding Universal Value and the need for State Parties to adequately justify each site’s Outstanding Universal Value in order for them to feature on a Tentative List. Furthermore, each site being submitted on a revised Tentative List must be able to satisfy the conditions of Authenticity (for cultural properties) and Integrity. These conditions have evolved over the years in line with the List itself and also with the need to make them more applicable to more diverse cultural contexts. Originally the condition of Integrity, which is a measure of the completeness of wholeness of a property, only applied to natural properties but is now invoked when assessing both cultural and natural properties.

Examining the conditions of Integrity requires assessing whether or not the property:

- includes all elements necessary to express its Outstanding Universal Value;
- is of adequate size to ensure the complete representation of the features and processes which convey the property’s significance;
- is free from the adverse effects of development and/or neglect.

The condition of Authenticity has also been expanded in both wording and scope. This was recommended to facilitate nominations and inclusions of less traditional categories of cultural heritage on the List. Up until 1994, the Operational Guidelines had recognized that Authenticity should be judged according to four attributes: design, materials, workmanship or setting.

The Nara Document on Authenticity (1994) was a defining moment in the life of the World Heritage List as it recognized that Authenticity should be judged within the cultural context to which it belongs and that it could be expressed through a multitude of attributes. A key determinant for Authenticity is that the significance of the property should be credibly expressed through a variety of attributes, for example, in relation to the site's original characteristics and the extent to which these may have been modified over time. Depending on the type of cultural heritage, and its cultural context, properties may be understood to meet the conditions of Authenticity if their cultural values (as recognized in the nomination criteria proposed) are truthfully and credibly expressed through a variety of attributes including:

- form and design;
- materials and substance;
- use and function;
- traditions, techniques and management systems;
- location and setting;
- language, and other forms of intangible heritage;
- spirit and feeling; and
- other internal and external factors. [15]

Tentative Lists as Planning Tools:

When used in comparative analyses on a global level, well-developed Tentative Lists are not only the first step towards inscription, but can also help with the development of an overall understanding of cultural heritage significance within a country or region and thus have an impact far wider than on the identification of potential World Heritage. Often a Tentative List is revised only to include a particular property which States Parties wish to nominate in the immediate future. However, revisions of Tentative Lists by certain States Parties may be regarded as best practice.

IUCN, for example, noted in 2004 [16] that Madagascar and Canada have undertaken comprehensive reviews of their natural and mixed World Heritage properties (both inscribed and potential properties) as an input to the preparation of their Tentative Lists. The Tentative List prepared for Canada also proposes areas that may merit nomination as transboundary or transnational World Heritage properties. Other best practice examples of Tentative List revisions include the UK, Mexico and Uruguay. [17]

More recently in 2008, IUCN again highlighted Canada and also Norway and Japan as models of Tentative List preparation and recommended that these examples be followed by other States Parties. A key feature of these examples is a lengthy scientific based assessment of those most outstanding properties with the greatest potential to meet the criteria of OUV and the

conditions of Integrity. In the case of Japan, for example, this process resulted in the nomination and inscription of Shiretoko in 2005; in the case of Norway, this process resulted in the nomination and inscription of the West Norwegian Fjords, also in 2005¹⁸. Both IUCN and ICOMOS concluded that more work is required to improve the quality of Tentative Lists before they can be effectively used as a tool to assist the further identification of potential cultural, natural and mixed World Heritage sites. The results of the Periodic Reporting exercises could lead to better Tentative Lists, increased harmonization, improved and focused nominations and therefore a more balanced World Heritage List. [19]

At this point it is useful to recall the recommendations concerning Tentative Lists of the Special Expert Meeting on “The Concept of Outstanding Universal Value”, Kazan, Russian Federation in April, 2005. [20]

The Experts recommended that:

- States Parties should each establish a coordination mechanism with an interdisciplinary composition to undertake and oversee effectively the implementation of the World Heritage Convention and the preparation and review of Tentative Lists in particular;
 - Tentative Lists should be seen as part of the effort of conservation of national heritage;
 - Properties on Tentative Lists should have national and/or other appropriate recognition;
 - Compilation of Tentative Lists should involve local communities and indigenous peoples and should include public consultation where appropriate;
 - The compilation of Tentative Lists should take account of the Global Strategy, comparative studies and the Advisory Bodies gap analysis;
 - The preparation of Tentative Lists should have due regard to other international conventions and programmes;
- In preparation of their Tentative Lists, States Parties should be rigorous in their local evaluation to ensure that expectations of inscription match reality;
 - The size of a Tentative List should take into account the Cairns-Suzhou Decision and the 10 years cycle of the Tentative List recommended by the Operational Guidelines; [21]
 - The comparative analysis should be developed by regions and themes;
 - Regional meetings on harmonization of Tentative Lists should identify types of properties for nomination in a given region, and those for possible inclusion as transnational and transboundary properties;
 - The Advisory Bodies should complete their thematic studies and initiate and facilitate appropriate regional and comparative studies as soon as possible and in a time scale to allow States Parties to identify categories and themes of heritage that are relevant for completion of all Tentative Lists in 2007 and the revision of existing Tentative Lists;

- States Parties with no Tentative Lists should be encouraged to request preparatory International Assistance if necessary for preparing Tentative List;
- The Advisory Bodies, within their available resources, should comment on the Tentative Lists of all States Parties upon request;
- The World Heritage Centre and the Advisory Bodies should provide a compilation of best practices and publish a number of training manuals;
- The World Heritage Centre should prepare a handbook to inform property owners and stakeholders about the process and requirements for inscription on the List of World Heritage, and to clarify expectations concerning the benefits and commitments that may result from being inscribed as a World Heritage property.

As of 15 April 2008, of the 185 States Parties which have ratified the Convention, 162 had submitted Tentative Lists in accordance with the requirements specified in the Operational Guidelines, while 23 States Parties had not submitted any Tentative List.

Since the 31st session of the Committee in July 2007 up until 15 April 2008, 32 States Parties have submitted new Tentative Lists or modified existing Lists. The number of new properties added to Tentative Lists in this time was 227. [22]

The Process of Compiling a Tentative List – Best Practice Models

In order to establish a best practice methodology for the revision of the current Tentative List, it is fruitful to examine international examples deemed by the Advisory Bodies to the World Heritage Committee to be models of best practice, such as Canada. The driving force of the Canadian method was a lengthy scientific based assessment of those most outstanding properties within their territory with the greatest potential to meet the criteria of OUV and the conditions of Authenticity and Integrity, followed by an extensive national process of stakeholder consultation.

Canadian approach:

Firstly, two Canadian experts with international cultural and natural heritage experience were tasked with carrying out a study to identify changes in trends and policies in the identification of potential World Heritage sites as well as a preliminary assessment of possible Canadian sites in light of World Heritage criteria and the priorities outlined in the Global Strategy. Sites assessed include those suggested by Canadians during the past two decades, as well as other sites that appeared to meet OUV criteria. Following this initial phase, Parks Canada (acting as Canada's State representative to the Convention) consulted with provincial and territorial representatives, interested national organizations, Aboriginal groups and key stakeholders across Canada, using the two independent experts' research reports as a basis for discussion.

Overall, one hundred and twenty-five proposals for new sites were received. A Minister's Advisory Committee met four times to review the two reports and the results of the consultations in order to identify the sites with the most potential for inscription on the World Heritage List. As recommended by

UNESCO, stakeholder support was emphasised throughout the process: any site nominated as a potential World Heritage site had to have the support of those responsible for the site as well as the respective provincial/territorial governments, as well as Aboriginal groups. This support was to be based on an understanding of the implications of inscription. In some cases, more detailed consultations with the stakeholders of the sites recommended by the Minister's Advisory Committee were necessary to ensure their support for including these sites on the revised Tentative List. The result of this approach was a short revised Tentative List (11 sites) that was well researched and had broad public support.

Analysis of Best Practice Approach to Tentative List Compilation

On examination of international best practice models, the recommended approach for compiling or reviewing a Tentative List is one firmly grounded in a scientific and structured framework, using a research document as a point of departure.

Tentative List Review Methodology:

(1) *The Establishment of an Expert Advisory Group:* The establishment of an Expert Advisory Group representative of both national and international experts in World Heritage to oversee and validate the review of the Tentative List.

(2) *A Guidance Document on Tentative List and WH status:* A draft guidance document entitled "*Tentative List and World Heritage Status*" will be circulated to the Expert Advisory Group by the end of September, 2008 for their consideration and on the basis of this guidance document they will be asked to identify a number of potentially suitable sites for nomination to the WHL. They will also be requested to take into account those sites remaining on the current tentative list, together with representations made for other sites since the current tentative list came into effect. Public Consultation on possible sites to begin with Press Release by the Minister and a press advertisement at the beginning of December, 2008 with ideas coming from the public received by the Department by 30 January, 2009. Letters will also issue to all local authorities, NGO's and interested stakeholders and prescribed bodies also inviting proposals by 30 January 2009.

(3) *Regional Information Seminars for Local Authorities:* The next phase will commence with Regional Information Seminars for Local Authorities, NGO's and interested stakeholder groups who will have a significant role to play in the effective planning policies and protection for those sites nominated for the new Tentative List. A presentation will be made on the Guidance Document and the role of the Expert Advisory Group. Local authorities will be asked to comment on the list of potential sites/properties identified by the Expert Advisory Group. This phase to be completed by the end of March 2009.

(4) *Public Consultation:* The discussion paper and the list of potential sites/properties may be placed on an Interactive Website similar to that being

used for the Architectural Policy Review at the moment. This will enable wider public participation in the process. The comments from this should also be received by end of March, 2009.

The information and updates on the review process can also be placed on the Department's website, on the website of OPW and the Dept. of Arts, Sport and Tourism and comments invited.

The documents might also be circulated to ICOMOS Ireland, Local Authorities and the Heritage Council.

A media advertisement campaign will be undertaken indicating that the Tentative List is being compiled and providing information on the Advisory Expert Group representative of national and international experts.

Public consultation will take place from December 2008 until end of March 2009.

Taking into account the feedback/output from the public consultation fora and interactive website, the Expert Advisory Group will identify the appropriate sites/properties/themes for inclusion on the new Tentative List.

The new draft Tentative List will then be submitted to the Minister for his agreement by the middle of April 2009.

The intention is to forward the list to the WH Centre in time for the World Heritage Committee 33rd Session in Seville in July 2009.

APPENDIX

Selected Paragraphs from Operational Guidelines (2008)

Criteria for the assessment of outstanding universal value

77. The Committee considers a property as having outstanding universal value (see paragraphs 49- 53) if the property meets one or more of the following criteria. Nominated properties shall therefore :

- (i) represent a masterpiece of human creative genius;
- (ii) exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design;
- (iii) bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;
- (iv) be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;
- (v) be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;
- (vi) be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria) ;

(vii) contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;

(viii) be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features;

(ix) be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;

(x) contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

78. To be deemed of outstanding universal value, a property must also meet the conditions of integrity and/or authenticity and must have an adequate protection and management system to ensure its safeguarding.

Authenticity

79. Properties nominated under criteria (i) to (vi) must meet the conditions of authenticity. which include the Nara Document on Authenticity, provides a practical basis for examining the authenticity of such properties and is summarized below.

80. The ability to understand the value attributed to the heritage depends on the degree to which information sources about this value may be understood as credible or truthful. Knowledge and understanding of these sources of information, in relation to original and subsequent characteristics of the cultural heritage, and their meaning, are the requisite bases for assessing all aspects of authenticity.

81. Judgments about value attributed to cultural heritage, as well as the credibility of related information sources, may differ from culture to culture, and even within the same culture. The respect due to all cultures requires that cultural heritage must be considered and judged primarily within the cultural contexts to which it belongs.

82. Depending on the type of cultural heritage, and its cultural context, properties may be understood to meet the conditions of authenticity if their cultural values (as recognized in the nomination criteria proposed) are truthfully and credibly expressed through a variety of attributes including:

- form and design;
- materials and substance;
- use and function;
- traditions, techniques and management systems;
- location and setting;
- language, and other forms of intangible heritage;
- spirit and feeling; and
- other internal and external factors.

83. Attributes such as spirit and feeling do not lend themselves easily to practical applications of the conditions of authenticity, but nevertheless are important indicators of character and sense of place, for example, in communities maintaining tradition and cultural continuity.

84. The use of all these sources permits elaboration of the specific artistic, historic, social, and scientific dimensions of the cultural heritage being examined. "Information sources" are defined as all physical, written, oral, and figurative sources, which make it possible to know the nature

85. When the conditions of authenticity are considered in preparing a nomination for a property, the State Party should first identify all of the applicable significant attributes of authenticity. The statement of authenticity should assess the degree to which authenticity is present in, or expressed by, each of these significant attributes., specificities, meaning, and history of the cultural heritage.

86. In relation to authenticity, the reconstruction of archaeological remains or historic buildings or districts is justifiable only in exceptional circumstances. Reconstruction is acceptable only on the basis of complete and detailed documentation and to no extent on conjecture.

Integrity

87. All properties nominated for inscription on the World Heritage List shall satisfy the conditions of integrity

88. Integrity is a measure of the wholeness and intactness of the natural and/or cultural heritage and its attributes. Examining the conditions of integrity, therefore requires assessing the extent to which the property:

- a) includes all elements necessary to express its outstanding universal value;
- b) is of adequate size to ensure the complete representation of the features and processes which convey the property's significance;
- c) suffers from adverse effects of development and/or neglect. This should be presented in a statement of integrity.

89. For properties nominated under criteria (i) to (vi), the physical fabric of the property and/or its significant features should be in good condition, and the impact of deterioration processes controlled. A significant proportion of the elements necessary to convey the totality of the value conveyed by the property should be included. Relationships and dynamic functions present in cultural landscapes, historic towns or other living properties essential to their distinctive character should also be maintained.

90. For all properties nominated under criteria (vii) – (x), bio-physical processes and landform features should be relatively intact. However, it is recognized that no area is totally pristine and that all natural areas are in a dynamic state, and to some extent involve contact with people. Human activities, including those of traditional societies and local communities, often occur in natural areas. These activities may be consistent with the outstanding universal value of the area where they are ecologically sustainable.

91. In addition, for properties nominated under criteria (vii) to (x), a corresponding condition of integrity has been defined for each criterion

92. Properties proposed under criterion (vii) should be of outstanding universal value and include areas that are essential for maintaining the beauty of the property. For example, a property whose scenic value depends on a

waterfall, would meet the conditions of integrity if it includes adjacent catchment and downstream areas that are integrally linked to the maintenance of the aesthetic qualities of the property.

93. Properties proposed under criterion (viii) should contain all or most of the key interrelated and interdependent elements in their natural relationships. For example, an “ice age” area would meet the conditions of integrity if it includes the snow field, the glacier itself and samples of cutting patterns, deposition and colonization (e.g. striations, moraines, pioneer stages of plant succession, etc.); in the case of volcanoes, the magmatic series should be complete and all or most of the varieties of effusive rocks and types of eruptions be represented.

94. Properties proposed under criterion (ix) should have sufficient size and contain the necessary elements to demonstrate the key aspects of processes that are essential for the long term conservation of the ecosystems and the biological diversity they contain. For example, an area of tropical rain forest would meet the conditions of integrity if it includes a certain amount of variation in elevation above sea level, changes in topography and soil types, patch systems and naturally regenerating patches; similarly a coral reef should include, for example, seagrass, mangrove or other adjacent ecosystems that regulate nutrient and sediment inputs into the reef.

WHAT IS A BIODIVERSITY HOTSPOT?

A biodiversity hotspot is a region of the Earth which is extremely biologically diverse and also under severe threat due to habitat loss, climate change, or extensive species loss. Around 25 sites worldwide are recognized as biodiversity hotspots, and several organizations have made efforts to protect these sites. Guarding such regions from further damage is considered environmentally and culturally important, as a biodiversity hotspot hosts organisms which are not found anywhere else on Earth.

There is some argument about how to define a biodiversity hotspot, with many definitions focusing heavily on vascular plants, sometimes at the expense of other living organisms. As a general rule, in order to be considered a biodiversity hotspot, a region must be biologically diverse, with a high proportion of species which are not found anywhere else on Earth, and the security of the region must be threatened. Losing more than 70% of native vegetation, for example, is a clear example of a threat to a biodiversity hotspot.

These regions can be found all over the world, and they vary considerably in size and composition. The California Floristic Province, for example, extends along the West Coast of North America, and covers both land and water, encompassing the rich ocean life off the coast of California along with the diverse plant and animal species found in California, Oregon, and Northern Mexico. The Succulent Karoo in Africa, on the other hand, covers a relatively small and extremely arid region, in marked contrast to the lush environments of sites like the Atlantic Forest in South America and the countries of New Zealand and Japan, both of which are considered biodiversity hotspots.

These regions contain around 60% of all of the species found on Earth, and because these species are endemic, damage to biodiversity hotspots could cause significant problems. Biodiversity as a whole on the Earth would decline, because many species would vanish forever if their native habitats were severely compromised. In addition to being simply unfortunate, a decline in biodiversity could mean that humans might lose access to medically important plant species, among many other things.

Some biodiversity hotspots have been protected through legislation or acquisition of threatened regions by conservation organizations. However, greater protection is needed for most of these regions, and some researchers would like to see the definition expanded to cover more areas in danger which are not currently considered biodiversity hotspots. The human populations which live near biodiversity hotspots also have a vested interest in the survival of these unique regions of the Earth, since many communities make their living from the diverse plant and animal life in such areas.

Potential Negative Effects of Transboundary Nature Reserves

As we know, each country has its own specificity due to its geographical position and its development throughout history, and is characterized by its own set of social values, customs and traditions that lead to its own specific decisions based on its own laws and administrative systems. When a country enters into agreements with other countries, it is keen that these conventions will not be conducive to the detriment of its interests and will not lead to radical changes in its values or in its administrative and legal systems. However, there is always a calculation of costs and benefits. If losses and benefits are clearly calculated and there is an excess of revenues over cost, the cost may be accepted. Costs and returns are not to be calculated only as financial accounts; social, legal, political, military (security) and environmental costs and benefits are also to be accounted for.

Intergovernmental and international non-governmental organizations do not leave any occasion to invite countries to expand the establishment of transboundary nature reserves of every kind across their borders. These are advocated to be a means for bringing peace among nations and for promoting cooperation between neighbouring populations within the reserves, for sustainable development. Our libraries are flooded by hundreds of books and research papers published in scientific journals, aiming to persuade countries of the benefits of transboundary reserves in providing gains from tourism and in establishing a climate of peace between nations. However, recent events in the eastern DR Congo, show the non-validity of this expectation, since rebels on the one hand and refugees on the other hand, seized the adjacent protected areas on the border between Uganda, Rwanda and Congo, killed their guardians, wrought havoc, destroyed biodiversity, and no one can – up till now - stop them from doing so.

There are currently 188 transboundary nature reserves of all kinds in the world. Therefore, it has been possible for some researchers and some international organizations as well, to identify a number of real and potential negative consequences of such reserves, through the dense fog of the international campaign calling for their establishment. This research shows

that the cost may significantly exceed revenues. Some researchers even found that such reserves may sometimes lead to new conflicts between neighbouring countries, instead of establishing peace and sustainable development.

The following are some elements of the cost of these transboundary nature reserves:

- 1 - Financial aspects: the cost of setting up the infrastructure and superstructure and uncertainty as the expected gains,
- 2 - Political aspects: having to engage in international agreements after painstaking negotiations in precise details, in order to avoid possible political disagreements in the future, and obliging the State to grant certain privileges to international organizations in charge of overseeing the management of the protected areas, which would curtail the role of the State and its sovereignty over its natural resources,
- 3 - Military aspects: the obstruction of border security and control measures that may be caused by the management regulations of such reserves, making easy the infiltration of insurgents or smugglers or other undesirable persons and goods,
- 4 - Social aspects: conflicts could arise between people on both sides of the border as a result of the lack of agreement on the sharing of benefits, or for reasons due to the acquisition of land or due to ethnic differences or for other differences,
- 5 - Legal and judiciary aspects: the fact that the national judiciary in some cases might be obliged to apply international or foreign laws not consistent with the country's laws,
- 6 - Environmental and Health aspects: the possible inability to control the infiltration of diseases or pests or genetically engineered organisms, and perhaps the inability to get rid of existing diseases and pests,
- 7 - Water Resources Management: In case of World Heritage sites, planning by two or more States to set up projects for the development of surface or underground water resources within or adjacent to transboundary World Heritage sites, it will be necessary to consult with the World Heritage Center at UNESCO prior to the implementation of such projects; the Center may object to these projects or may propose amendments that may reduce their usefulness.

The World Heritage Convention, contrary to the UNESCO Man and Biosphere (MAB) Programme, neither established National World Heritage Committees nor did it establish Regional Networks of World Heritage Committees and/or sites. This structural void makes it difficult for neighbouring countries to discuss their problems with transboundary World Heritage sites, either at the national, regional, or international levels. We suggest that existing National MAB Committees and Regional MAB Networks tackle issues of World Heritage sites in their agendas, in order to discuss such issues freely and in an informal way.

The experience of Regional Networks of MAB National Committees and for Biosphere Reserves shows that the MAB Programme does not restrict the States from implementing projects within their own Biosphere Reserves as they may wish. There is complete freedom and flexibility in the exchange of

information and cooperative activities between the countries in the same region, such as for the European Network EuroMAB or for the Arab or African Networks (ArabMAB and AfriMAB), or between regions. Under the MAB Programme, two countries, one from Africa and the other from Europe, Morocco and Spain, recently agreed to establish a Transcontinental Biosphere Reserve, with the purpose of enhancing cross-border cooperation between them. However, it is noted that the establishment of such a Reserve - at least until now – is of practically little avail in solving the old and persistent political and economic disagreements between these two countries.

<http://www.wisegeek.com/what-is-a-biodiversity-hotspot.htm>

The World Heritage List. What is OUV?

Defining the Outstanding Universal Value of Cultural World Heritage Properties

An ICOMOS study compiled by Jukka Jokilehto, with contributions from Christina Cameron, Michel Parent and Michael Petzet

Summary

Following on from and completing the volume *Monuments and Sites XII "The World Heritage List, Filling the Gaps – an Action Plan for the Future"*, published in 2005, this new volume takes a comprehensive look back at the work done among other by ICOMOS since 1976 as an advisory body to the World Heritage Committee in relation to the criteria for the outstanding universal value (OUV) required by the Convention as a precondition for the inscription on the World Heritage List. It contains chapters on: the development of the OUV concept; characteristics of the OUV criteria i.) – vii.) and their justification; different aspects of using the criteria; other requirements for inscription; reasons for non-inscription; as well as conclusions and recommendations and a series of annexes, some of which represent previously unpublished material.

Eight Recommendations

1. For nomination, consider the list of priority habitat types
2. Each state party should develop Tentative List by technical workshop followed by regional harmonization
3. Continue use of Udvardy system for comparative analysis, but for marine areas, WWF ecoregion could be useful
4. Global Theme Studies is useful for scientific nomination and evaluation, so it should be continued. (Deserts and Grasslands; Polar regions; Central Asia; and Freshwater Lakes/Wetlands/Rivers in 2004-2008)
5. Support UNEP-WCMC's proposal of "World Heritage Atlas"
6. Serial and transboundary nominations should be widely used through regional cooperation
7. Full use of other international instruments, namely:
 - MAB Biosphere Reserve
 - Ramsar Sites
 - Regional designations: EU – Natura2000 □ Alpine and Carpathian Convention (ASEAN Heritage)
 - Geopark (UNESCO)
 - High seas and Antarctica □ not suite for WH Convention □
8. **More attention to the better management of existing heritage sites**

Transboundary World Heritage Sites and Protected Areas

(TBPAs)

by
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for the UNESCO Man and Biosphere Programme (MAB)

January 2008

It is a well known fact that UNESCO's primary objective, besides working together with its Member States to develop and promote education, science and culture in all countries of the world, is to achieve mutual understanding among nations and peoples. Therefore, UNESCO proposed two activities, approved by its Member States, aimed at establishing two types of natural and cultural reserves. The first was under the umbrella of the Man and Biosphere Programme (MAB) in 1971, which established the so-called "Biosphere Reserves", which were organized in the "World Network of Biosphere Reserves". The second was launching the Convention for the Conservation of the World Cultural and Natural Heritage in 1972, which establishes a "World Heritage List of Cultural and Natural Sites". UNESCO became interested, ever since the start of these reserve systems, in encouraging the declaration of Biosphere Reserves or Cultural and Natural World Heritage Sites between two or more countries, and called transboundary or transboundary sites. The number of such joint protected areas or sites between two or more countries increased in recent years, so that there are now many countries willing to share with other countries on the opposite side of the border, or sometimes sites that are not contiguous sites, but far apart. As a result, the question arises: What are the issues that should be examined in this new type of reserves, whether they follow one or the other of the two activities of UNESCO, or that could be implemented through an agreement between two or more countries and may not require the involvement of UNESCO or are not related to its activities.

Among these questions are:

- 1 – What exactly are the descriptions of the missions and duties of the joint committees between the States concerned and what are their functions?
- 2 – What controls are to be put in place for the rational exploitation of resources of protected areas across borders?
- 3 – What are the international obligations of each party towards the other?
- 4 – What should be the management regulations of transboundary protected areas?
- 5 – What security controls are to be put in place for visits, trips, accommodation, special missions, and scientific research?

6 – What specific contributions are to be expected for the ways and means UNESCO can help in enhancing the services and values of transboundary protected areas (physical, technical, managerial, imposing specific obligations on any party for international recognition, etc...?)

Present Situation of transboundary Protected Areas:

All international documents on transboundary protected areas existing so far, are as a guidance or recommendations only, and not yet raised to the level of international law, whether soft or hard. They however give many directions and approaches that could serve as starting points for the preparation of national plans of this type of protected areas. As can be seen from the comparison of these documents, the first requirement in the guidelines and recommendations issued by international bodies, or even in the agreements or memoranda of understanding between two or more countries, is a common desire among neighboring countries to establish joint transboundary protected areas between the two. A common will on the part of the two countries concerned is clearly the first condition for the establishment of such protected areas (TBPAs).

We propose to start answering these questions with the first one, concerning the description of the missions and duties of the joint committees between the States concerned, and what are their functions. It is evident that establishing them is the first action to be taken once the common will of the two countries has been expressed. The agenda of the meetings of these joint committee should clearly include issues related to technical, legal, and social aspects of the proposed TPA, such as the potential boundaries of the two adjoining PAs, mapping, management issues and machinery, type, level and wording of the joint cooperation agreement, agreement on a unified management plan or at least two harmonized plans, funding issues, cost-sharing and benefit-sharing, control of visitation movements and activities within the TPA, means of participation of stakeholders on both sides, preparation of joint media and educational material, and all other issues that appear in the guidelines and recommendations of international agencies in this respect. The harmonization of management may have to go as far as harmonizing the salaries of employees on both sides, so that those on one side do not feel underpaid by comparison with their counterparts on the other side. In case the two PAs are World Heritage Sites or Biosphere Reserves, a common Nomination File is to be edited and submitted to the World Heritage Center or the MAB Secretariat at UNESCO for international recognition.

What is also important to note is the attempt of IUCN to convince countries of the role of TBPAs in establishing international peace and understanding among world nations. It presented a draft behavioral “code” for these TBPAs in case of armed conflict, requesting that these be immune from attack in case of wars, that they not be military targets, except when they are used for military purposes. This draft is of course not binding to any country or any military entity.

Origin of Nature Reserves:

Nature reserves were first established in the Pharaonic era to prevent the entry of the public and so to facilitate the practice of the hunting of wild animals by

the royalty and the aristocracy, without disturbance from the commoners. There were similar hunting reserves in the Persian Empire and in Medieval European countries. In the Arabian Peninsula before and after Islam, Bedouin tribes agreed to preserve certain areas called *hema* (singular, plural *ahmia*), to ensure the adequate growth of plants and protect them from overgrazing, as a sponsored repository for years of drought, or for beekeeping or to regulate hunting of wild animals (i.e., the sustainable development concept in the modern sense). Some of these *ahmia* still exist until now in Saudi Arabia and in Syria.

Modern Protected Areas (PAs) Systems:

In modern times, there are four types of PAs in the world:

1 - The International Union for Conservation of Nature (IUCN) system:

This is the oldest of the international conservation institutions in modern times. They have a varied nomenclature, such as: "nature reserves", "national parks", or "bird sanctuaries", and may be intended to protect one element such as the protection of birds or some rare plants, or for the purpose of tourism and some fishing and some herding. Their basic objective, however, is to protect a region's natural components of plant or animal species or natural features. The first of these reserves of the modern system was the Yellowstone National Park in the United States, which was established in 1872. It was followed by a large number there, in Europe, and in Africa in particular, after the advent of colonialism to that continent in the late nineteenth century and early twentieth century. The International Union for Conservation of Nature was established in 1947 to organize the process and for its codification.

IUCN was preoccupied in developing policies for the management of these protected areas and for follow-up of their efficiency. The Union had Prof. Mohamed A. Kassas for President between 1978 and 1984. In that period, the Union issued in 1980 the seminal document entitled: "The World Conservation Strategy" (WCS), in cooperation with the United Nations Environment Programme (UNEP), whose Executive Director was at the time Prof. Dr. Mostafa Tolba, and with the World Wide Fund for Nature (WWF), whose President at the time was Prince Philip of the United Kingdom. In that Strategy, was set for the first time the principle of "sustainable development" as a basis for dealing with natural resources and development. The concept was adopted by the United Nations General Assembly in 1987 as the basis for international aid for development. The WCS also developed the concept of "economically productive ecosystems", which are four: (1) agricultural fields, (2) grazing lands, (3) forests, and (4) water bodies, that is, every ecosystem, whether natural or managed by humans, is economically productive. The WCS thus removed the artificial divisions between them and economic systems, in order to alert the world that the conservation of natural ecosystems is also part of the conservation of world's economic order, to ensure the sustainability of production systems and the continuous use of this production.

IUCN divides nature reserves into 8 categories according to purposes and methods of management. It collaborates with the United Nations in producing lists every few years on the conditions of nature reserves in the world. In the

most recent edition of 2003 the number of nature reserves in the world, were more than 102,000, while they were only just over 9,000 in 1962; a clear proof of the attractiveness of this type of reserves to world countries. Egypt is an old member of IUCN and a National IUCN Committee is established since a long time ago within the Egyptian Academy of Scientific Research and Technology, within the State Ministry for Scientific Research/

Egypt now has at present 27 nature reserves based on this IUCN system, that are under Law No. 102 of 1983 for nature reserves. They are administered by the Nature Conservation Sector (NCS), within the Egyptian Environmental Affairs Agency (EEAA), which is itself within the State Ministry for Environmental Affairs (SMOEA). Among these reserves not a few are adjacent to the international borders. This PAs system of Egypt is fully under national law, but it is benefits from voluntarily complying with guidance from IUCN. International media may expose countries which ignore the implementation of this guidance, and this may affect negatively on the reputation of that country and also on its tourism revenues.

In 2002 there was a large number of adjacent PAs in the world (666) on both sides of the border between two or more countries, including 31 between three countries, in 169 regions. Such cases are not considered transboundary reserves; they are only contiguous reserves and not common, as they are not subject to any kind of conventions and there is no real cooperation on both sides. If there is any kind of cooperation, it is at the lowest level (in 82% of them), perhaps only when incidents involving the two sides occur (Table 1). Statistics in 2007 show that there are 227 protected TBPAs in the strict sense of the term, comprising more than 3,000 nature reserves in the world, or 0.22% of the total.

Table 1 - levels of cooperation in adjacent and transboundary PAs, varying levels of cooperation from least to highest.

Level of cooperation	Its characteristics
Level 0: No contacts	Workers of the PAs do not hold common meetings and do not even see each other. Hence, there is no exchange of information or talk about certain issues.
Level 1: Contacts	There are some contacts between the two sides, common meetings are held once or more than once a year, there may be some exchange of information, there is reporting about some of what's happening in the reserves.
Level 2: Consultation	There are contacts three times a year, there may be cooperation in two or three cases a year, the two sides will exchange information up to twice a year, it is not usual to report what is going on in one of the reserves to the other.
Level 3: Coordination	Contact frequent (at least once every two months), joint meetings are held at least three times a year, the two PAs cooperate seriously in some activities, and may cooperate in coordinating the planning and consultation with other protected before taking some action.
Level 4:	Coordination and planning in some issues, the two PAs work together in at least five activities and hold joint

Coordination and planning	meetings regularly and inform each other in emergency situations, the two PAs coordinate their plans, and often deal with wildlife conservation as if the 2 PAs are one and the same environmental unit, coordinated planning of their activities continues several times a year.
Level 5: Full cooperation	Planning for a protected and integrated management plan that addresses and preserves the 2 PAs in a single approach on the basis of the ecosystem approach whenever necessary, and taking decisions for the realization of common goals, the two PAs work together in at least six activities, they establish a joint committee to sustainably provide advice on transboundary cooperation and management, according to an agreement approved by the authorities of both countries.

2 - The Ramsar Wetlands:

In 1971 in the city of Ramsar, Iran, was held an international meeting that resulted in an agreement to establish a special organization for conservation of wetlands and their monitoring. By wetlands is meant ponds, lakes, swamps, land submerged by water, permanent or seasonal, and coastal land affected by seawater. The number of declared Ramsar sites has reached so far, 1462 sites in 146 countries. In recent years, several countries in Eastern Europe announced wetland sites under the Ramsar system that have a transboundary character. Announcement is very simple. All that is required is a letter of intention signed by the administrative organs of the two countries together, sent to the Ramsar Secretariat. The transboundary site may have a single name, or each site on each side of the border may have a name different from the name of its neighbor. There are currently 6 transboundary Ramsar sites, which represent only 0.4% of the total.

Egypt has announced Lakes Bardawil, Burullus, and Qaroun, as well as the Omayed Biosphere Reserve, west of Alexandria, in the list of Ramsar sites. Each Member State appoints a focal point for the Convention. In Egypt it is the Environmental Protection Agency, Ministry of State for Environmental Affairs. This system is not very well known to the international media, unless there is anything worth mentioning about these sites.

3 - The UNESCO MAB Biosphere Reserves system:

Also in 1971, UNESCO launched the Man and Biosphere Programme which proposed quite a novel concept of PAs, called "Biosphere Reserves". This was a response to criticisms that were directed to the traditional IUCN system of nature reserves, for which the sole purpose was and is still the protection of wild animals and plants, without giving much attention to the local population. In Africa in particular, this gave rise to some lamentable tragedies in the days of colonialism. The restriction of PAs for wildlife conservation, meant in some cases the expulsion of local populations, as happened in Kenya and South Africa. At the end of colonialism from Africa in the sixties, some of the newly independent African States and Kenya in particular thought of abolishing the reserves and giving them back to the local populations for their own traditional uses at will, or for modern development schemes. World scientists feared that these PAs and their biota were to be lost, and talked to

UNESCO for introducing the idea of multi-purpose and applying several levels of protection, distributed into 3 “rings”, which are: (1) a Core area, which is at the heart of the PA, exclusively for conservation and for scientific research, (2) a Buffer zone for the local population to be engaged in their normal traditional activities, and (3) a Transition zone where some development projects (such as hotels) could be practiced, under conditions determined by the management of protected areas.

Hence the Man and Biosphere Programme (MAB) and a Secretariat for follow-up were established by UNESCO. Third World countries were immediately receptive to the idea. A country like Kenya, which had thought of abolishing her PAs, but 40% of whose income was from revenues from tourism in her PAS, found the idea worthwhile. The MAB Secretariat handles the affairs of the “World Network of Biosphere Reserves” (WNBR). This Network, however, has no legal international status and no internal system. Its function is only to exchange experiences without any specific by-laws. It held its 3rd International Conference in Madrid in February 2008. Each Member State in the MAB Programme has a National Committee to handle MAB affairs. In Egypt this Committee is part of the Egyptian National Committee for Education, Science, and Culture (UNESCO, ALECSO, ISESCO) within the Ministry of Higher Education. Egypt has at present 2 Biosphere Reserves: the Omayed BR on the north-western Mediterranean coast, about 80 kms west of Alexandria, which has a winter rainfall regime, and the Wadi Allaqi BR, east of Lake Nasser in the south-eastern desert, about 180 kms SE of Aswan, adjacent to Lake Nasser. Two more BRs are in the drawers: St. Catherine in South Sinai, and Wadi Gemal on the southern Red Sea coast. The WABR has an irregular rainfall regime.

The Omayed BR was included in the WNBR in 1981, even before passing the new law on nature reserves in 1983. The efforts of the late Dr. Mohamed Abdel-Gawad Ayyad, Professor at the University of Alexandria and the second Chairman of the Egyptian MAB Committee after Dr. Kassas. The WABR is an 80 km long valley east of Lake Nasser. It was declared a nature reserve by the Egyptian law in 1989 and declared a BR in 1993, due to the efforts of Dr. Irina Springuel and Dr. Ahmed Esmat Bilal at the University of Southern Valley. Both BRs are within the 27 natural reserves under Egyptian law 102/1983 on Nature Reserves.

The number of BRs in the world is currently (Jan. 2008) 529 in 105 countries, of which there are only 8 transboundary (i.e., 1.5%) in 14 countries, including 4 African countries and the rest European countries. Perhaps two of them deserve mention, the first is intercontinental, encompassing Morocco (in Africa) and Spain (in Europe). It was announced in 2006 to promote cooperation between the two countries after the emergence of numerous conflicts between them because of illegal immigration on the one hand, and disputes over fisheries on the other hand. The other BR that is worth mention is the Danube Delta BR Ukraine and Romania, about which arose a dispute between the two countries in 2006 because the former had dug a wide navigation channel on its respective side to facilitate the sailing of large ships from the Black Sea through the Danube River to the heart of Europe, which was considered by Romania (and endorsed by the NGOs in Russia) a threat to the authenticity and protection of such a distinct biological diversity. The BR system is known to the international media better than the Ramsar system.

But that really draws attention more than the three previous ones is that of World Heritage Sites.

4 - The Natural and Cultural World Heritage Convention Sites:

After the brilliant and unprecedented experience of the greatest international cooperation project that was administered by UNESCO in Egypt, on the basis of the international appeal launched by President Nasser of Egypt to save the monuments of Nubia, as a legacy not for Egypt alone but for all mankind, UNESCO proposed the World Heritage Convention for the Conservation of Natural and Cultural in 1972. The Convention was meant to codify international cooperation to protect sites or properties considered by the statutes of the Convention to be of "Absolute Universal Value (OUV)", deserving international cooperation efforts to protect them.

Generally speaking, the main feature of the World Heritage Convention (WHCon) system is that it is more rigid than the three previous ones. It is governed by the World Heritage Committee (WHCom, consisting of 21 countries from among the States Parties to the Convention, which have now reached 185). The Committee meets once a year to examine the state of conservation of the sites and properties included in the "WH List" and the "WH List in Danger", as well as adding new sites or properties to any of these two Lists. This Committee can delete (or "delist") a site already included on the list if it is judged that their OUV has been lost. In the case that is the first of its kind, one of the States Parties of the Convention, asked in 2007 for the lifting of one of its sites from the list. The WHCom accepted delisting the site but without mentioning that the request came from the State Party itself, and instead mentioned that the lifting of the site from the WH List was because of mismanagement by the State Party so that the site had lost its "Absolute Universal Value".

There are now new conditions added to the "*Operational Guidelines for the Implementation of the World Heritage Convention*" that did not exist before. To accept a Nomination File of any new site, it must be previously included in the "*Tentative List*" of sites submitted by the State Party. This inclusion is a declaration on the part of the State Party that is willing in the future to submit a Nomination File for it. The site must already be protected under national law and have an approved Management Plan. In exchange for these rigidity features that are non-existent in the previous regimes, the WHCon provides technical and financial support if needed by the State Party, with priority given for support of the sites listed in the "WH in Danger List". The main provider of assistance is the World Heritage Fund, which receives contributions from States Parties and other donors, and caters to the needs of States Parties. A similar fund has recently been established for Africa (of which Egypt is a founding member). We hope to establish another similar fund for Arab countries in the near future.

Within UNESCO, the "World Heritage Center (WHCen)" is an autonomous body whose mission is the follow-up of the implementation of the Convention and to seek to take into account the assistance that is required in the event of sites being at risk. There are no official focal points or national committees for the Convention in most countries. The Convention did not set out this requirement clearly, but the need for such focal points is being more and more felt. The Center recently requested of States Parties to consider that each States Party establish a national strategy and a national plan of action for

the implementation of the Convention. These national strategies and plans are to be synthesized into regional strategies and plans. Egypt has submitted in 2006, through her National MAB Committee, such documents for natural heritage to the Center.

Egypt was naturally one of the first signatories of the WH Convention, and hosted the third meeting of the World Heritage Committee in 1979 in Luxor and Cairo, where five sites were inscribed on the WH List. These are: Abu Mena Monastery west of Alexandria, Islamic Cairo, the Pyramids Plateau, Luxor, and Nubia from Aswan to Abu Simbel. In 2002 the site of St. Catherine in southern Sinai was added as a cultural heritage site, but with a large enough area of natural features. In 2005, the WH Committee agreed to inscribe Wadi Al-Hitan (Valley of Whales), within the Wadi El Rayan PA, as the first Natural WH Site in Egypt. It was the pleasure of the Egyptian MAB Committee which had coordinated the work of the Scientific Working Group that had prepared the Nomination File, to be invited and received by HE Dr. Ahmed Nazif, the Prime Minister, in August 2005, just one month after the inscription, to be congratulated on this achievement. In February 2008, there was organized a spectacular ceremony attended by senior figures, headed by Egypt's First Lady Mrs. Suzanne Mubarak, for the official inauguration of the site. This was after the Ministry of State for Environmental Affairs had completed the preparation of an infrastructure of the site, according to the management plan agreed upon with the World Heritage Center. Experts from the Center had visited the site a few months earlier and expressed great satisfaction for the work that had been done for the good management of the site.

To date (Jan. 2008), there are 851 World Heritage sites in about 145 countries, including 22 that are transboundary (i.e., 2.6%) in 37 countries, of which 10 are natural sites and 11 are cultural sites and one a mixed natural and cultural site. Three of these are in Africa, two in North America, one in Asia, and the rest (16) in Europe. In an unprecedented case, Thailand officially and openly refused in 2007 to have a transboundary site (a temple) with neighbouring Cambodia and even threatened to go to war over the issue. Thailand also refused the establishment of any transboundary world heritage site with hers neighbours.

The Current Situation of Transboundary PAs:

The total transboundary PAs and reserves under the four systems reached in 2007 the total number of 263. Here we would like to recapitulate the number of reserves and their ratios under the regulations of the four aforementioned systems: IUCN, Ramsar, MAB, and the WH Convention:

- The International Union for Conservation of Nature: 227 out of 666 contiguous protected areas, almost one third, and about 0.2% of total IUCN PAs.
- The Ramsar Wetlands Convention: 6, making 0.4% of total Ramsar reserves.
- The UNESCO Biosphere Reserves system: 8, making 1.5% of total BRs.
- The UNESCO World Heritage Convention (some cultural): 22, making 2.6% of total WH sites.

Experts recognize that: (1) it is difficult to make a full and complete census of transboundary reserves, as they are of many different denominations and purposes, (2) that their number in the 1980's did not exceed 35 PAs under the definition of "protected areas of common international border". In any case, we may note (1) that their proportion in the IUCN PAs system on the whole is very small, in spite of the larger number (227) for this type of reserves, although it is the oldest systems of the four, and is the least stringent in its standards, and, for this reason, PAs within territorial borders are more numerous (102,000) than any other system, (2) that the highest percentage is in the World Heritage Convention system, which astonishingly is the most stringent in its criteria, (3) that the lowest proportion is in the Biosphere Reserves system, followed by the Ramsar system, and (4) that most of these transboundary reserves are in Eastern and South-eastern Europe (some had been established while these countries were under federal systems of government, which makes the declaration not requiring a lot of negotiation), but the trend continues after independence, nevertheless.

From this review, it seems that the IUCN system of PAs is on the whole largely attractive, but the idea of transboundary IUCN system PAs is not so much popular. On the other hand, it seems that under UNESCO regulations, both for the Biosphere Reserves and the World Heritage Convention, the idea is more attractive, although rules are more compelling. It could be that the attractiveness is due to the name of UNESCO in itself, as an explanation for the higher rates of UNESCO TBPAs over those of IUCN and Ramsar. International recognition by UNESCO in their two systems makes sites better known to the public and the international media than the other two.

IUCN announced that the number of TBPAs has doubled since 1990. This may be due in some cases to partition of PAs that were common between countries which were part of the former Soviet Union or former Yugoslavia, into independent states and neighbors finding themselves involved in the management of reserves originally announced as within one country, and not to an increase in the enthusiasm for this kind of protected areas. Whatever the reason, the doubling of TBPAs firmly placed the issue on the agendas of international organizations, in order to reach a consensus on the delicate and sensitive problem of appropriate management systems, as there is now no single standard management recipe for all types and for all situations.

It is noteworthy that the European Union (EU) recognizes in one of its studies in 2007 that one of the biggest challenges for the establishment of new TBPAs in Europe is political problems and security in the border areas, such as organized crime and public health and illegal immigration, rather than technical problems or administrative issues. But IUCN experts argue that the establishment of such PAs is the answer to resolve these problems, or at least their mitigation. In addition, and up till now, there are no internationally agreed standards to manage TBPAs in any of the aforementioned four conservation systems. What we have are only guidelines or recommendations emanating from expert meetings, that have not yet entered into written international law. As it is possible to declare a site under more than one regime (i.e., a world heritage site and a Ramsar site or BR site all at the same time), it is increasingly difficult because to agree on a given management system, even under national laws, since each system includes special criteria for the nomination and in the management plans and specifications.

These facts show that the situation for TBPAs is that they are very desirable on the part of international organizations in all four of these systems, and in particular UNESCO, whose main objective is to promote international cooperation in the three areas of its mission: education, science and culture. However, what was actually agreed upon between neighboring countries to establish TBPAs is very limited because of the multiplicity of problems associated with them, as is clear from a literature review of the subject. But when two countries seriously decide to create a TPA between them, it becomes a significant historic event, as Morocco celebrated her Intercontinental TPA with Spain. Similarly, the States of South Africa and Botswana celebrated their TPA in a ceremony in which the agreement was signed by the two Heads of State. Establishment of an IUCN or a Ramsar TPA does not require special help from international organizations, since the TPA may not need more than a mutual agreement between the 2 or 3 countries involved. However, it is advisable to draw upon the expertise of those international organizations, needed anyway to improve the process. The importance of requesting technical assistance from international organizations, starts from the optional level in the case of IUCN and Ramsar, where the need is simply to inform them that the two countries could address the issue with national expertise, to the obligatory need to involve the World Heritage Center from the very beginning in case of WH sites. Apparently, declaration of IUCN system PAs in accordance with national laws, regarding the large number of these PAs so far (over 102,000 in the world), has given sufficient experience to national experts, so that IUCN expertise is sought only in difficult cases.

With regard to TBPAs subject to international law, and the international status of WH sites, a country may not be able to state that they have a sufficient number of national experts familiar with these conventions in their minute details and international programmes. There is therefore a clear need in the case of this kind of reserves, for assistance from international organizations. In the case of the Ramsar Convention on Wetlands help may also be required to consult with the Secretariat of the Convention. Need in the case of BRS is greater than in the case of BRs from the International Coordinating Council (ICC) of the MAB Programme, which meets once every two years. It reviews the proposed BR file and gives approval, according to certain criteria that have recently been tightened by the Council, but not as rigidly as in the case of the WH system.

In the case of Transboundary WH sites, the assistance of the UNESCO World Heritage Center is a necessity. The Joint Declaration that establishes the TPA requires the approval of the WH Committee, after taking the view of the Advisory Bodies, which are IUCN in the event of natural sites and the International Council of Monuments and Sites (ICOMOS) in the case of cultural properties, and both in the case of a mixed site. Perhaps the high proportion of transboundary WH sites, despite the difficulty of preparing files and the need to request technical assistance from the UNESCO WH Center (and sometimes also financial assistance), is due to feeling of pride at the announcement of such sites that appear linked to the heritage of the State Party and its people as a world heritage of mankind. It is also due to the greater interest shown by the international media, and consequently the attention of decision makers and the public of international tourists, that these sites are given more importance by decision makers than either IUCN PAs, Ramsar sites, or BRs.

In theory, management of protected areas of all kinds requires strategies, management plans, and programs for scientific research and for local development. In the case of WH sites, such plans are compulsory. They have to be elaborated before inscription on the WH List, not after. If they are transboundary, differences in research traditions between the two neighboring and differences methods of site management and administrative systems in each country separately, must be taken into account. It may not be easy to reach a unified, or even coherent system, to be implemented in two or three adjacent sites by the same methods. Therefore it is required - according to UNESCO experts - to first design a general philosophy of conservation and management in each State Party, to remain free in the details of the implementation of management plans for the one in each territory, to enable the inclusion of both current traditions and reflect their methods, but at the same time, to be guided by the general philosophy agreed upon between the two countries. In one case by the World Heritage Committee, decide to refer back a site in Borneo (divided between Malaysia and Indonesia) to these two States Parties, asking them to first agree on the appropriate manner to deal with threats surrounding the site and the challenges of transboundary management system, including the handling of forest exploitation and poaching, as well as bio-prospecting expeditions to collect bio-diversity resources (such as medicinal plants). Besides such obvious problems of management of TBPAs, different local names of plants and animals, and possibly also the different languages and dialects and different alphabets, are certainly obstacles to effective cooperation. IUCN proposed establishing a global network of TBPAs as a source of information and to exchange experiences at the global level, and so help to achieve better management methods, especially in such cases where differences of this kind exist, which requiring such help more than others.

The Definition of Transboundary Sites:

There are many designations for these types of reserves, but opinions seem to have settled to preserve the name, "Transboundary Reserves ". States members of the Ramsar Convention requested to rename them as "Transnational Reserves". In any case, the definition set by IUCN is that nomination is by more than one State Member and the reserve extends across their common borders. It is clear from this that only the geographical definition (the spatial contiguity) of the site is considered. It does not mention anything about the purposes of administration systems and the obligations and commitments of each of the participating countries. It also ignores that TBPAs may not be geographically adjacent to each other (serial TBPAs), that are considered by the UNESCO WH Center.

In 2006 another, probably better, definition appeared in the "*Encyclopedia of Earth*", as: "It is the area of land and/or water on both sides of the border between the countries or regions, such as administrative units or regions, or autonomous regions and/or areas beyond the limits of sovereignty, whose biodiversity components are allocated for protection and preservation and conservation of natural resources and cultural resources associated with them, and managed cooperatively through legal or other effective means".

It is noted that the international organizations concerned adopt the viewpoint of interest to society and the environment and do not consider the issues involving state sovereignty. This leads to a loss in the efficiency of studies and documents that ignore a key aspect of the subject matter that is certainly of the utmost concern to all decision-makers. We did not find other

international organizations operating in the fields of research on politics, economy, and international law, dealing with that aspect.

Case Studies of Some Recent TBPAs:

IUCN started in 2002 to help in holding a bilateral meeting between Zambia and Zimbabwe to manage jointly Victoria Falls, which is Natural WH site on their common borders, and to make it one site. The meeting resulted in the identification of what is required for urgent attention and the need to establish a joint organization and the need for an accurate description of the site from natural and biological conditions, as well as economic and social development on both sides and elaboration of a joint management plan. Participants in that meeting did not shy away from mentioning the prickly issues between the two countries. They identified and proposed specific actions to coordinate between them to ensure the integration of the site and its long-term conservation from both natural and human aspects.

In 2004 the EU held a meeting to look into the situation of WH sites and recommended that in the case of transboundary existing sites can be candidates for serial nominations, on condition that the link between their units is made clear, and that the matter needs more evaluations and comparisons. The EU advocates the establishment of TBPAs, especially the type called "peace parks", as an ideal solution to ease conflicts between neighboring countries, and to contain conflicts between neighboring countries on water or land. They are defined as : "an area formally dedicated for the protection and conservation of biological diversity and natural and cultural resources, and the promotion of peace and cooperation". The first of such "peace parks" was established in 1932, before the birth of IUCN, between the State of Montana in the United States and the Government of Alberta in Canada, at the request of people in the two opposite areas. Both the Canadian Parliament and the U.S. Congress approved it. The Park was declared a protected Park and its declaration is celebrated annually under the slogan: "Shaking hands across the border". Following this, another Peace Park was declared between Poland and Czechoslovakia in the same year. After the establishment of IUCN, it continuously speaks in its publications about the possibility of settling disputes between States through transboundary protected areas and sets as an example of 13 cases in south-east Asia alone. It also mentions effective and successful examples between the United States and Mexico, and between the Republic of South Africa and Botswana. It proposed Peace Parks between Afghanistan and her neighbors. It gives as a realistic example talks on cooperation between Greece, Bulgaria and Turkey to declare a common BR (Box 1). In 2005 a tripartite agreement was signed at the Ministerial level between the Democratic Republic of Congo, Rwanda, and Uganda, to establish an "Albertine Rift Transfrontier Protected Area Network", of which a large part of fauna and flora is now being decimated by civil wars and gang wars.

Box No. 1

Cooperation between Greece, Bulgaria, and Turkey

Experts from the three countries met several times to discuss the idea of transboundary protected BR in the "Merrick" River Delta region. The most

recent meeting was organized by the Turkish MAB Committee in 2005. These meetings were preceded by cooperation between the institutions of the three countries. It was felt that it is imperative to involve the local population and NGOs in face to face discussions, with regard to nature conservation and sustainable use of resources and the implementation of certain joint projects. The purpose of the meeting was: (1) exchange of information on nature conservation and environmental protection in each country (2) identifying forms of cooperation, (3) identifying priorities in each country (4) reaching a conceptual framework for the proposed TBPA. Each one of the three countries presented a national report addressing these four topics. Four working groups were constituted, to deal with: (1) the participatory process and approaches for joint management, (2) joint scientific research and its priorities, (3) the local population and the degree of public awareness, and (4) capacity-building for MAB Committees and cooperation needs.

Cooperation between Kosovo and Albania and Montenegro (Montenegro):

The United Nations Environment Programme (UNEP), called in a meeting of non-governmental organizations from both Kosovo and Albania and Montenegro, for an official meeting to discuss the declaration of a joint protected reserve, to be called the Balkans Peace Reserve, in an attempt to pave the way for peace between them, after the deadly conflicts of the 1990's and early in this century, through joint management of natural resources in the proposed protected area. Six Heads of neighboring municipalities participated in the meeting which took place in August 2006, beside six associations from the three countries, two from each country. The mediator was a British association interested in the case, which prepared the working papers. The main concern at the meeting was to improve the economy and local industries, such as bee-keeping, cheese, bread, and jam, and the issuance of manuals for birds and butterflies and plants, and selling them to stimulate tourism. The aims of the PA were set as follows:

- Promotion of the environmental conservation,
- Providing opportunities for local employment, and
- Promoting sustainable tourism activities in the region.

The meeting concluded with a decision to form a Drafting Committee for the so-called "goodwill message".

The advantages of transboundary parks in the eyes of some experts are that they could be useful in the fight against poverty (due to income generated from higher numbers of tourists), and can work at reducing cases of aggression on human rights (as in cases of conflicts). Some African countries felt, however, that this kind of reserve reflects the position of contemporary colonial powers, and that, on the contrary, they could lead to more conflicts (as for example in the equitable allocation of profits from tourism).

Numerous articles appeared in the media and in international scientific journals about resolving the conflict between Israel and the Palestinians over the stock of underground water, through its joint management within the framework of a joint nature reserve. The idea also emerged of sharing between Israel, Palestine, and Jordan, to conserve the Dead Sea by declaring it a natural and cultural WH site and a BR as well (Box 2).

Box No. 2

A natural and cultural WH site and a BR for the Dead Sea area After declining of the water level in the Dead Sea between Jordan and Israel, due to withdrawal from the Jordan River and for salt extraction, Israel published since 1999 several studies to pave the way for of the site to be declared a natural and cultural WH site and a BR, for "reviving the Dead Sea". These studies indicate that there are several proposals for delineation of the reserve. Each different map to demarcate the border requires a different management plan, according to which areas will be within the TBPA and which will be outside. The western limit was suggested to be the watershed line extending from north to south, between Jerusalem and Hebron. This includes the border city of Jericho. For the eastern limit, the road between the towns of Madaba and Karak in Jordan was suggested. It was also proposed to set a strict land use systems for industrial activities, to ensure their sustainability, in line with the requirements of MAB Programme.

In this context, we may recall the "Bridging the Rift" proposed by a State Party of the WH Convention to the World Heritage Committee in 2002 to include 22 countries from Turkey to Mozambique in one natural and cultural WH site. This was an extension of a proposal by another State Party in 2000. We may also recall the suggestion by IUCN for Egypt to declare Gebel Elba a joint protected reserve with the Sudan, within the concept of "peace parks". Also, we may recall the proposal by the WH Center to inscribe the area of Gebel Oweinat which lies in the territories of Egypt, Libya, and the Sudan, as a transboundary WH site. Although these three proposals seem attractive at first, they were not accepted due to the enormous difficulties that their management will surely have to face.

Examples for codifying relations between partner countries for TBPAs management

1 - Studies by many experts showed that there are three possible approaches to codify TBPAs:

- initiatives at the highest political level by ministers and senior officials,
- local initiatives by the managers of protected areas
- initiatives by voluntary non-governmental organizations (civil society) to promote and support the idea of co-management across the border.

2 - They agreed that the objective conditions for accepting the idea are:

- that the idea of transboundary cooperation for the management of adjacent protected areas is important for the success of management of the national PAs and to obtain a satisfactory result of the efforts on both sides,
- that there will be appropriate means of communication between individuals on both sides,
- that there will be available those persons who have a desire and ability to play a leading role, and
- that PA managers be able on both sides to contact each other without obstacles.

3 - The first attempt to codify this kind of reserves may have taken place in 1980 when the EU drafted a model agreement for cooperation between communities on both sides of the border, for the establishment and management of transboundary protected areas. It calls upon States to

coordinate all management methods in development or improvement projects through the program of comprehensive work, ultimately leading to joint management of TBPAs on the basis of a unified management plan. It also calls for the establishment of joint committees comprising, inter alia, representatives of stakeholders interested in environmental conservation.

4 - The Convention on Biological Diversity (1992) does not include any mention of TBPAs. But in 2004 States Parties to the Convention agreed at their annual meeting, to encourage cooperation between protected areas on both sides of the border. IUCN issued in the same year a draft international convention for cooperation for the conservation, management, and rehabilitation of natural resources in areas under the sovereignty of two or more countries, recommending States sharing the same ecosystem to make every effort to manage them as a single ecological unit, despite the borders dividing it. IUCN established "The Global Network of Transboundary Protected Areas" to help countries in this regard. The World Bank recently gave its attention to transboundary reserves, as it has funded some projects and research for this issue.

Guidelines and Recommendations for the Management of TBPAs:

On the basis of these attempts, and with the growing interest in TBPAs, transboundary protected areas, the World Commission on Protected Areas (WCPA) has developed a list of nine guidelines called the "Good Practice Guidelines". These are:

- identifying and highlighting the common values,
- involvement of the local population and work for their benefit,
- guaranteeing continued support of the decision-makers,
- activating coordination and cooperative activities,
- achieving coordinated planning and development of the protected region,
- achieving cooperative agreements,
- ensuring sustainable funding,
- monitoring and evaluating progress, and
- dealing with tensions and armed conflicts.

Because some TBPAs have been brutally affected by armed conflict, such as the areas between Rwanda and DR Congo, which remained lawless for several years, the WCPA proposed a 35-page draft "Code" in 2001 for TBPAs in times of peace and of armed conflict., that in fact explains and deals with the background of this subject and serves as a basis for a formal bilateral agreement or an international convention for TBPAs (summarized in Box No. 3). Currently it is naturally far from being mandatory. It has to be seriously dealt with, especially after the renewal of conflict over the borders there.

Box No. 3

Code for TBPAs in Situations of Peace and of Armed Conflict

A Summary

These reserves are to be considered non-military areas, wherever possible

Prohibition of the use of protected areas for military purposes

Prohibition of the search for strategic locations in the transboundary reserves

Prohibition of deliberate damage to natural resources in protected areas

Prohibition of long-term damage of the reserve

Prohibition of the various warring regular and irregular groups from plundering the cultural and natural resources of the reserve

The warring regular and irregular groups have to protect the cultural and natural resources of the reserve from any attack

If the warring regular and irregular groups transform the protected area for military purposes, the reserve will lose its immunity from attack so long as it is used for such purposes. Nevertheless, decision for attack must come from the highest military authority

In 2003 the EuroPark Federation proposed seven criteria for evaluating TBPA's, as follows:

1. Do the reserves have a common vision for sustainable development in the region?
2. Does an agreement exist at the political level for the TBPA to ensure the continuity of cooperation?
3. Is there a joint work programme identifying facets of the cooperation and specifying who will do what?
4. Are there mechanisms for direct cooperation between employees in the two reserves and regular exchange of information and experiences, and for organization of meetings and for implementation of decisions?
5. Is there a system for observation and monitoring of the natural values of the reserve and for regular exchange of information?
6. Have steps been taken to ensure that communication between the two sides is not hindered by a language barrier? (and sometimes dialect)
7. Are there joint projects implemented on both sides and has financing for them been secure?

Obligations for TBPA's according to IUCN:

The IUCN guidelines indicate that, besides general principles of management of protected areas, such as the involvement of local people in planning and management, the obligations of TBPA's are divided into direct obligations and indirect obligations.

¶ The direct obligations include the following:

- Awareness campaigns to inform citizens and to identify their needs and expectations of the establishment of TBPA's,
- Developing legislation, guidelines, and mechanisms to build policing capacity and to provide resources at the national level,

- Providing positive incentives to encourage participation,
- Use of appropriate techniques for the rehabilitation of degraded ecosystems,
- Preparing research programmes involving indigenous and local decision makers to reach a consensus on both sides of the border,
- Establishing mechanisms for the exchange of information and experience among administrators and local populations,
- Encouraging joint research programmes involving scientists from both sides,
- Strengthening management systems, upgrading, and training of administrators, including the upgrading of local populations,
- Ensuring the availability of equipment and tools necessary for efficient management, and
- Establishing strict procedures to maintain the integrity of sensitive sites within the protected area.

¶ The indirect obligations include the following:

- Ensuring that the local populations obtain all available information,
- Ensuring respect for the needs of the local population and their social values,
- Promoting the application of the ecosystem approach,
- Ensuring full transparency in proposing projects affecting "sacred" sites, or those that have a special respect by the local population, and their homes, and consulting them about the extent of their approval,
- Involvement of local people in the formulation of national plans,
- Involvement of local people in implementing projects of rehabilitation of degraded ecosystems,
- Including aspects of the local cultural heritage in the planning of projects,
- Coordination of action against the illegal activities, such as fishing or logging,
- Promoting trade in local products of the TBPA,
- Search for additional financial resources for management of the TBPA,
- Connection to the internet in the management of the TBPA, and
- Ensuring protection from aggression against the local populations and the TBPA resources.

Recommendations of the UNESCO biosphere reserves transboundary:

UNESCO issued in 2004 the recommendations of the biosphere reserves transboundary each stage starting from preparing to file employment. And for the preparation of the file there are two scenarios: first, that there will be protected and adjacent required combined together in one protected, and the other to establish a new joint protected in a single step in the region were not declared before.

UNESCO Recommendations For the Establishment and Functioning of Transboundary Biosphere Reserves (TBBRs):

As borders between states are political and not ecological, ecosystems often occur across national boundaries, and may be subject to different, or even conflicting, management and land use practices. A TBBR is an official recognition at an international level and by a UN institution of a political will to co-operate in the conservation and sustainable use through common management of a shared ecosystem. It also represents a commitment of two or more countries to apply together the Seville Strategy for biosphere reserves and its objectives. It corresponds to the increasing recognition of the appropriateness of the ecosystem approach, for conservation and sustainable use of biological diversity. The recommendations presented below deal with the establishment of TBBRs, the measures which can be taken to respond to the MAB principles and in particular the goals of the Seville Strategy and the way of ensuring that a TBBR is truly operational. However, it should be kept in mind that, although the biosphere reserve provides a general framework for action in a transboundary location, the real-world situations will vary very much from a place to another, and flexibility is needed even more than in a national context. The process leading towards the official designation of a TBBR can include many forms of cooperation and co-ordination among the existing areas on either side of a border. These serve as a basis for formalising the TBBR proposal and should be encouraged.

Procedure for the Establishment of a TBBR:

Up until now, all existing TBBR were established as separate biosphere reserves in individual countries before being designated as TBBR. However, it could be envisaged in the future that a TBBR be established jointly by the countries concerned in one step. In both cases, the ultimate aim should be to have one *functional biosphere reserve*. In these two different scenarios, the following respective procedures are recommended: □ Establishment of a biosphere reserve on each side of the border; or,

- When the TBBR is established in one step, definition of the zoning of the area according to the general criteria for designation of biosphere reserves,
- Identification of local and national partners and establishment of a working group to define the basis and identify key issues for co-operation,
- Signing of an official agreement between governmental authorities regarding the TBBR,
- Nomination of the various parts by the respective State authorities; or,
- When the TBBR is established in one step, joint nomination for the whole area by the concerned State authorities,
- In both scenarios, indication of the main components of a plan for co-operation in the future, and
- Official designation by ICC MAB of UNESCO.

Function of the TBBR:

Among the measures recommended to make the TBBR function effectively, priority should be given to:

- Preparation and adoption of a zonation plan for the whole area and implementation of the zonation by strict protection of core areas, delimitation of the buffer zones and coordinated objectives for the transition areas; this implies that the countries concerned have a common understanding of the characteristics of each of the zones, and that similar management measures are in place for each zone,

- When the zonation plan is defined, publication on a joint map of the zonation,
- Definition of common objectives and measures, work plan, time table, and required budget; this should be a demand driven process, based on perceived needs or management requirements. This work plan should take into account the elements listed under the goals of the Seville Strategy as suggested below,
- Identification of potential funding sources for the work plan and joint or simultaneous application for these funds,
- Establishment of a means of communication between the co-ordinators/managers of the different parts of the TBBR, including electronic mail when feasible, and
- Efforts towards harmonized management structures on each side.

Institutional Mechanisms:

The TBBR will not function without a joint structure devoted to its co-ordination. Although this structure can vary greatly from one TBBR to another, the following points can be recommended:

- The coordinating structure is representative of various administrations and the scientific boards, as well as the authorities in charge of the protected areas, the representatives of local communities, interested and affected groups, including youth, and of the private sector,
- The NGO sector in the area is also represented in the structure,
- This structure has a permanent secretariat, and a budget is devoted to its functioning,
- A person is designated on each side to act as a focal point for co-operation,
- General and regular meetings of the co-coordinating structure are complemented by thematic groups, on an *ad hoc* basis, in order to create a platform for discussion among stakeholders from the countries concerned, with a view to promote all opportunities for exchanging views and knowledge,
- Joint staff teams are operational for specific tasks and
- An association is set up with the specific aim of promoting the TBBR.

Importance of TBPAS, Continuity, and Partners, according to IUCN:

IUCN issued in 2003 a document on the importance of TBPAs (Box 4), the factors that make them useful or continuously, and also factors that may prevent its establishment (Box 5). In addition, authorities have identified that could cooperate in this area (Box 6) and the tasks to be carried out (Box 7).

The Importance of TBPAS (IUCN)

- When protecting the environment and natural resources in a nature reserve on one side of the border, factors operating in the neighboring country, will be fruitless, as in the case of the protection of migratory birds to activate the pertinent conventions (Bonn Convention),
- When one of the objectives of the PA is raising the standard of living of the local population and maintaining the cultures and this depends on their relations with their neighbours in the neighbouring country,
- TBPAs can attract international support from donors interested in peace-making rather than environmental conservation (such as in the DR Congo),
- TBPAs can support efforts of the two countries to combat smuggling, illegal hunting and fishing, improve environmental monitoring and environmental conservation, and
- TBPAs can support mine-clearance efforts and would thus gain satisfaction of the local population.

Box No. 5

Factors Which May Prevent the Establishment of TBPAs

- Different legislative structures and systems of land tenure and land use,
- Different levels and objectives of training of personnel, provoking difficulties in planning, organization, so that the process will take longer and cost more and must involve as many stakeholders as possible from various segments of society,
- Technical difficulties: differences in valuation of biological diversity and social aspirations on both sides of the border will provoke different concerns of monitoring and evaluation on both sides,
- Opening borders may lead to increased tourism, but may also lead to illegal activities and smuggling and illegal migration,
- This can be overcome, however, by joint management and strict cooperative monitoring,
- The TBPA must therefore develop a contingency plan to overcome such problems and to address them as much as possible.

Box No. 6

Potential Partners for the Development of TBPAs

These are those interested in:

- Sustainable development,
- Improvement of living standards,
- Empowerment of local communities in terms of education, health, and culture (including the empowerment of women),
- Maintaining the stability of the environment, and
- Promoting cooperation between the countries and peoples and to maintain world peace.

Box No. 7

Tasks to be Carried out

First: International Organizations

- World Conference of Nature Reserves: launch of the global programme of TBPAs, and holding workshops for its implementation,

International Union for Forests: Promote and support international projects and exchange experiences Field

- Convention on Conservation of Biodiversity: Discussion of the topic in its meetings
- World Commission on Nature Reserves: Include the subject in various studies and the agendas of its subcommittees.

Second: Member States

- Agreement on a timetable for the standardization of land use systems,
- Agreement on terms and definitions and types of desirable TBPAs,
- Mapping of biological diversity and social and political conditions and threats and border problems, etc..., and integration of such data by overlaying,
- Understanding the different concepts of transboundary population involvement in all aspects of management,
- Develop skills and approaches and new institutions,
- Calculations of the cost effectiveness of TBPAs and agreement on methodologies to identify the appropriate degree of commitment to cooperation (from a memorandum of understanding to a full legal recognition for joint cooperation),
- Develop strategies for funding the ongoing (and for compensation), including defining the role of the private sector (in particular tourism companies and hotels), and creative incentives to attract satisfaction of land owners,
- Capacity-building and the encouragement of administrators to use the modern technical means that are to be made available, including the legal framework and local knowledge, and establish a system of long-term training, and
- Develop a methodology for monitoring and evaluation and assessment of environmental performance and comparisons with similar situations in other countries.

Agreements Already in Place:

With respect to agreements that already exist, we found two documents: one is an official Memorandum of Understanding between the United States and Canada (Box 8), and the other is an agreement between the Republic of South Africa and Botswana (Box 9). We will try to use them in understanding the nature of agreements about TBPAs and to answer the six questions raised in the Introduction. Differences in responsibilities and mechanisms in these two documents, are shown in Table No. 2.

Box No. 8

Model Memorandum of Understanding between the United States of America Canada to cooperate in the management of nature reserves and research and the protection and preservation and submission (May 1998)

Introduction: The National Parks Service of the Department of the Interior of the United States of America and the Office of Nature Reserves of the Canadian Ministry of Heritage, reached the understanding:

Article 1: The purpose of this memorandum is to establish a framework for cooperation and coordination among the participants for the conservation and presentation of natural and culture heritage sites.

Box No. 9

Model Bilateral Agreement Between Botswana and South Africa

For the "Kgalagadi" TBPA

(April 1999)

Introduction: The two countries recognize the equal sovereignty and territorial integrity of each other, and agree upon:

Article 1: The two countries recognize that the protected "Kgalagadi" Transboundary Reserve consist of "Gemsbok" Reserve in Botswana and the "Kalahari Gemsbok" Reserve in South Africa, that will remain intact as a natural ecosystem for the conservation of biodiversity, for research, and for visitors, and for society as a whole and especially for the community around the reserve.

A Final Word: Potential Negative Consequences of Transboundary Nature Reserves

As we know, each country has its own specificity of its geographical position and its development throughout history, which are impressed with the social values, customs and traditions, and the modes of decision making according to its own specific laws and administrative systems. We also know that when a country enters into agreements with other countries, it is keen that these agreements will not be conducive to the detriment of their interests and will not lead to radical changes in its values or in its administrative and legal systems. Agreements with other countries are accepted only if they will not lead to losses that will be in excess of gains. Costs and benefits must be clearly shown. Calculating costs and benefits are not restricted to financial accounts, the social, legal, political and military (security) and environmental costs and benefits, as well, must also be taken into consideration. Intergovernmental and non-governmental organizations invite world countries to expand the establishment of transboundary nature reserves of every kind, as a means to bring peace among nations and promote cooperation between neighboring populations in the reserves, for sustainable development. They have flooded the scene with hundreds of books and research papers published in scientific journals, with the aim of persuading world countries to believe in the benefits of transboundary nature reserves for providing benefits from tourism and for establishing a climate of peace between nations. Recent events in the eastern Congo, however,

Table No. 2 – Comparison of the US- Canada MoU and the African Agreement

<p>The US-Canada MoU 1998, signed by the Departments of Wildlife Protection of the two countries, after approval by their respective legislature.</p>	<p>The African Agreement 1999, Signed by the respective Presidents of the Republic, after approval by their respective legislative authorities</p>
<p><u>1 - Controls the exploitation of the TBPA:</u> Not specifically mentioned and appears to be left to be decided by the Joint Commission (and especially for tourism).</p>	<p><u>1 - Controls the exploitation of the TBPA:</u> Management of protected target is clearly stated as follows: Integration and ensure long-term conservation of wildlife resources in the southern Kalahari. Sharing of experiences between the neighboring preserves on the basis of good neighbors. Increased international presence to improve the region's tourist potential. Facilitate the free movement of tourists within the reserves. Achieving full economic potential of protected and surrounded by economic benefits to both countries, and especially for the local population. Preparation of information campaigns to boost tourism in both directions. Compatibility with international laws on environmental protection The integration of the reserves - to the extent possible - between management and research and marketing, and so on.</p>
<p><u>2 - Accurate description of the functions and duties of the Joint Commission and its function, to be formed by countries:</u> There is no indication of such a description.</p>	<p><u>2 - Accurate description of the functions and duties of the Joint Commission and its function, to be formed by countries:</u> There is no indication of such a description.</p>
<p><u>3 - Obligations of each party to the other.</u> Forms of cooperation between the two parties include: the exchange of technical information and management, Seminars, training courses, conferences, and workshops in areas of common interest, Joint planning of common research and implementation projects and the selection of their members,</p>	<p><u>3 - Obligations of each party to the other.</u> The two countries pledge that the objectives of management of the TBPA are: Providing the TBPA with the necessary guidance for the development, management, and control, consultation, mutual support, and assistance in implementing the management plan.</p>

<p>Exchange of personnel and specialists and experts, Strengthen participation in UNESCO WH and other international organizations. Study, monitoring, and documentation of natural resources and cultural heritage and methods for their development and preservation. Preparation of information and educational programmes. Development of joint tourism initiatives.</p> <p>Each party is committed within the limits of its laws and regulations to seek assistance for implementing these plans from outside sources as seen appropriate.</p> <p>The implementation of this MoU is subject to the availability of financing and personnel of each party, and the laws and regulations prevailing in the State Party.</p> <p>The two partners will decide together the nature of the contribution of each Party in joint projects and activities and the amount of funding contributed for it.</p> <p>Each Party testifies that the information provided to the other Party is accurate to its knowledge, and will not be responsible for its use by the other Party.</p> <p>This note does not affect any other agreements upheld by the State, and does not affect rights and obligations of other parties.</p> <p>This MoU will become effective from the date of the last ratification and will remain valid for 5 years. It can be extended, modified or supplemented by the written consent of both Parties.</p>	<p>Use of the best methods for the homogeneity of their respective national legislation and the removal of legal and practical obstacles - wherever possible - which may prevent the facilitation of integrating the management of the TBPA as a one ecological unit.</p> <p>Reach an equitable distribution of income earned from the TBPA entrance fees, through control of accounts, shared by the two Parties, Income gained inside the TBPA from business activities will remain within the profits gained by the State where these activities take place.</p> <p>The two Parties undertake to enter into other agreements to achieve the spirit and objective of the Convention.</p> <p>The implementation of the Convention starts after the endorsement by the constitutional authorities for compatibility in each of the two countries' laws.</p> <p>It will become effective with the date of the last ratification.</p> <p>This Convention does not affect any local law in any of the two countries or any other agreement with other parties.</p>
<p><u>4 - Management of the TBPA:</u></p> <p>The two partners will establish an "Inter- Governmental Committee", jointly headed by the directors of both the U.S. Service and the Deputy Canadian Minister, or their representatives, to review and discuss the progress of the projects and possible areas of future cooperation and various matters of</p>	<p><u>4 - Management of the TBPA:</u></p> <p>Implementing the management plan will begin from the signing of a "Record of Understanding" between the two departments in which the management plan is detailed and the practical steps to achieve them are identified. It will include the establishment of a "Kgalagady Agency" for</p>

<p>mutual interest. The Committee meets periodically between the two countries.</p>	<p>overseeing the implementation. The Agency is a public interest institution based in South Africa. It will decide its rules of procedure and method of work. Its mandate is to implement the plan and manage its affairs, finance and management of common protected to safeguard the natural environment and as a tourist destination in an equitable manner. It can enter into agreements with other parties.</p> <p>The Agency will promote exchange of ideas and propose projects and public outreach activities in the TBPA and take the steps required by the Convention to facilitate the integration of the two Nature Reserves and their joint administration and management. Each side of the Agency will be headed by the respective Minister of Environment.</p> <p>The two countries undertake to provide the funding required for the implementation of this Convention, provided that the necessary the Agency has done what is necessary for funding from external sources.</p>
<p><u>5 - Controls of visits and excursions and accommodation, especially missions and exploratory trips by foreigners:</u></p> <p>There is no mention of such controls.</p>	<p><u>5 - Controls of visits and excursions and accommodation, especially missions and exploratory trips by foreigners:</u></p> <p>There is no mention of such controls.</p>
<p><u>6 - Help expected from UNESCO:</u></p> <p>There is no mention of such expectations.</p>	<p><u>6 - Help expected from UNESCO:</u></p> <p>Requires management controls in the reserves to facilitate the free movement of tourists.</p>

have shown this expectation is a mirage, since rebels seized these reserves on one hand, and refugees settled there, on the other hand. The adjacent protected areas on the border between Uganda and Rwanda and Congo have become a war front that wrought havoc without any one being able, till now, to stop them.

There are currently in the world 188 transboundary protected areas. It has been possible for some researchers and some international organizations as well, to identify a number of negative impacts, through the dense fog of the international campaigns calling for their establishment. These researchers have shown that the cost may significantly exceed benefits. Some researchers

even found that such reserves might sometimes lead to new conflicts between neighboring countries that were not needed at all.

Some areas of the cost shown by these accounts of cases of agreement between two or more neighbouring countries for the establishment of protected areas along their common borders include:

- 1 - Financial aspects: the cost of setting up the infrastructure and superstructure and uncertainty as regards expected benefits,
- 2 - Political aspects: having to engage in international agreements after painstaking negotiations to determine the precise details to avoid political trouble in the future, in addition to curtailing the role of the State and its sovereignty over its natural resources, and having to grant certain privileges to international organizations in charge of managing protected areas,
- 3 - Military aspects: such reserves may cause the obstruction of border security and control to stop the infiltration of insurgents or smugglers or other wrongdoers,
- 4 - Social aspects: conflicts could arise between people on both sides of the border as a result of the lack of agreement on the sharing of benefits, or for reasons due to the acquisition of land or ethnic differences or any other differences
- 5 - Legal and judicial aspects: the fact that the national judiciary in some cases will be obliged to apply international or foreign laws,
- 6 - Environmental aspects: the inability to control the infiltration of diseases or pests or genetically engineered organisms, and perhaps an inability to get rid of existing pests,
- 7 - Water resources aspects: In case of world heritage sites planning by two or more States to set up projects for the development of shared water resources of rivers or lakes within transboundary sites, it will be necessary in case of World Heritage sites to consult with the World Heritage Center prior to the implementation of such projects. The Center may propose amendments that are liable to reduce their usefulness, or may even decide to warn against the implementation of such projects

The World Heritage Convention, contrary to the UNESCO Man and Biosphere (MAB) Programme, unfortunately did not provide for the establishment of regional networks of Focal Points and/or World Heritage sites. It also did not set up National Committees to deal with World Heritage affairs at the national level. This lack of institutional arrangements is a handicap for overt discussions of World Heritage problems at the national and regional levels. The only forum available at present for discussion of World Heritage affairs is the annual meeting of the World Heritage Committee, that is composed of only 21 States Parties, from among 185 States Parties to the Convention, and whose heavily loaded agenda cannot allow for serious discussion of the issues underlying transboundary sites.

The experience of regional networks of National Committees for the MAB Programme and the MAB Biosphere Reserves is that the Programme does not oblige Member States to do things they may not wish to do. There is complete freedom and flexibility in the exchange of information and cooperative activities between the countries in the same region, such as between the European Union, or the Arab or African regions, or between regions, such as that had been recently agreed between Morocco and Spain,

for the establishment of a Trans- Continental Biosphere Reserve between them. It is noted however, that the establishment of such a protected area - at least until now – was of no avail in solving their long-standing political and economic conflicts.

Conclusion:

All international documents on TBPAs available so far are mere guidance or recommendations and are not yet at the level of binding agreements by the UN General Assembly or other international organizations. They give, however, many directions and approaches that could serve as starting points for implementing TBPAs. As can be seen from the above comparison (Table 2), and as mentioned earlier, the first condition is a mutual desire in two or more neighbouring countries to enter into such a project. The second is the preparation of national plans of this type of protected areas, provided the candidate PAs are already declared under national laws or are already inscribed as BRs or WH sites. The third condition is of course reaching a formal agreement at any legal level to establish the TBPA and give it international recognition. The said agreement must rely on a factual management plan.

There are two types of management plans for TBPAs that already exist: the “American”, an MoU, and the “African”, a Convention (Table 2). Their details are useful to note, but many details of the functional commissions are left to further agreement between the Parties. There are some details, among which controls on the management of the TBPA, and commitments and governance that somewhat answer questions 1, 3, 4, of our Introduction, while question 1 is left out in the case of the American MoU. There are no details on the control of visitors and excursions, which is the responsibility of the State concerned. There are also no details about help expected from UNESCO (questions 5 and 6), different from what is known about the help UNESCO is able to offer for BRs or for WH sites. We cannot know what assistance can be given by UNESCO, unless we have already begun to participate with other countries in the determination of what will be implemented as TBPAs in partnership with them. Moreover, there are no details given about the *modus operandi* of the Joint Committees (question 2), either before the preparation for the announcement and management, or beyond. The difficulty here is that this is a matter that belongs mainly to the two or three neighbouring States that have to decide.

Therefore, the field is open for each country to choose the appropriate methods in answering each of these six questions, both for the preparation or after the announcement. The easy way is that main issues could be agreed in advance with the partner country - through preliminary consultations - taking models of the international experience for guidance, and leaving serious talks to the actual start. This is the easy way, but the consequences of failure to agree later on the main issues may be quite serious. In our opinion, every little detail must be negotiated from the start.

More particularly, we have to discuss question no. 2 on the precise characterization of the functions and duties of the Joint Committee, to be formed by the countries concerned. Clearly, the Joint Committee must be formed concomitant with the first steps of thinking about establishing TBPAs. The agenda of such a Committee should necessarily include substantive technical, legislative, economic, and social issues, such as:

agreement on the possible borders of the reserve, mapping, management, drafting of the Convention, modes of cooperation and identification of type and legal level, and editing a joint request for the status of World Heritage in mind if the reserve will be a candidate as a WH site, agreement on a unified management (or homogeneous) plan, financial matters, costs of movements and control within the reserve, profit-sharing method, participation of stakeholders, development of joint information programmes and educational material, and so on and so forth.

The available international documents of guidance and recommendations about establishing TBPA's unfortunately do not cover all these issues. For example, guidance for the consolidation of management systems, their uniformity, or their homogeneity (including salary standardization), that we may require, is not addressed by international documents.

References:

More than a 100 references were used in this essay. They can be available upon request.⁴

⁴ Written in Jan. 2008.

Arab Republic of Egypt
Ministry of Higher Education
The Egyptian National Commission for Education, Science
and Culture
(UNESCO – ALECSO - ISESCO)
In collaboration with the
The African World Heritage Fund

WORKSHOP ON HARMONIZATION
OF THE AFRICAN
WORLD HERITAGE TENTATIVE LISTS

Cairo:
March 16-18, 2010

REPORT

The African Workshop for the Harmonization of African World Heritage Tentative Lists was held in Cairo on Tuesday, March 16-18, 2010.

Venue: Hotel Sonesta - Nasr City - Cairo.

Working languages:

Arabic and English

Organizers:

The Egyptian National Commission for Education, Science and Culture (UNESCO - ALECSO - ISESCO) in cooperation with the African World Heritage Fund, within the activities of the UNESCO World Heritage Convention

Objectives of the Workshop:

1 Encourage and promote cooperation between African countries and improve the chances of the success of nomination files of African WH sites for inscription on the World Heritage List.

2 Prioritization of these sites on the basis of objective scientific principles, and ensure that there is probability of redundancy with each other and try to avoid it on the basis of sound science principles.

Participating States:

Egypt, Ethiopia, Kenya, Libya, Morocco, South Africa, Sudan, Tanzania Tunisia - and an expert from the African World Heritage Fund in South Africa

Proceedings of the Workshop

Opening Session

The ceremony opened with the fully ten o'clock on the morning of Tuesday, 16 March 18, 2010 Sonesta Hotel Iris Hall recital of verses from the Holy Quran.

In the presence of:

His Excellency Ambassador of Spain (attended on his behalf by Dr. Ana Maria Alonso, (Cultural Counselor, Spanish Embassy in Cairo).

HE Ambassador Maher Al-Adawy, Deputy-Secretary-General, the African Cooperation Fund.

Dr. (Ms.) Wafaa Amer , Director, Nature Protection Sector, Ministry of State for Environmental Affairs (attended on her behalf by Eng. Atef Darwish)

Dr. (Ms.) Prof. Gihane Zaki, Director-General of International Relations, the Supreme Council of Antiquities

Eng. Mohamed Safwat Salem, Secretary-General of the Egyptian National Commission for UNESCO

Dr. Samir Ghabbour, Chairman of the Egyptian National Committee for the UNESCO Man and Biosphere (MAB) Programme, Egyptian National UNESCO Commission, and Workshop Coordinator.

Ms Mona Allam, Assistant-Secretary-General of the Egyptian National UNESCO Commission.

Mr. Jacob Niyangila, representing the African World Heritage Fund.

And many experts and participants.

OPENING SPEECHES

At the opening session the following speeches were given:

Dr. Ana Maria Alonso, Cultural Counselor at the Spanish Embassy in Cairo gave a speech on behalf of HE the Ambassador of Spain. She welcomed the participants and thanked the National Egyptian UNESCO Commission for the well-organized Workshop significant, and highlight the importance of the workshop to draw a streamlined list of the heritage of the African countries to be submitted to the UNESCO World Heritage Center and Committee, and emphasized the need to preserve this heritage for future generations.

Speech by **HE Ambassador Maher Al-Adawy**, Deputy Secretary General of the African Cooperation Fund Progress thanked the organizers for their invitation to attend this workshop, for which he was happy to support because of its importance, and talked about the importance of harmonization of lists of world heritage sites at the African level, and stressed again the importance of the workshop saying that it is timely.

In his statement, **Dr. Jacob Niangyla**, Programme Specialist and representative of the African World Heritage Fund, said that the African World Heritage Fund (AWHF) has embarked on encouraging African State Parties to develop and update their Tentative Lists (TLs). To achieve this, Regional Harmonization of Tentative Lists training workshops are being organized. The first workshop was held in Sao Tomé in March 2009. Eight French and Portuguese speaking countries attended the workshop to work on their lists. The second workshop was held in Nigeria in May 2009. Six English speaking countries in West Africa attended the workshop. Another workshop is planned to take place in Central Africa in October this year. The idea is to come up with an inventory of sites which State Parties to the World Heritage Convention intend to consider for nomination in the near future. The overall objective of these workshops is to harmonize World Heritage Tentative List for Africa in order to reduce duplication between countries, thus resulting to a higher success rate of inscription of sites into the World Heritage List. The World Heritage Committee encourages States Parties to harmonize their Tentative List at regional and thematic levels And the main reason for doing this is to enable States Parties to collectively assess their respective Tentative List in order to identify opportunities and common themes. The outcome of harmonization can result in not only an improved Tentative List and new nominations from States Parties but also cooperation amongst groups of States Parties in the preparation of nominations. Therefore, at the

end of this exercise we hope to have a document containing a draft harmonized Tentative List for African Countries. The African World Heritage Fund would like to call upon African States Parties and other partners to support the work of the Fund by making financial contributions to the endowment fund and programme activities. The returns from the Endowment Fund are already being employed to support strategic projects and programmes across the continent.

Dr. (Mrs.) Wafaa Amer, Director of the Nature Conservation Sector, State Ministry for Environmental Affairs (delivered on her behalf by **Eng. Atef Darwish**), said she was glad to convey to the participants her sincere compliments and wishes to build a fruitful conference and happy to present her views on the natural and cultural resources that characterize the African continent. She said they are witnesses of the various civilizations shown by the ancient and modern excavations and large richness of biological diversity, indicating prosperity of the continent, the treasures of African heritage and knowledge are not rightly appreciate so far, and this diversity is clear in newly discovered marine organisms, coral reefs and wildlife, represent the strategic reserve of biodiversity resources of economic value, and represents a factor of top tourist attraction as one of the richest ecosystems in biodiversity, and should refer to the excursions of many scientists from developed countries to explore the uninhabited areas under the umbrella of tourism, collecting sources of unique genetic material that may have enormous economic value in the field of medicine or the various industries. They are taken free of charge in the absence of legislation governing the sharing of benefits. She went on to say that we have the pride of our civilizations on the continent and have to take care of biodiversity and development to meet the human needs of food, clothing and medicine. Over time, this continent's biodiversity was received from around the globe and its development for adaptation of environments to accommodate the dry and semi-arid desert to become an important component of the national natural heritage. The natural biodiversity and its development are a gift from God Almighty and are to be used by everyone alike and not by any one group alone.

More recently the exclusive intellectual property rights for creators of new strains of biodiversity have been granted, resulting in access to huge returns without the participation of countries of origin of the Third World. The Convention on Biological Diversity in 1994 was adopted and acceded to by 192 countries so far. We encourage the idea of the inevitability of the recognition of sovereignty of States over their biodiversity and traditional knowledge and sharing of benefits arising from the use of national biodiversity heritage and knowledge relating thereto, in return for facilitating access to as one of the three main objectives of the Convention on Biological Diversity.

The vision of Egypt's national environmental policies of biological diversity is to lay the foundations of good sustainable development and conservation of national natural resources, to remain valid for use, and able to bid to ensure that meet the needs of present and future generations, and harmonization of development plans of the State, and the various components of agriculture and industry and petroleum, mining and tourism and housing.

The policy of biodiversity in Egypt is a serious policy to safeguard the wealth of biodiversity elements of a "the three levels of diversity: ecosystems, the diversity of flora and fauna and micro-organisms and genetic diversity", as a basis for economic and social development, and an ecological balance in favor of the citizen and to secure their own future.

The general principles of biodiversity in the policy:

- maintenance of national biodiversity.
- establish a network of natural reserves.
- efficient management of natural reserves.
- Activating the environmental legislation and international conventions and regional and awareness and environmental education.

The main objectives of the national strategy for biodiversity conservation till 2017 are:

- policy-making and management of national plans to protect and manage natural resources.
- Mobilization of national efforts for the maintenance of biological diversity and its elements of environmental biotechnology and genetics.
- Activating the legislation and environmental laws for the maintenance of biological diversity and natural reserves, biosafety and intellectual property and benefit sharing of genetic resources and others.
- Work to establish incentives, which are supported and achieved overall sustainable development.
- Develop and implement national action programs of biological diversity.
- the participation of government sectors and the private sector and NGOs and civil society, local communities and promote the role of women in conservation actions.
- Support the institutional system and the Executive and Coordinating and follow-up to implement the national strategy and programs and fulfill the obligations of Egypt international and regional conventions on Biological Diversity.

Among the landmarks on the path of biodiversity conservation in Egypt so far I may mention:

- Law 102 of 1983 regarding the establishment of nature reserves.
- Establishment of Ras Mohamed National Park as the first protected area in Egypt in 1983 and the start of its development in 1989.
- Egypt's accession to the Convention on Biological Diversity in 1992 and ratified in 1994.
- Law No. 4 of 1994 regarding the protection of the environment as amended by Act No. 9 of 2009.

- the addition of article 59 of the Constitution in 2006 that fact that environmental protection is a national duty binding on all.
- Adoption of the Strategic National biodiversity conservation and plan operations in 1997 to 2017 and the National Strategies for Wetlands, 2005, eco-tourism 2005, medicinal plants, 2009.
- The decision of the President of the Republic No. 154 of 2001 to use the territory of the State Nature Reserve in current and future development plans.
- Ratifying the Intellectual Property Law and the Biosafety Protocol in 2003.
- Declaration on the heart of the Saint Catherine protectorate of World Cultural Heritage site, 2003.
- the declaration of the whales and led the first region in the global natural heritage of Egypt 2005.
- Declaration of the largest nature reserve in Egypt 2007, the Gilf Kebir, area of 48,523 km².
- Reaching a network of nature reserves to the equivalent of about 15% of the country's area, by declaring the latest 28th protected marine area at Salloum, in March 2010.
- The continuation of Egyptian-European cooperation in the development of South Sinai reserves since 1989 to 2010.
- Cooperation with the U.S. Agency for International Development in the development of the Red Sea reserves from 2000 to 2008.
- The Egyptian-Italian cooperation multidisciplinary agreement for Fayoum reserves from 1996 to 2009.
- Bio-safety bill on the of the People's Assembly.
- Establishment of a clearing house for biological and national and international environments, and a map of Egypt and method for predicting biological events in 2008.
- The introduction of economic management approach and sustainable development of natural reserves in 2008.
- Develop and implement national indicators for the diagnosis of status and trends of biodiversity 2009.
- Cooperation with the private sector for the propagation of endangered species since 2003.
- Taking into account economic and social development and environmental tourism as main themes in the management of protected areas.
- Cooperation and integration of the national implementation of the obligations of international conventions for biodiversity and climate change and fight desertification.
- Dealing with a serious invasive species from bird flu since 2006.

The number of employees working in natural reserves are currently to 700; more than 60% of them from local communities in the environment of nature reserves and 15 of them hold Doctorate degrees and more than 30 have a Master's degree and more than 230 are university graduates.

World Heritage Sites offer a thriving business culturally and nationally, so it is necessary to work on increasing their numbers and improve their conservation to the extent appropriate for our civilization, and the number of heritage sites present in the African continent is not commensurate with the historical values and the area's natural richness, and require intensive efforts and self-funding to lift the burden on governments by the private sector and environmental investment site levels, to allow for sustainability in the financing and maintenance of these sites.

The challenges facing the world can be overcome through the protection of natural resources and achieving sustainable development objectives that are means in the fight against poverty and hunger and to narrow the gap between rich and poor and the maintenance of biological diversity and address climate change and global warming and the depletion of fish stocks and the fight against desertification and pollution of all kinds and to cope with globalization and the concomitant growth of an integrated world market and the movement of funds and the increase in investments and take advantage of them in achieving the goals of sustainable development and achieving food security and maximizing the role of women in development activities and strengthening the private sector and NGOs and human development and safety and human well-being and to maximize the sustainable production and rationalize consumption patterns, especially in the renewable energy resources and maximizing the role of young people and develop a global partnership for development and achieve universal education for every individual on our homelands.

We hope that the results of your Workshop will enhance the special positive information of partnership mechanisms and decisions and recommendations to support the expansion of heritage sites in the African continent and managed efficiently. God's mercy and blessings.

African workshop
For the
Harmonization of African World Heritage Tentative Lists

Cairo, Egypt, 16-18 March 2010

Speech by
HE Eng. M. Safwat Salem
Secretary-General
Egyptian National UNESCO Commission

It gives me a great pleasure to greet you and welcome you in your second home Egypt, in this important African Workshop that is conjointly organized by the African World Heritage Fund and the Egyptian National UNESCO Commission.

I am privileged to have been asked by HE Dr. Hani Helal, Minister of Higher Education and State Minister for Scientific Research and President of the Egyptian National UNESCO Commission, to convey to you his greetings and best wishes for a successful meeting that will advance the conservation of African Heritage for the generations to come. He would have much liked to come here and greet you himself, but unfortunately he had other urgent matters to deal with.

The aim of our Workshop, as you know, is to reach a consensus among Delegates of our African countries and our experts, on the principles upon which to submit proposals to the World Heritage at UNESCO for the inscription of the heritage jewels that we possess, on the World Heritage List.

As you have received in our invitation messages, we are here to encourage cooperation among African countries and improving the opportunities of success of recommendation of their Nomination Files for inscribing African sites on the WH List. This we think will need a specific activity that this Workshop is asked to proceed with, namely, prioritize these sites on sound scientific bases, to avoid repetition, so as to improve their chances of success when officially submitted to the World Heritage Center at UNESCO and when evaluated by the Advisory Bodies.

As we all know, World Heritage sites are sites of cultural or natural heritage with outstanding universal value, recommended by the World Heritage Committee of UNESCO, upon the request of Member States – and inscribed in a list known as the World Heritage List, according to the rules of the World Heritage Convention.

I wish now to talk to you about the World Heritage Convention within which we move now, came into existence.

Interest in world heritage appeared when building the Aswan High-Dam in the late 1950's, and it was clear that it would create a permanent body of water that would cause inundation of sites of great importance, especially the Abu Simbel temple.

To avoid that, the late President Gamal Abdel-Nasser issued an international call in which he asked for international cooperation to rescue that valuable heritage. He charged UNESCO with the task of preparing this mission scientifically and financially. UNESCO accepted the challenge and led a highly successful international campaign to protect and rescue Nubian monuments, and especially Abu Simbel Temple. As a result, those monuments were saved.

Rescue works have brought out to light that similarly many sites in many countries have a great importance and value as world heritage and that protecting them is a mission to be carried out not only by their countries, but also by the international community as a whole. Let us think of the Acropolis in Greece, the Taj Mahal in India, or the Great China Wall. And so UNESCO sponsored an international agreement concerning the conservation of the world's most valuable cultural and natural heritage, namely, the International Convention for the Protection of World Cultural and Natural Heritage, approved by the UNESCO General Conference in its seventeenth session in Paris on the 16th of November 1972.

This Convention is the international legal tool concerning the conservation of natural and cultural heritage, setting criteria for recommending sites qualified to be of outstanding universal value. It also determines methods of conservation and management of that heritage.

The process of a country recommending its site includes many steps. First of all, ratifying the Convention to get a membership therein. After that, the country prepares a Tentative List (TL) of the sites that it considers of outstanding universal value. Then, it chooses from time to time – from the TL – one or more site(s) to be added to the World Heritage List, indicating its reasons for that. Also it indicates that the site is under legal protection by national laws to guarantee its authenticity and its integrity, its safety, and that it has an effective management plan and suitable administration. In addition, it presents a comparative analysis of that site with other ones of the same type in the same country or in other countries. Approval for inscription of the site in question is conditioned by applying – at least – one of the ten criteria mentioned the Convention which emphasize the site's outstanding universal value. The number of sites in the World Heritage List is increasing every year. Now, it has become 890 sites.

Listing a site does not mean that UNESCO is managing its matters itself; it remains kept under the control of its owning country and under its protection and management. The idea is that the site can benefit from the attention of the international community which cooperates with that country in protecting it in case of danger or damage, by presenting technical help or financial support or both of them, upon need. Countries try to list their sites in the List as this means a global recognition of the value of this country's cultural and natural heritage, and attracts touristic importance.

In 2005, African countries felt that their contribution in and benefit from the Convention is less than they expect. As a result, the Republic of South Africa has thankfully called for a meeting for the experts of African

countries in which they decreed forming a fund for African heritage, which would contribute in enhancing African heritage and increasing the participation of African countries, to benefit thereof. Indeed, the fund was established in 2006. Egypt and some other European countries and foundations contributed in its budget. Egypt was elected as a member of its Board of Directors to represent North Africa. The Board has held a meeting in Cairo in 2008.

The fund has started its activity by holding expert meetings for different areas of Africa to study the problems of its World Heritage sites, so that African countries would not compete with each other in recommending similar sites. This situation is removed by the experts coming together to study the submitted Tentative Lists, to achieve harmony amongst them, to prioritize them, and to set common plans to manage them. During the last two years, the fund has contributed in holding regional workshops for different African countries that ended with recommendations to be viewed by decision makers in those countries.

Through the Fund's programme, Egypt has called for a workshop including countries for countries of North Africa for the same purpose. A few countries from East Africa were also invited to harmonize with their TLs.

Opening Speech

Mr. Jacob Nyangila, Programme Specialist

African World Heritage Fund

The African World Heritage Fund (AWHF) has embarked on encouraging African State Parties to develop and update their Tentative Lists (TL). To achieve this, Regional Harmonization of Tentative Lists training workshops are being organized.

The first workshop was held in Sao Tome in March 2009. Eight French and Portuguese speaking countries attended the workshop to work on their lists.

The second workshop was held in Nigeria in May 2009. Six English speaking countries in West Africa attended the workshop.

Another workshop is planned to take place in Central Africa in October this year.

The idea is to come up with an inventory of sites which State Parties to the World Heritage Convention intend to consider for nomination in the near future.

The overall objective of these workshops is to harmonize World Heritage Tentative List for Africa in order to reduce duplication between countries, thus resulting to a higher success rate of inscription of sites into the World Heritage List.

The World Heritage Committee encourages States Parties to harmonize their Tentative List at regional and thematic levels And the main reason for doing this is to enable States Parties to collectively assess their respective Tentative List in order to identify opportunities and common themes. The outcome of harmonization can result in not only an improved Tentative List and new nominations from States Parties but also cooperation amongst groups of States Parties in the preparation of nominations.

Therefore, at the end of this exercise we hope to have a document containing a draft harmonized Tentative List for **African Countries**.

The African World Heritage would like to call upon African States parties and other partners to support the work of the Fund by making financial contributions to the endowment fund and programme activities. The returns from the Endowment Fund are already being employed to support strategic projects and programmes across the continent.

Speech by Dr. Samir Ghabbour

Chairman of the Egyptian National Committee for the UNESCO Man and Biosphere Programme (MAB) and Workshop Rapporteur

The speaker reminded participants that the years 1970-1972 marked a historic turning point in humankind's long march towards a better future. Aspirations all over the world shifted from wealth procurement to the quest for health. The preparations for the Stockholm Conference of 1972 obliged many organizations to revise their mandates and their plans⁵. New organizations sprang up⁶. New international agreements and programmes were discussed and launched⁷. Two of these were within UNESCO: The Man and Biosphere Programme (MAB), launched in 1971, and the World Heritage (WH) Convention, launched the year after.

Fortunately for the WH Convention, its founding fathers treated natural and cultural heritage on the same footing. However, a larger number of cultural sites were submitted for inscription on the WH List than natural ones. The very word "property" used in the Convention text, reveals that innocent bias.

States Parties to the Convention cherished cultural creations by their ancestors more than God's natural creation. This attitude is still making natural sites a minority on the WH List.

For us in Egypt, boasting to harbour one third of the world's antiquities, every one understood that we should submit cultural sites in the first place, and so Egypt submitted 5 of her cultural jewels to the third session of the WH Committee, during its third meeting in Luxor, namely:

1. The ancient Abu Mena Monastery, west of Alexandria (on the Danger List since 2001)
2. The Pyramids area
3. Islamic Cairo
4. Luxor, and
5. Nubia from Aswan to Abu Simbel

These 5 sites were deliberately and intelligently chosen to be on a line from the Mediterranean to the Sudan border, and represent the 3 civilizations that came over Egypt in the 7 millennia of her existence: the Pharaonic, the Coptic, and the Islamic. They were thus comprehensive of both Egypt's geography and her history.

⁵ UNESCO in particular

⁶ UNEP, SCOPE, *inter alia*

⁷ Ramsar, MAB, *inter alia*

In the year 2000 Egypt submitted a sixth site, St. Catherine area in South Sinai, which was inscribed in 2002 as a cultural site only. And in 2003 Egypt submitted her first natural site of Wadi Al-Hitan (Whale Valley) which was successfully inscribed in 2005 in Durban.

We are now in the process of preparing two Nomination File for another site of two contiguous areas, one natural (fossils) and the other cultural (the Pharaonic basalt quarries). Both are in the Faiyum Province, north of Lake Qaroun.

The other Nomination File concerns the natural Dababiya site south of Luxor, where scientists discovered the best example of the Paleocene/Eocene boundary, showing what had happened on our planet during what they call the “Paleocene-Eocene Thermal Maximum (PETM)”. Its thorough study should indicate what may happen to us in the coming Global Warming.

The speaker then went on to deal with the difficulties encountered in the exercise of comparative assessments of sites proposed in Tentative Lists are due to the following four main defects:

- The structure of the Tentative List does not encourage inclusion of a full description of the site,
- The absence of a clear purpose sought from the comparative assessments of sites,
- Lack of an internationally approved methodology for comparative assessments, and
- Criteria and indicators of biodiversity to be used in comparative assessments are not agreed upon, or even utilized.

Consequently, the structure of Tentative Lists has to be improved so that they could be amenable to comparative assessments of sites. Otherwise, the assessment has to be deferred until *Draft Nomination Files* are presented by States Parties, or a Tentative List should be modeled after a template Draft Nomination File from the very beginning. The World Heritage Center, in collaboration with the World Heritage Committee, IUCN, and ICOMOS, ought to fill out these four main defects in order to promote serious and effective comparative assessments of sites proposed in Tentative Lists at the regional or at the international levels. Until then, comparative assessments are bound to be of only a general character.

What can we do then under the present circumstances of the inadequacy of data and information contained in Tentative Lists? Perhaps the best thing to do would be to classify the proposed sites according to their primary types of habitats, as was done in 2003 (see below). We can arrange sites, moreover, in the order of how many criteria are applicable to each site. Here fossil sites will be at a disadvantage because they may have only the one criterion of showing stages in the earth's history, which is quite important on its own, but that can rarely be associated with criteria of biodiversity or

landscape beauty. We may also arrange them in the order of the number of attributes they possess, e.g., how many secondary habitat types does each site include? Fossil sites in this case, will again falsely seem at a disadvantage, and this should always be borne in mind when examining, classifying, comparing, or assessing Tentative Lists. Eventually, with better and more detailed data and information on proposed natural heritage sites, of the level of elaboration required in Nomination Files, comparative assessments can be

usefully made by using suitable statistical methods. These methods range from the simple discriminant and principal component analyses, to the more complex correspondence analysis and ascending hierarchic classification. These analyses can give clear and more accurate indications of the comparative quality of sites and of their resemblances (or similarities), provided the classification criteria and the conceptual assumptions are objectively identified from the start, as much as possible.

Finally, the speaker pointed out the inadequacy of training programmes at present and proposed the establishment of a special Diploma Degree on the Management of World Heritage sites. He pointed out that all world continents have such degrees, except Africa.

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Dr. Nyangila took the floor and said he would take that proposal as one of the recommendations to submit to the AWHF. He also said that programmes for capacity building are being carried out as student programmes, as part of the new strategy they are implementing.

Afterwards, the presentations were made according to schedule, with a few exceptions.

After all national reports and scientific presentations had been made on the first and second days.

On the third day, the participants visited the Great Pyramid area at Giza, the Egyptian Museum (King Tut's treasures) and the Geological Museum.

After they returned to the Workshop hall, the proposal of an African World Heritage Action Plan was shown. It was decided that the participants would have the opportunity to study and comment on it within a week. It would be declared adopted after that period of commenting, by e-mail.

Presentations

African Workshop for Harmonization of World Heritage Tentative Lists

Cairo, 16 – 18 March 2010

List of Experts and Their Contributions

#	Subject	Author(s)	Ppt	Paper
1	Water Bodies	Dr. M. Bahaa El Din	+	+
2	Animal Fossils	Dr. Mohamed Abed	+	+
		Dr. Ferial El-Bedewy		
3	Plant Fossils	Dr. Wagieh El-Saadawy		+
		Dr. Marwa Wafeeq		
		Dr. Marwa Kamaleddin		
4	Prehistoric sites (Nabta playa)	Dr. Samir Ghabbour	+	
5	Bird Migration Routes	Dr. Hala Barakat	+	
6	Biodiversity	Dr. Samir Ghabbour	+	
		Dr. Boshra Salem		
		Dr. Manal Fawzy		
7	Nature Reserves	Dr. Monier Abdel Ghani	+	+
8	Natural Landscapes	Dr. Samir Ghabbour	+	
		Dr. Eman Ghoneim		
9	Historic Roads	Dr. Samir Ghabbour	+	
		Dr. Gihane Zaki		
10	Ancient Quarry Sites	Dr. Per Storemyr	+	+
		Dr. James A. Harrelll		
		Dr. Adel Kilany		

**Arab Republic of Egypt
Ministry of Higher Education
The Egyptian National Commission for Education, Science
and Culture
(UNESCO – ALECSO - ISESCO)
In collaboration with the
The African World Heritage Fund**

SECOND AFRICAN WORKSHOP

**On the
*Harmonization of World Heritage
Tentative Lists in North Africa
Cairo, 29-30 May 2010***

REPORT

The Opening Session

The Opening Session was held at the Meridian Hotel, Cairo, on Sat. 29 May 2010. At the beginning of the meeting the **Rapporteur Dr. Samir Ghabbour** welcomed the audience and participants in their second country Egypt and stated that this is the second workshop held as supplementary for the previous Workshop of African World Heritage experts held on March 18, 2010. This First Workshop had resulted in the adoption of a Draft African World Heritage Action Plan. This Draft was distributed to the National UNESCO Commissions of the States participating in the First Workshop. They were asked to send their comments on it so as to reach a Final Version of the Action Plan, to be distributed to concerned international organizations, particularly the UNESCO World Heritage Center.

He then gave the floor to **Ms. Mona Allam**, Assistant-Secretary-General of the Egyptian National UNESCO Commission, to deliver the welcoming speech on behalf of **HE Eng. M. Safwat Salem**, Secretary-General of the Egyptian National UNESCO Commission, whose obligations prevented him from coming to the meeting. In his speech, he expressed his sincere thanks and welcomed the audience and conveyed the greetings of HE Dr. Hany Helal, Minister of Higher Education and State Minister for Scientific Research and President of the Egyptian National UNESCO Commission along with best wishes for the success of the Workshop in meeting its objectives. He referred to the first workshop which was attended by delegates from African countries, from the north and east, to establish the harmonization of African WH Tentative Lists, as a prelude for the eventual preparation of Nomination Files and submitting to the World Heritage Center for inclusion on the World Heritage List. He also referred to the recommendations that have been reached at the First Workshop of March 2010, and that resulted in the adoption of a proposed plan of work of the African World Heritage Action Plan. In order for the activation of the joint African action, countries that could not come to the First Workshop were invited to the Second one, as well as some countries that had participated in the First one, to ensure continuity in concepts and understanding of the actions to be taken by African countries, in the hope of providing a finalized version to be reported at the 34th session of the World Heritage Committee to be held in Brazil in July 25, 2010. He added that this second workshop should provide an opportunity for other African countries to participate in the nomination of more sites for inclusion on the World Heritage List and to improve chances of success of nomination files of these sites and strengthen the efforts of heritage conservation and good management. He stressed the necessity of activating the role of civil societies in conservation programmes and awareness raising. At the end, he wished all the best of success for the participants.

Dr. Samir Ghabbour then presented **Mr. Webbe Ndoro**, Director of the World Heritage Fund, who warmly expressed his thanks and appreciation to the Egyptian National Commission for its efforts and thanks to Egypt in particular for the role it played in the establishment and support of the World Heritage Fund, which was just an idea and turned to be a fact thanks to the

assistance of Egypt as well as Kenya and Ethiopia. List. He referred to the history of the African Fund the first meeting for its inception in 2005, was

signed in October 2005 on its establishment in Paris, became legal in May 2006 to be based in South Africa. Trust Fund is administered by the Board of Trustees (composed by the Ambassadors of African countries at UNESCO), assisted by the Secretariat and the Technical Advisory Committee. He pointed out the signing of 53 African States of the Fund document and expressed regret at the lack of representation of the heritage sites on the African World Heritage List, despite the presence of a large number of African sites on the in Danger List. He added that in most cases management is inefficient and ineffective, and that there are more than 30 sites at risk in many countries, including Egypt, Congo, Côte d'Ivoire, and Tanzania. He expressed his desire for many more of new sites Africa to be inscribed on the World Heritage

He further stressed the great importance of heritage management in the support of sustainable development and the eradication of poverty. Furthermore he pointed out that the world heritage status could greatly contribute in achieving the Millennium Development Goals. He said that the Fund's vision and mission in identifying heritage sites that must be placed on the list and which need to be revived, which had been already described on the List. He stressed the importance of training of experts and the participation of civil society and the local population at these locations to emphasize the interests and of material benefits.

He then spoke about the key obligations of the Fund, summarized in:

1. Complete and even add to the work of the World Heritage Committee.
2. Develop a work plan period of ten years to ensure capacity building in African heritage.
3. A strategic plan for the next three years focusing on the preliminary support for conservation and management of sites and support for the process of rehabilitation of these sites.

He pointed to work at the website in both Arabic and English and that they depend on universities, institutions and heritage specialists and include them in a single network. On strategic partners, he informed the participants that there is transparency in the use of funding and that there is development of partnerships financially and practically.

He also focused on the importance of voluntary contributions by States, which contribute to the benefit of all. He highlighted the strategic plan for the year 2008/2010 and a focus on strengthening the work of the Fund and development and capacity building of African skills on the application of the 1972 Convention and the development of a Trust Fund and the work of partnerships with regional institutions. He listed the contributions of each country in the Fund and the States that have not yet committed to pay their contributions. He said there had been five training workshops organized by the Fund, and that they are about to hold a training course in Algeria. He emphasized that these workshops were to prepare lists and to exchange experiences and properly updating the files of the States so as to succeed in the development of sites on the International Heritage List. He expressed his pleasure for holding this workshop to continue in the further development of the lists, and pointed out to holding another workshop for Central Africa. He noted that the third programme of the Fund would be on World Heritage and

sustainable tourism development. He noted that Egypt's tourism experience can be a tremendous source to learn from, whatever they are currently doing in the Fund. He informed the participants that they were working on the nomination of new sites and establishing training programmes and work on the List and tourism. In the end, he expressed his thanks and appreciation and gratitude for all and wished them luck.

This was followed by a speech given by **Dr. Aly Radwan**, Professor at the Faculty of Archaeology at Cairo University, Advisor to the Supreme Council of Antiquities, and Chairman of the Arab Archeologists Union. He too welcomed the audience and thanked Dr. Ndoro for his detailed presentation of what the African Heritage Fund as doing, and expressed his happiness for being part of this continent, where lived the first man on the earth's surface in the east of the continent, who carried out in Egypt one of the oldest civilizations in the "cradle of civilizations." He praised the role of the African Heritage Fund and demanded from all great support for the efforts of the Fund and that Africans should come together to create one world of African with one voice to preserve their history for future generations to link with their roots. He commended the Fund's role in providing assistance to all African networks, to protect and preserve their heritage, sound management, and successful nominations for the World Heritage List. In the end, he thanked the efforts made by the African WH Fund to protect African heritage sites.

After that, **Dr. Samir Ghabbour** explained what was expected to be done during the workshop and reported that the Action Plan for the African Heritage is still a draft and needed to be revised and expanded by the present Workshop, and contribute more ideas before they are brought to the WH Committee meeting in Brazil in July 2010. He noted that the Plan is based on its adoption by 9 African countries of the 9 which participated in the First Workshop of March 2010 (Algeria, Egypt, Ethiopia, Kenya, Libya, Morocco, South Africa, Sudan, and Tanzania). Then he read the plan in detail and stated that it is necessary to establish WH Diplomas, the establishment of national committees for world heritage, requesting support for studies in heritage sites of Africa, support the workshop in Algeria to prepare for the sites Heritage in May 2010, requested the support of States to make it a success, coordination of work between the sites and twinning and networking of sites, as well as establishing lists of national sites and interfaces (intermediary) between the national and the international heritage sites. He ended with his request for this meeting to start where the first meeting had ended, to review the National Reports of the participating States.

The First Session

In the beginning of the First session of the meeting **Dr. Ndoro** noted the meeting in Algiers was postponed from May to September and said that the training course will be in Arabic, and then made a comment on the African lists and reported the need for variety and agreed upon and the need for harmonization amongst them, and stressed the need to implement the recommendations reached by the ten years Plan of Action of the Fund. He then touched upon the most important problem of lack of research and

information on sites, and called for the encouragement of universities and research students to undertake research in the field of African Heritage, which had went on nicely until 2009 but had to stop due to the current European financial crisis. He said they were encouraged to work in themes of sites of outstanding universal value and sacred sites, their management and preservation at times of conflict. They encourage students to work on these topics in their research, but the only drawback is the lack of funding. He stressed the importance of establishing national WH and praised the recommendation to do so, but inquired about the satisfactory presentation to the World Commission so that they are approved. He promised to submit in Abuja, Nigeria.

Here Dr. Ghabbour stated that measures will be quietly and quickly taken to view the recommendations and obtain approval in preparation and for application.

The second working session

The 2nd session began with a presentation by the representative of **Ethiopia**. She spoke about the World Heritage Convention, signed early by Ethiopia. She indicated that there are 7 cultural sites and one natural site, inscribed between 1978 and 1980. There is a specialized body of Ethiopia for heritage preservation and research, and reported that the sites included in the list already, and 7 other cultural sites and one natural site on the Tentative List, but they are not representative. She also spoke about the the mixed Conso Landscape site placed on the TL, together with the Bal Mountains and the Conso Jardo site. It was necessary to provide protection to these sites and special laws have been issued. Decree No. 209 was issued in 2000, but these laws do not include methods of conservation. Dr. Hailu Zeller (archaeologist) said that in Ethiopia the process of maintaining this system of government represented by the Ministry of Culture and Tourism as the party representing the state in the agreement with UNESCO regarding World Heritage. ARCCCH is the body of research and conservation of the cultural heritage of Ethiopia which is doing inventories of the heritage of the State for study and development for sustainable tourism. It has 6 departments, including the management of World Heritage Management in Ethiopian and would manage and coordinate the process of maintaining the sites of the eight Ethiopian world heritage sites. Administration is organized and chaired this committee will consist of the Ministry of Culture, Tourism and Wildlife Authority and the Ethiopian and archiving the environment and the biodiversity and other shareholders. In addition to sites that have been placed on the TL. There is the astronomical site Artiel Volcano and the tomb of Sheikh Nur Hussein, they are in the process to include them in the TL.

Dr. James Neug of **Kenya** introduced the Kenyan tentative sites submitted for the year 2010. He showed a map of Kenya and its relation to Africa, according to the presence of 5 sites cultural (4 cultural and one mixed, and 10 natural) and presented in detail and identified the importance of each one of them with photos of birds, forests, mountains, animals and lake systems, etc. His colleague thanked the Egyptian National Committee, the kind invitation and hosting of the African participation in the workshop, and said that most of what was presented by Dr. James is the nature reserves proposed for the TL. He spoke about the tunnels dug by elephants in nt Kenya, which is a unique phenomenon, and also talked about the lakes that

can be shared to provide serial nominations, and the cultural part in these sites because they are from pre-history.

Then, the representative of **Sudan** talked of his delight to work with other African countries and thanked the Egyptian National Committee, which allowed him the opportunity to meet with African brothers and take collective action and apologized for the absence of his colleagues who had already made a detailed presentation of Heritage Sites in Sudan in the previous workshop. But he had some comments on the site of Gebel Barkal that has been included on the list in 2003 and he said that they will develop this site where fossils were discovered near it, to become an archaeological site and also a natural site. He said that there will be cooperation with Egypt in the search for the development of this site and study and also as a joint across the border with Libya.

The representative of **Algeria** explained the TL for Algeria and said the presence of 6 sites to which will be added 4 others (2 cultural and 2 mixed). For example National Park of Tassili and the Bani Hamad Castle and showed the map with the boundaries of protected areas in northern Algeria, on the border of Tunisia. He spoke about the decision of its establishment and explained its plants and birds, representing an important site of biodiversity, and then talked about the Jurjura National Park in detail and the wealth of birds, rare trees and varied vegetation. He also talked about the flora and rock art of the Hoggar National Park., a mixed natural and cultural heritage site, the garden of Atlas cultural desert.

Second Day:

The third working session

Dr. Ghabbour welcomed the participants present and asked them to make any additions, modifications, or even omissions, of what they see appropriate in the African Action Plan proposed for discussion and eventual adoption.

Dr. James from **Kenya** presented his sincere thanks to Egypt and the National Commission and those in the workshop and reported that he had studied the plan of action submitted and found it to be the best plan of action has been developed and he does not have any comment, only to be displayed in the final version not in the form of a table as it is now. His Kenyan colleague commented that the time element mentioned in the plan must always be present.

Dr. Ghabbour responded by saying that both forms will be present and that the table is only as a summary, and that this was the proposal of the delegate of Sudan at the first Workshop.

The representative of **Algeria** said that the proposals come at the level of the African region, as well as the Arab region, so there must be coordination between the Arab Group and the African Group to be some kind of integration at the level of the year. He said that there should be a training plan and be for the benefit of the African region. For the African Heritage Fund and its goals, Algeria based her activities to achieve these goals and to find a system to bring together all world heritage specialists in Africa to protect their heritage. As for technical proposals said there is a need to work within a

network linking the region, particularly sites of every state in order to strengthen the activities of the African region.

The representative of **Sudan** gave some remarks on the names of the candidate sites of his country on TL and said they have been corrected. He also stated the existence of development of two sites, one site there is a forest fossils that can also be a serial site.

The representative of **Algeria** intervened saying that there is a number of common heritage in Africa, such as sites of rock art from Egypt to Morocco and a number of Sahelian countries such as Niger, Chad, Mali, and Burkina Faso. He suggested the establishment of a common committee to study the Prehistoric rock art in these countries. That is an extremely important heritage. It needs support from the African World Heritage Fund.

Dr Ndoro attempted to respond to these questions and comments of participants. For the African Action Network, he said that they are trying to do it. He reported that there are two sets of the African Group: Ministers of Culture and Ministers of Education. There are attempts to connect them and there is a lack of communication channels with the Ministers of Environment. The Fund is trying to extend the Network to ensure that institutions of different countries are aware of and familiar with the Fund's programmes and facilitate communication with other organizations. Within ten years we will have offices in all regions.

The project of rock art is wonderful, but funding stands in our way. He pointed out that the Fund engages foreigners, and he would prefer Africans, but lack of funding forced them to hire foreigners.

The representative of **Ethiopia** commented on the Action Plan, saying that its approach does not have a binding force and we want to work in the development of strategic plans for implementation and application, showing how construction mentioned in these proposals and how their application can be performed.

The representative of Ethiopia said they do not understand the meaning of periodic review and lack experts. She requested the assistance of the Fund in support of the States when preparing the files and then she asked for amendment of some descriptions of the sites nominated from Ethiopia like Conso landscape, which has become a mixed site and the walled city which has become already on the list, and Conso Jardo cultural sites, not mixed as stated.

The role of **Egypt** was explained by **Dr. Khaled Saad** of the Supreme Council of Antiquities, who thanked the National Committee for its efforts in this regard. His remarks were as follows:

A – Weakness of internal or international organizations in the management of protected areas in Egypt and elsewhere,

B - Inadequate laws for the protection of sites,

H - Overlap of reserves between the neighbouring States and the lack of cooperation, including, for example, Gebel Oweinat between Egypt, Libya and Sudan

He noted that the new reserves will be subject to illegal exploitation of the States themselves and that reserves cannot stand in the face of industrial development of human society, etc. He further pointed out the lack of

adequate support from the State of which manages the new sites to protect its borders and there is a large number of protected areas that could be included but there is not enough support for them. He also noted the absence of entities assembled for the management of protected areas in common, such as for the Western Sahara, for Gebel Oweinat, in African countries of the Nile Basin and the Horn of Africa. He presented a proposal to set up a fund for quick support of African countries, to be called the Support Fund, to quickly bring support to protect sites exposed to the dangers faced by protected areas, such as the Disaster Fund. He also suggested the establishment of Fund for management of contact and communication among African countries.

Then **Mr. Mohamed Ibrahim**, of the State Ministry for Environmental Affairs, presented an exposé about natural heritage sites in Egypt and the laws in this regard that were issued since 1983 to give a legislative status for nature reserves in Egypt. He talked about the stages of the declaration of protected areas ranging from the presentation of a study about the proposed site to be placed on the list until the announcement internationally. He said there are so far 28 nature reserves in Egypt, covering 15% of the land of Egypt. He further talked about the transboundary protected areas, which should be worked out by the countries involved and must be separately declared in each country according to their own laws. For Gebel Oweinat there is work going on in the participating States in Egypt, Libya, and Sudan, but there is a need for the harmonizing legislation, coordination and issuance of laws in this regard. Egypt already is coordinating these issues. Sites have to be consolidated according to the regulations of each country and must have the entities and legislation and the work of integration among them into national development plans. He pointed out the availability of expertise and strategic plans and qualified personnel, but there must be a single umbrella to assemble these efforts, and that Egypt welcomes regional action. He further spoke of future reserves and the need for a plan of action for the future and for identification of suitable sites, in particular in the Egyptian Western Desert, where the chosen sites for nomination to run consequently up to 17% of the land of Egypt. This will help to conserve its natural resources, while taking into account of the social aspects. He said the areas to be protected came out from the studies conducted with the concerned Ministries and other entities.

Comments

Algeria

For the program of rock art has been adopted at the level of UNESCO to work a programme for the Prehistoric period, welcomed by UNESCO. We welcome the establishment of national WH committees, particularly African heritage, in coordination with other countries. For employees of the African Heritage Fund we propose the approval of our administration to delegate Algerian employees for work at the Fund and for the Algerian Government to bear their salaries.

Kenya:

Kenya asked how the African continent can work as a single entity and one continent, while there is a large gap in information and institutional equipment. We need a meeting of African countries to clarify and explain the institutions currently operating in this area and how to strengthen the position of Heritage Fund, and to provide it with African employees and support African meetings, and examination of each of the bodies working in the field of African heritage and how they inscribe African WH sites.

Ethiopia

Kenya asked for a clarification of the meaning of the establishment of National WH Committees for African heritage within the National Commissions for UNESCO. Dr. Ndoro commented on item number 5 of the Action Plan, about teaching an internationally recognized sites Diploma, or Master in the field of conservation and management of world heritage. He reported the need to work together to develop regional universities and institutes to teach management courses recognized internationally for capacity-building in the field of conservation and management of heritage sites in four languages by distance learning. He also reminded that the date of the workshop in Algeria on stimulating sites for the World Heritage List of Arab and African countries is changed from May 2010 to September 2010.

Sudan

We support Ethiopia has proposed and we think it must focus on priorities in the proposed Action Plan presented and have ambitious projects that will be applied subject to these priorities. We will adopt preliminary steps for as a transboundary WH site. We will go through the necessary procedures and legislation for a joint plan between the participating States where borders meet.

Recommendations by Dr. Ndoro:

Dr. Ndoro stressed the role of the African Heritage Fund in facilitating cooperation between Africans in order to exchange experiences and skills to conserve and manage African heritage sites and the importance of the different bodies to work for this purpose. In the progress through the workshop he thanked to all countries which contributed to the Fund and called on all African States to contribute to it, either financially or by personal skills, and the importance of the African Fund in this respect. He agreed for holding a special workshop on Prehistoric heritage, but the problem is always the funding, which comes mostly from Spain, which always wondering why this or that. What they see as important may not be important to us and vice versa. About establishing a disaster fund has already started in this, but on a small scale for a speedy reaction with the situation, but we need to fund the work of workshops on disaster management. We are in collaboration with the private oil companies and encourage the sites to see the best sites in the region and contact heritage institutions and departments to contribute to strategic planning and adopt their own curriculum and we now have studies on the best sites and this will help us a lot. The establishment of Heritage Committees within National UNESCO Commissions or other entities depends on the State and there is no common formula for them, but it is of vital importance in this area. We cannot play a role in that because it is the responsibility of the State and its circumstances and policy. He emphasized the need for cooperation of African countries to provide the Fund with staff from African countries.

Comments by Egypt

Dr. Mohamed M. Abed

Dr. Mohamed M. Abed talked after the comments Dr. Ndoro, about the Egyptian reserves and the prominent local fossils which could be included on the World Heritage List. Then he pointed out the presence of large numbers of more than 406 whale skeletons from 29 to 37 million years in an area not more than 1 sq. meters wide so that it was easy to inscribe them on the WH List. The speaker mentioned the sites of the Fayoum Governorate full of rounded stones, as watermelons, showing photos of the valley, and the rare

extinct whale skeletons. The speaker also showed the Three Sisters Hill in the Valley of Whales and pictures of the visitor center. He explained in detail the site of Gebel Qatrani in the north of Lake Qaroun. The speaker showed fish, reptiles and mammal fossils in it and pictures of the ancestors of elephants, monkeys that had been discovered there. He stressed the applicability of the criteria that highlight the unique value on the site, which is a mixed site (natural-cultural), in the presence of the oldest existing paved road in history to link the basalt quarries to the shores of the ancient Lake Moeris (now Qaroun). He also spoke of the Dababiya protected area which is the separation from the Paleocene and Eocene, when the greatest global warming event in the history of the earth occurred. It meets criterion 8 and is located east of the Nile valley. He pointed out the existence of only 33 natural sites in Africa and said that the Chilga site in Ethiopia is a promising as a museum of human evolution and history of cultural achievements, and showed images that reflect the natural diversity there. In the end, he made a presentation of the sites that are worthy of nomination on the list of Africa.

Dr. Manal Fawzy

This was followed by a presentation by Dr. Manal Fawzy, Professor at the Botany Dept., University of Alexandria. She addressed the biological diversity of Africa and shed light on the nature of biological diversity and its importance to mankind. This is not only between plants, animals and other forms of life on Earth, but inside the species itself, represented in its genetic diversity. She stressed the importance of this diversity which provides for human communities ecosystem services whereas mankind depends on them and should not be ignored. Despite our appreciation for this importance, we are losing some elements of this diversity of ecosystems, exposed to the risk of becoming threatened. The speaker divided these services into four classifications. A - organized legislative services, B - provisioning services, C - support services, and D - cultural services. She noted that biodiversity richness in the region of animals or flora is an important element of the World Natural Heritage sites. She also spoke about important biodiversity sites on Earth and that these areas are not distributed geographically equally. Norman Mayer developed the idea of important sites in 1988 to identify priority areas for conservation, according to which are the richest areas and most vulnerable. She presented a map of the number of endemic species and the degree of threat. She then explained the ecosystems of Africa and noted the most important places for its diversity and statistics to the content of multiple types and showed pictures of the unique plant and rare reptiles species in South Africa and Namibia, and the great diversity in biological resources in the Horn of Africa, Madagascar, parts of the Indian Ocean, forests East Africa and the Guinea forest, and birds and flamingos on Lake Naivasha, Kenya. The speaker cast light on how the mutation and adaptation of plants and animals in the desert evolve in physiology and behavior, and demanded protection for these highly adapted animals and plants, which flourish despite all the difficulties of high temperature and drought, thriving in oases, wadis, and mountains. She explained the places of priority in Egypt and the mountain ranges such as Mount Elba, and offered wonderful pictures about it, showing the richness of plants compared to other parts of the Egyptian Western Desert, highlighting the cultural diversity there of the Ababda and Bishari tribes and explained the pictures mountains such as Gebel Dokhkan (Mount of Smoke), Gebel Moghara, the Gilf Kebir and Jebel Owainat.

Dr. Manal Fawzy

On behalf of **Dr. Marwa Wafik** and **Prof. Wagieh El-Saadawi**, Dept. of

Botany, University of Ain Shams, Dr. Manal Fawzy graciously gave the presentation prepared by the latter on plant fossils in Africa. The speaker began by shedding light on the importance of understanding the nature of plant and animal fossils to understand the history and environment of the planet we live in. The authors reported that the study of these fossils gives us a good idea about the history of the earth and life forms, evolution and climate change and the terrestrial environment, etc. They stressed the need to protect and preserve the fossil sites because of the impossibility of restoring or reviving them again, in addition to their importance. We should preserve for future generations. They talked first about the countries of North Africa, began with Algeria, which has about 40 species of fossil wood, and provided a detailed view of the places of these forests. Then they talked about Egypt and the regions of Abu Drag, the Bahrain and Ksiba formations, the Gilf Kebir and Jebel Owainat, Mount Rozza, Qaret er-Raml, and the Petrified Forest near Cairo. They displayed a map showing these sites and provided a detailed explanation for each site, with pictures. They also explained the fossils in the Western Desert of Egypt and the Sudan in the Wadi Halfa and Umm Bedda in central Sudan and eastern Darfur. They then presented pictures of fossils found in East African countries such as Burundi, Djibouti, Ethiopia (Chilga), the Omo basin and plants of Kenya, and sites throughout the Rift Valley and Lake Victoria and Mulitno Height.

Mr. Mohamed Ibrahim

Mr. Mohamed Ibrahim, Adviser to the State Minister of Environmental Affairs, took the floor to talk about the nature reserves in Egypt. He talked about the Egyptian Environmental Affairs Agency (EEAA) which was established in 1982 and the definition of protected areas according to Law 102/1983 as zones of ecosystems and biological and geological diversity. They are the more important part of the natural heritage of Egypt and act as a reservoir of natural resources and are administered by methods that ensure sustainability. He spoke about the importance of protected areas, protection and environmental sanitation, retrieval of biodiversity, optimal use of resources, and scientific research, understanding and enjoyment of cultural and natural heritage. Turning to the criteria used in the selection of reserves in terms of geography, vital and important environmental, economic, social, national, and international and the establishment of protected practical and cultural, aesthetic, and regional and in terms of space, diversity and rarity, and nature of the site, sensitivity, probability of destruction, representativeness, recordings of rare and environmental status, and the expected value. He informed the audience about the creation of a network of 28 protected areas covering 15% of land area in Egypt, and the development of protected areas management plans and proposed the declaration of more reserves in the future. Then he introduced the map of protected areas in Egypt and dates of their declaration. For example, Ras Mohamed, which was declared in 1983 a marine reserve and potential natural World Heritage site, Zaranik, till the Northern Red Sea Islands in 2006 and Gilf Kebir in 2007, and Wadi Gemal in 2008. He gave a list of 12 reserves under preparation for declaration. The speaker showed pictures of wetland reserves, desert reserves, and geological reserves. The speaker then addressed the significant legislation of natural reserves in Egypt and the international conventions and laws, of which Egypt is party. He then reviewed some desert pioneers: Egyptians and foreigners alike. The speaker then gave a description of activities for conservation and capacity development and legislation enforcement. He addressed the risks faced by protected areas and biodiversity, the impact of

tourism activities on coral reefs and diving activities and coastal development, and the measures taken to combat the threats facing the marine environment and wildlife. Then he talked about the environment and infrastructure for the management of visitor centers, publications and media, and its role in spreading environmental awareness among the Bedouin community and the local population.

Conclusion

In the afternoon session, chaired by Prof. Ferial El-Bedewy, the participants endorsed the African World Heritage Action Plan and thanked the Egyptian Government and the African World Heritage Fund for hosting the 2nd Workshop for the Harmonization of Tentative African Heritage Lists, their hospitality and their generosity.

SITES PROPOSED BY DELEGATES

ALGERIA

République Algérienne Démocratique et Populaire

Ministère de la Culture

Présentation de la liste indicative d'Algérie

Mr Salah AMOKRANE, Directeur du parc culturel du Tassili

Mr. Zouhir BALLALOU,

Directeur de la culture de la Wilaya de Ghardaia

Organe de gestion

- ☐ Projet socioéconomique :
- ☐ Electrification d'un village en énergie (solaire réalisé)
- ☐ Équipement de puits de parcours en pompe solaire (réalisé)
- ☐ Plan de développement intégré pour trois grands sites: Anhaf, Tihoudaine, Medak (en cours de réalisation)
- 1) Les mausolées royaux de Numidie de la Mauritanie et les monuments funéraires prés islamiques (préparation du dossier de classement pour l'année 2011)
- 2) Parc des Aurès et les établissements oasiens des gorges de Ghoufi et d'El kantara (préparation du dossier de classement pour l'année 2012)
- Sites portés sur la liste indicative (depuis 1992) :
- 3) Tlemcen et Nedroma (préparation du dossier de classement pour l'année 2013)
- 4) Le parc culturel Touat Gourara Tidikelt -les oasis à foggaras et les ksour du grand erg occidental (préparation du dossier de classement pour l'année 2014)
- 5) Sites, lieux et itinéraires augustiniens du Maghreb central (préparation du dossier de classement pour l'année 2015)
- 6) L'Oued Souf (préparation du dossier de classement pour l'année 2016)

Nouvelles propositions

Le parc national d'El Kala (site naturel)

Le parc national du Djurdjura (site naturel)

Le parc culturel l'Atlas saharien : monts des ksour et Amor (site mixte)

Le parc culturel de l'Ahaggar (site mixte)

Le parc national d'El Kala (site naturel)

Fiche descriptive

Décret de création : n°462/83 du 23 juillet 1983.

Organe de gestion : Établissement public à caractère administratif (EPA).

Superficie : 76438 ha.

Point culminant : 1202 m (Djebel El Ghorra).

Étage bioclimatique : subhumide chaud.

Flore: 964 espèces dont 840 espèces de plantes, dont 27 % sont des espèces rares et très rares et dont 26 sont protégées par décret, 114 espèces de lichens dont 53 protégées et 165 espèces de champignons.

Faune : 29 espèces de mammifères, 195 espèces d'oiseaux dont

69 sont protégées. 17 espèces de reptiles dont 3

protégées ; 7 espèces d'amphibiens ; 74 espèces de

poissons réparties et 223 espèces d'invertébrés.

Particularités:

Le plus vaste parc national du Nord algérien;

Dernier refuge du cerf de Berberie (*Cervus elaphus barbarus*) ;

Avifaune très remarquable (plus de 60000 canards et foulques par an)

Région des lacs de notoriété internationale (Tonga, Oubeira et El-Mellah,) inscrits sur la liste Ramsar relative aux zones humides ;

Mosaïque d'écosystèmes (marins, dunaires, lacustres et forestiers ;

Site classé réserve de la biosphère par l'Unesco;

Frange marine riche en corail et en poissons et posidonie.

Diversité de la flore du parc national d'El Kala

Le parc national de Djurdjura (site naturel)

Décret de création : n°460/83 du 23 juillet 1983.

Organe de gestion : Établissement public à caractère administratif (EPA).

Superficie : 18550 ha dont 10340 ha au Nord et 8210 ha au Sud.

Point culminant : Tamgout de Lalla-Khedidja (2308 m).

Étage bioclimatique : subhumide, humide, perhumide à hiver froid.

Flore : environ 1100 espèces dont :

35 espèces endémiques au Djurdjura,

70 espèces sont très rares, 33 espèces sont protégées,

Faune : 23 mammifères dont 10 protégées et 122 oiseaux.

Particularités :

Parc de montagne avec des escarpements rocheux d'une rare beauté.

L'un des massifs les plus riches en rapaces d'Algérie du nord.

Présence de cèdre de l'Atlas avec de belles futaies d'un âge très avancé, d'une forme captivante et d'une végétation accompagnatrice riche et diversifiée (if, érables, houx,...).

Présence de peuplement endémique de pin noir.

Présence d'une faune remarquable telle que la salamandre et le singe magot.

Site classé réserve de la biosphère par le MAB le 15/12/1997.

Fiche descriptive

Diversité de la faune du parc national du Djurdjura

Décret de création : n°460/83 du 23 juillet 1983.

Organe de gestion : Établissement public à caractère administratif (EPA).

Superficie : 18550 ha dont 10340 ha au Nord et 8210 ha au Sud.

Point culminant : Tamgout de Lalla-Khedidja (2308 m).

Étage bioclimatique : subhumide, humide, perhumide à hiver froid.

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Particularités : Parc de montagne avec des escarpements rocheux d'une rare beauté.

L'un des massifs les plus riches en rapaces d'Algérie du nord.

Présence de cèdre de l'Atlas avec de belles futaies d'un âge très avancé, d'une forme captivante et d'une végétation accompagnatrice riche et diversifiée (if, érables, houx,...).

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Présence d'une faune remarquable telle que la salamandre et le singe magot.

Site classé réserve de la biosphère par le MAB le 15/12/1997.

Fiche descriptive

Diversité de la faune du parc national du Djurdjura

Diversité de la flore du parc national du Djurdjura

Le parc culturel de l'Ahaggar (site mixte)

Décret de création : 231/87 du 03 novembre 1987

Organe de gestion : Office du parc culturel de l'Ahaggar

Superficie : 450 000 Km².

Point culminant :Tahat (3003 m).

Étage bioclimatique :Désertique

Flore :environ 360 espèces dont :

73 espèces endémiques de l’Ahaggar ,

36 sont considérés gravement menacés ,

Faune :inclut 38 espèces de mammifères , la plupart typiques des climats arides

Particularités :

Le parc culturel de l’Ahaggar fait partie de l’espace géographique du Sahara dont la limite nord coïncide avec le piedmont sud de l’Atlas saharien et la limite sud va au-delà des frontières nationales à une ligne allant de l’embouchure du Sénégal au lac Tchad. A l’instar du reste du Sahara, la région a connu au cours des temps d’important changements climatiques. Il y a environ 10.000 ans, de nombreux lacs de très grandes étendues étaient connus dans la région. Une faune éthiopienne avec notamment des girafes, des rhinocéros, des autruches, des crocodiles, etc., était en place comme en témoignent les nombreuses gravures et peintures rupestres.

Fiche descriptive

Diversité de la flore de l’Ahaggar

No. de taxons PC de l’Ahaggar	Origine biogéographique
25	Souche méditerranéenne
18	Souche Saharo Sindienne
20	Souche Tropicale

Faune

Le nombre total d’espèces au niveau nationale compte 350 oiseaux, 67 reptiles et 107 mammifères. La richesse spécifique au niveau de l’Ahaggar reste assez élevée avec 162 oiseaux, 29 reptiles et 38 mammifères.

Cependant, la faune de la région a connu une évolution régressive pour certaines espèces comme l’Addax, l’Oryx, la Gazelle rouge et l’Autruche. Malgré leur disparition n’est pas encore confirmée avec certitude, la sécheresse et surtout la pression du braconnage empêchent ces espèces de recoloniser les habitats qu’ils occupaient et leurs aires de répartition historique.

L’actuel statut de protection des espèces en Algérie est établi en terme des trois éléments: (i) le Décret n°83-509 du 20 Août 1983 relatif aux espèces animales non domestiques protégées; (ii) l’Ordonnance n°06-05 du 15 Juillet 2006 relative à la protection et à la préservation de certaines espèces animales menacées de disparition; (iii) la liste rouge de l’UICN; (iv) la convention Africaine pour la conservation de la nature et des ressources naturelles; (v) la convention sur le commerce international des espèces de faune et de flore sauvages menacées d’extinction CITES; (vi) la convention de Bonn sur la conservation des espèces migratrices appartenant à la faune sauvage (CMS).

Le parc culturel de l'Ahaggar, un saharien

important habitat du guépard

Observé dans la Tefedest avril 2004

Observé dans la Torha juillet 2006

Observé dans l'Egéré avril 2008

Mouflon à manchettes observé février 2009

Gazelle Dorcas observée février 2009

Diversité des représentations rupestres

Le parc culturel Atlas saharien, l'ensemble des monts des Ksour et Amor (site mixte)

Localisation de l'ensemble paléontologique et archéologique dans le territoire du parc culturel de l'Atlas Saharien

Fiche descriptive

Décret de création : N.08-159 du 28/05/2008

Organe de gestion : office du parc culturel de l'Atlas Saharien

Superficie : 63 000 km².

Étage bioclimatique : Saharien à hiver froid.

Art rupestre : la région est connue pour être la première à dévoiler les manifestations rupestres des 1847 dans la localité de Tiout. L'Inventaire effectué depuis, a permis de mettre en évidence plus quatre cent stations comptant plus de 2000 gravures échelonnées sur plus de six milles ans. Les études entamées dès le 19^{ème} siècle ont démontré une diversité des techniques et des styles de réalisation de l'art, mais surtout la diversité des thématiques développées par les hommes préhistoriques qui ont soigneusement et fidèlement reproduit, soit la diversité de la faune ou la diversité culturelle ; rites et croyances et divers aspects sociologiques

Site paléontologique:la découvertes d'empreintes de pas de dinosauriens dans la région d'El Bayadh remonte au mois de mai 2004. Les travaux de prospection et de fouilles paléon/tologiques engagés par la suite sur ce site ont permis d'étendre la surface à empreintes, initialement de quelques dizaines de m², à plus de 1000 m². Ainsi, le nombre d'empreintes est passé d'une vingtaine d'empreintes à plus de 300 (12 pistes différentes), ce qui confère à cette localité d'être la plus importance en Afrique.

Sites paléontologiques traces d'empreintes de pas de dinosaures dans le parc culturel de l'Atlas Saharien

Ensemble des Recensements de la Faune algérienne

	Bubale	Eléphant	Rhinocéros	Hippopotame	Girafe	Antilope Chevaline	Antilope Oryx	Antilope Addax
Sud-oranais	+	+	+	-	1	+	+	?
Oued Djerat	+	+	+	+	+	+	+	+
Fezzan	+	+	+	+	+	?	+	-
	Gazelle	Mouflon	Cerf	Phacochère	Oryctérope	Singes	Lion	Guépard
Sud-oranais	+	Tardif	-	-	-	-	+	+
Oued Djerat	+	+	-	+	+	+	+	+
Fezzan	+	Tardif	-	-	-	-	+	+
	Hyène	Cynhyène	Chacal	Lièvre	Autruche	Flamant Rose	Pélican	Hibou
Sud-oranais	-	-	-	+	+	-	-	-
Oued Djerat	+	+	+	+	+	+	+	+
Fezzan	-	-	+	-	+	-	-	-
	Crocodile	Python	Vipère	Couleuvre	Lamentin	Poissons	Chèvre	Mouton
Sud-oranais	-	-	-	-	-	-	-	-
Oued Djerat	+	+	+	+	?	+	+	+
Fezzan	+	-	-	-	-	-	+	+
	Chien	Boeuf						
Sud-oranais	+	+						
Oued Djerat	+	+						
Fezzan	+	+						

ETHIOPIA

Report on the First Section

of the World Heritage Periodic Reporting Questionnaire

May 2010

By Tsehay Eshetie

The World Heritage Convention and Ethiopia

Ethiopia was one of the first signatories of the “Convention concerning the Protection of World Cultural and Natural Heritage” in 1977. Member countries or “State Parties to the Convention” may put forward properties with recognized cultural and natural values, depicted in the intrinsic nature of each site and its important features to humanity in the world. To date there are seven cultural and one natural World Heritage sites in Ethiopia where all except one were included on the World Heritage List between 1978 and 1980.

Some of the Cultural heritage sites have yielded the most complete fossil remains of human ancestors and the associated stone tools during pre-historic period. The only world natural heritage of Ethiopia, the Simien Mountain National Park, is famous for its rare endemic wildlife. The Authority for Research and Conservation of Cultural Heritage (ARCCH) is responsible for the implementation of the WHC.

The Authority is the custodian of World Cultural Heritage Sites in Ethiopia and is primarily accountable for the Conservation of immovable cultural heritages in the country. The Authority also links the World Heritage Centre and governmental institutions, working on the World natural heritage site.

Inventory of cultural and natural heritage in Ethiopia

Natural Heritages in the Country are better inventoried/listed/registered, however they are under represented in the WHL.

Properties in the Tentative List

In spite of this, three properties, approved and submitted by ARCCH, are currently on the World Heritage Tentative List:

1. The Konso Cultural Landscape (Mixed)

2. The Bale National Park (Natural)

3. Konso Gardula Paleo-anthropological site (Cultural)

Ethiopia is waiting for the Konso Cultural Landscape to be inscribed in WHL 2010. The Bale Mountain and the Konso Gardula are expected to be on the List in 2011.

Legal Framework

The WH Convention obliges signatory states to provide separate legal framework to protect their Sites on the List

Protection of cultural heritage in Ethiopia is accordingly governed by the Decree of 209 of 2000, which has also established ARCCH

The law does not have complementary regulation to regulate identification, conservation and protection of cultural heritages in the country

The WHC was supposed to act as a driver of each state party's policy at the local level as national policy guidance are derived from obligations in the international agreements

Ethiopia does not have a clearly stated policy to guide the conservation, protection and identification of cultural heritage

No adequate services are available for the conservation, protection and presentation of cultural heritages in the country

Therefore, the country needs to bring more natural sites, which are under represented, to be on the WHL.

KENYA

KENYA TENTATIVE LIST SUBMITTED LIST

2010

Cultural and Natural sites

•5 Cultural sites and •10 Natural sites

Cultural sites and Their Criteria

- The Historic Town of Gedi (ii, iii and iv)
- The Mfangano-Rusinga Island Complex (ii and vi)
- The Marakwet Escarpment Furrow Irrigation System (iii, iv and v)
- The Thimlich Ohinga Cultural Landscape (iii and iv)
- Olorgesailie Prehistoric Site (Mixed site) (iii and viii)

Natural sites and Criteria

- Aberdare Mountains (vii and ix)
- The Eastern Arc Coastal Forests (Arabuko-Sokoke, Shimba Hills National Reserve) (x)
- The Kakamega Forest (vii, ix and x)
- The Meru Conservation Area (ix and x)
- Mount Kenya National Park/ Natural Forest/Lewa Wildlife Conservancy (Extension) (viii and ix)
- Hell's Gate National Park (viii)
- The Maasai Mara (vii and x)
- The Lakes System in Kenya (vii, ix and x)
- The Tana Delta Forest Complex (ix and x)
- Tsavo Parks and Chyulu Hills Complex (ix and x)

Libya

Tentative list of Natural sites

Dr. Omar Assaadi

Libyan Delegation

Cairo 16/3/2010

Libya is characterized by a large area of desert. However, these vast areas are rich in their cultural and natural sites since the dawn of history or the rainy era. There is a strong indication that the area was inhabited by man and different species of animals roamed there. Besides; Libya was exposed to various geological activities which produced amazing geological and geomorphologic phenomena.

Till now **Libya did not submit any natural tentative list** for the World Heritage Committee or any other similar organization.

The Socialist Peoples Libyan Arab Jamahiriya has presented the following tentative list for natural sites. Four of those are in the desert while one only close to coast. . Two of the sites can be categorized as both cultural and natural, namely (Ra's Elhilal – Lathrone) and Auenat. These sites have been carefully selected among many other important sites which could be presented in the near future.

Detailed information was not supplied where these sites were prepared and examined in short time. However slides with important photos as well as coordination were shown on data show during the workshop.

Here is a list of the selected sites with brief information for each:

1- 1-Gabger Oun قبرعون

One of the most important touristic attractions in the country. Most of the visitors come from foreign countries, Hundreds of photos on the internet by professionals. Contains superlative natural phenomena and areas of exceptional natural beauty and aesthetic importance. So it meets Criterion VII

2- Waw Anamous واو الناموس

A volcanic field cone and caldera in the center of the Sahara .In the caldera rich foliage and three salt lakes of variable colors. Studies has indicated reasonable biodiversity. An apron of dark basaltic tephra extends 10-20 km around the caldera. It is an increasingly popular tourist attraction

Coordinates: N 25.00.16.86 E 17.44.04.04

Contains superlative natural phenomena and areas of exceptional natural beauty and aesthetic importance... Criterion VII

An outstanding example representing major stages of Earth's history, including the record of life, significant on-going geological processes in the development of landforms and significant geomorphic and physiographic features.... Criterion VIII

3- Aljabel Alahkdar (Ras Elhilal – Lathrone) راس الهلال لثرون

One of the most important areas of AlJabel Al Akhdar (Green Mountain)

It has been considered as a natural and cultural geographical area by many.

Deep vallies with diversified Flora and Fauna.

Cave believed to be inhabited log ago

Certain plants are endemic (only in this area) and considered endangered.

To bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared...Criterion III

An outstanding example of a traditional human settlement, and land use, which is representative of human interaction with the environment especially when it has become vulnerable under the impact of irreversible change....Criterion V

Outstanding examples representing major stages of Earth history, including the record of life, significant on-going geological processes in the development of landform, and significant geomorphic and physiographic features Criterion VIII

An outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial ecosystems and communities of plants and animals....Criterion IX.

Contains the most important and significant natural habitats for *in-situ* conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.....Criterion X

4- Jagaboub الجغبوب

Malfa Lake

Petrified Forest

Contain superlative natural phenomena and areas of exceptional natural beauty and aesthetic importance... Criterion VII

An outstanding examples representing major stages of Earth history, including the record of life, significant on-going processes in the development of landforms or significant geomorphic or physiographic features. VIII.

5- Auenat العيونات

South eastern part of Libya

Cultural and Natural sites (mixed) meets Criteria: III, V, VII. VIII. IX. X

Desert - Mountains

Kufra District: 1) Jabal Awaynat - Rock Paintings – engravings

2) Jabal Arcnu - Rock engravings

Ubari District: 3) Matkhandush - Rock Parings and engravings

Kufra District: 4) Tolab – Hawary. Old construction using salt masonry

- 5) Rebyana construction using mud – brick
missionary – and Minify in wood

6) Bezzema

Ben bleeds District:

- 7) Ghirza - Libyan City in Raman era
sculptured gates and engrave and Tombs.

Oasis Wahat District:

- 8) Awjila. Libyan traditional city with – old
wooden roofs – tomb of ABDULLA
BENAbBY El SARH

El Marj District:

- 9) Tuehera ancient Greek city.
10) Ptolemais ancient Greek city.

Fripeli District:

- 11) Gasser el haj. Old monument with
many stairs
12) gasser Kabaw with many stairs

Sibha:

- 13) El- Fuqha – tradition Roman Period.
14) Old JARMA

THE LOWER PALAEOOLITHIC SEQUENCE OF ATLANTIC MOROCCO REVISITED AFTER RECENT EXCAVATIONS AT CASABLANCA

J. P. Raynal, F. Z. S. Alaoui, L. Magoga, A. Mohib & M. Zouak

The Mio-Plio-Pleistocene sequence at Casablanca covers the last six millions years. The age estimates for different phases of this sequence have been established by various methods: lithostratigraphy, biostratigraphy, absolute dating (OSL, ESR), palaeomagnetism and aminochronology. Mio-Pliocene environments are characterized at extremely rich palaeontological sites (Lissasfa, Ahl-Al-Oughlam) but these have not yet yielded hominid remains. The oldest lithic assemblages are found in Late Lower Pleistocene deposits, circa 1 Ma, in unit L of Thomas Quarry 1, and consist of Acheulian artefacts made from quartzite and flint. The first human remains discovered in this area were found in younger Middle Pleistocene deposits and cover an important period of human evolution between *Homo erectus* and modern *Homo*. They are associated with Acheulian artefacts and rich faunas in caves (Littorines Cave at Sidi Abderrahmane, caves at Thomas Quarries 1 and 3). The variability and the chronology of the Acheulian sequence is well documented following recent excavations in various sites around the well known locality of Sidi Abderrahmane (Ours Cave, Cap Chatelier, Unit L and Hominid Cave at Thomas Quarry 1, Rhinoceros Cave at Oulad Hamida Quarry 1, Sidi Abderrahmane Extension and Sidi Al Khadir open-air sites). The Casablanca sequence thus offers useful data for comparison with those from other African areas where hominids lived. The Thomas Quarry I was made famous in 1969 with the discovery of a half-mandible, first attributed to *Atlanthropus mauritanicus*, but more recently considered as a representative of *Homo rhodesiensis*.

THE AFRICAN WORLD HERITAGE FUND

AWHF Report

Investing..... in Africa's heritage

WORLD HERITAGE ISSUES

- Africa's heritage is the most underrepresented on the World Heritage List.
- Many African States Parties to the Convention have no sites on World Heritage List.
- High number on the List in Danger.
- The management is not effective.

CREATION OF THE AWHF

- 29th session of the WHC (Durban 2005) proposal to create the AWHF
- Endorsed by:

General Assembly of the State Parties to the World Heritage Convention (Paris October 2005)

African Union Summit on Culture and Education (January 2006)

LAUNCH

Feasibility by Development Bank of Southern Africa, Department of Arts and Culture of South Africa, NEPAD and the World Heritage Centre

The AWHF Launched on 5 May 2006 in Maropeng, Krugersdorp (South Africa)

Registered as trust Fund.

MEMBERSHIP

- All African countries upon ratification of the World Heritage Convention (53 AU countries)
- Voluntary contributions by member states to the World Heritage Convention
- Regular reports to be provided to the World Heritage Committee and the African Union

GOVERNANCE OF THE FUND

- AWHF Patrons (AWHFP) Ambassadors for the AWHF
- Board of Trustees (BoT)
- The Secretariat of the Fund
- Technical advisory committee

DEVELOPMENT

SUSTAINABLE

“the management of heritage is an important tool for the promotion of sustainable development and poverty alleviation; and that World Heritage status can make a distinct and valuable contribution to addressing the Millennium goals..”

Provide opportunities for local communities to make decisions about their, resources identity and place in the world.

VISION

Through effective investment and sustainable management, Africa’s World Heritage Sites will be catalysts in transforming Africa’s image and means to stimulate socio-economic growth and infrastructure development for the benefit of Africa’s people

MISSION

- ☐ Identify African heritage sites to be inscribed to the World Heritage List
- ☐ Conservation and management of heritage sites
- ☐ Rehabilitate sites inscribed on the List of World Heritage in Danger
- ☐ Train heritage experts
- ☐ Involve communities in and ensure that tangible benefits accrue to them

STRATEGIC OBJECTIVES

Provide support to:

- Identify and list African Heritage sites on to the World Heritage List
- To the conservation and management of heritage sites
- Rehabilitate sites inscribed on the List of World Heritage in Danger
- Train heritage experts as an ongoing investment
- Involve communities in decisions concerning their heritage and ensuring that tangible benefits accrue to them

MAIN MANDATE

- To complement, not conflict with, the World Heritage Committee
- 10 year action plan with main emphasis on capacity building
- Strategic Plan for the next three years All focus on:
 1. Preparatory assistance
 2. Conservation and management assistance
 3. Rehabilitation assistance

NETWORK BASED

- 1.EPA ,CHDA , Mweka Collage, Robben Island, etc.
- 2.Universities-Research on heritage issues
- 3.African professionals essential asset
- 4.Networking with other heritage organizations and professionals

STRATEGIC PARTNERS

- 1.State parties to the world heritage
- 2.UNESCO-WHC
- 3.Nordic World Heritage Foundation
- 4.AU/NEPAD
- 5.Advisory bodies to WHC
- 6.Heritage organizations

ISSUES FOR AWHF

- Transparency in the use of the fund
- Ownership –involving all stakeholders (meeting in Abuja)
- Partnership development-Financial and operational.

STRATEGY PLAN 2008-2010

- Strengthen the AWHF operations
- Develop ownership structures
- Grow the Endowment Fund
- Develop partnerships with regional institutions and heritage professionals
- Continue to build capacity for implementing the 1972 Convention (based on experience in Africa 2009 etc)

1 500 000	Egypt
1 100 000	South Africa (first payment)
60000	Namibia
59 845	Kenya
50 000	Morocco
50 000	Tanzania
10 000	Mauritius
10 000	Africa Union
2 830 845 \$	Total Africa
1 020 000	China
400 000	Norway
240 000	Netherlands
80 000	India
30 000	South Korea
20 000	Israel
1 790 000 \$	Total other State Parties
4 620 845 \$	Overall Funds raised

ENDOWMENT FUND

1 100 000	South Africa
1 000 000	Nigeria
41 000	Kenya
1 000 000	Tanzania
600 000	Algeria
60 000	Gabon
50 000	Zambia
60 000	African Union
3 911 000 \$	Total

UNFULFILLED PLEDGES

2300 000	AECID-SPAIN
50 000	UNESCO-WHC
162 000	NWHF
20 000	Norway Foreign Ministry
48 000	Norway -Riksantivaren
45 000	UNESCO-WHC

PROGRAMME FUNDING

BRAND OFFER

- Category II: only UNESCO associated institution in Africa
- Long term investment in African heritage and implementation of millennium goals
- Sustainable development contribution
- Access to in African countries –decision makers, cultural and scientific community

EVALUATION AND COMPARISONS OF SITES PROPOSED IN WH TENTATIVE LISTS

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Water Bodies

By Dr. M. Bahaa-El-Din Ahmad
Ministry of Irrigation and Water Resources

**Report on
Nominated Water Bodies in Africa to be as UNESCO Natural
Heritage**

**By
M. B. A. SAAd
Ph. D Hydraulic Engineering
Member of Egyptian Committee of MAB
Oct. 2009**

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1. Introduction

I was asked by the Secretary General of the National Committee of UNESCO (as I am a member of the Egyptian Committee of the UNESCO MAB Programme) to review and prepare a report on the sites presented by the African states the Nominated water bodies located In Africa to be accepted by UNESCO as Natural Heritage.

The report will be presented in the Cairo Workshop on "THE HARMONIZATION OF AFRICAN WORLD HERITAGE TENTATIVE LISTS" to be held during 14-16 Dec. 2009 in Cairo. I received documents of ten sites as stated in a tentative list which were submitted from different African countries as following:

- four from Burundi;
- three from Kenya;
- one from morocco;
- one from Tunisia; and
- one from South Africa.

2. Criteria for selection

The UNESCO 10 criteria for World Heritage Sites, with some examples

Criteria - Cultural:

(i) *represent a masterpiece of human creative genius;*

Palaces, gardens, public buildings, libraries, museums, urban planning, decorative art, bridges, railways, canals, etc.

(ii) *exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design;*

Architecture or technology, monumental arts, town-planning or landscape design, etc.

(iii) *bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;*

Folkloric decorative arts, housing patterns, quarry landscapes, graveyards, etc.

(iv) *be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;*

Historic buildings, agricultural landscapes, sylvo-agro-pastoral systems (e.g., the gum arabic landscape of Kordofan), etc.

(v) *be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;*

Fishing villages, ancient ports (eg., Suakin), Neolithic sites, « art rupestre », etc.

(vi) be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria);

Ancient battle fields, sites of historic events, religious monuments, reminders of liberation strife, etc

Criteria - Natural:

(vii) contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;

Mountains, lakes, forests, mangroves, sea grasses, oases, dune fields, etc.

(viii) be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features;

Geological strata, volcanoes, cratons, cliffs, tufas, caves, karsts, scarps, stalactites and stalagmites, waterfalls, paleodrainage systems, etc.

(ix) be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;

Biodiversity corridors (canals, roads, pipes), islands, oases, ecotones, etc.

(x) contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

Biodiversity hotspots, coral reefs, coastal areas, estuaries, islands, oases, lagoons, etc.

As indicated above the criteria for natural site selection are four.

3. Description of Properties of Sites on the Tentative Lists

As mentioned ten sites are included in the tentative list which are:

- Gasumo of Burundi;
- Rihinda of Burundi;
- Le Lac Tangangika of Burundi;
- Les Chutes de La Karera of Burundi;
- Lake Bogoria of Kenya;
- Lake Naivasha of Kenya;
- Lake Nakuru of Kenya;
- Lagune de Khnifiss of Morocco;
- Chott El Jerid; and
- The Prince Edward Islands.

Here a brief summery for each site as quoted form the relevant data presented by thr relevant state.

3.1 Gasumo of Burundi

Date of Submission: 09/05/2007
Criteria: (vii)
Category: Natural
Submitted by: Ministère de l'Education Nationale et de la Culture
State, Province or Region: Province : Bururi
Coordinates: S3 54 47 E29 50 22

Gasumo, the southernmost source in the town Rutovu in Bururi province. It is a trickle of water coming out of the north flank of Mount Gikizi 3 ° 54'47" south latitude, in the town of Rutovu in Burundi. It continues its journey through rivers Gasenyi, Kigira, tributaries of the Ruvyironza. The latter in turn throws in the Ruvubu whose waters join Nyabarongo to form the Kagera, the main tributary of Lake Victoria.

The source of the Nile River has been subject to any particular organization. His condition is not threatened. Besides this source of tourism promotion initiatives have been undertaken, including shelter for tourists. The site access is facilitated by a very good way to share viability of Bujumbura to the source of the Nile River for a distance of 132 km.

Statements of authenticity and / or integrity

The source of the Nile River has been subject to any particular organization. Besides this source of tourism promotion initiatives have been undertaken, including shelter for tourists. The site access is facilitated by a very good way to share viability of Bujumbura to the source of the Nile River for a distance of 132 km.

Comparison with other similar properties

The river Nile can be compared to the Niger River. This is the great river of West Africa (4200 km). Like the Nile, it serves for irrigation.

3.2. Rihinda of Burundi

Date of Submission: 09/05/2007
Criteria: (vii)(ix)
Category: Natural
Submitted by: Ministère de l'Education Nationale et de la Culture
State, Province or Region: Province : Kirundo
Coordinates: S2 33 39 E30 03 51
Ref.: 5145

Lake Rihinda called "Bird Lake" is part of the eight lakes which are a part of watershed of the Nile River. It covers an area of 425 ha and is the crossing point and hibernation for migratory birds, about 20 species. They come from Europe, arrived on site in December and return in April.

The lake has a central island called (Akagwa) and secondary peat floating islands called (ibishinga), moving into the lake with the wind, as a preferred habitat, a place of spawning and nesting habitat for some migratory birds. The ecological richness, specificity of the lake consists of aquatic plants including water lilies, the Potamogeton and marsh plants such as papyrus.

It also counts as Dasypeltis scabra reptiles, amphibians and fish spécifiques. Au above the lake observed a savanna composed of a few trees of Acacia and Combretum.

Despite some threats to the lake Rwihinda including drying due to climatic disturbances, Lake Rwihinda retains its integrity because of its natural look characterized by natural vegetation of lowland savanna woodland consisting of trees and floating plants. However, the lake suffers threats from pollution by human activities, the gradual disappearance of tree species (Acacia, Combretum), waterfowl (crowned cranes, Flamengos red) and fish.

Statements of authenticity and / or integrity

Despite some threats to the lake Rwihinda including drying due to climatic disturbances, Lake Rwihinda retains its integrity because of its natural look characterized by natural vegetation of lowland savanna woodland consisting of trees and floating plants. However, the lake suffers threats from pollution by human activities, the gradual disappearance of tree species (Acacia, Combretum), waterfowl (crowned cranes, Flamengos red) and fish.

Comparison with other similar properties

Lake Rwihinda has special characteristics compared to other (located on the territory of Rwanda near the border with Burundi), although located in a very natural environment.

3.3. Le Lac Tanganyika of Burundi

Date of Submission:	09/05/2007
Criteria:	(vii)(x)
Category:	Natural
Submitted by:	Ministère de l'Education Nationale et de la Culture
State, Province or Region:	Provinces : Bujumbura Rural, Bujumbura Mairie, Bururi et Makamba
Coordinates:	S3 15-4 30 E29 18-29 45
Ref.:	5146

Lake Tanganyika is the oldest lake of African Rift Valley as it dating back to more than 12,000,000 years, . It is the second largest lake in depth after Lake Baikal in Russia. The 800 km wide and 50 km, it reaches in places a depth of 1435 meters. With its 18,800 km³, this lake is the largest reservoir of fresh water in Africa. It drains a catchment of about 220,000 km². It is fed by many tributaries, the most important are the Rusizi (draining Lake Kivu) and Malagarazi which drains the western Tanzania. Its outlet is the River Lukuga. This ecosystem contains a remarkable animal. In most species of cichlid fish (more than 250 species), it houses collections of other non-cichlid species (more than 145 species) and invertebrates: more than 60 species of gastropods, over 15 species of bivalves, more 69 species of copepods, over 20

species of licking, 84 ostracods, 15 species of decapod, over 9 species of sponges.

If related species of cichlids from Lake Tanganyika are known worldwide, three non-cichlid species of particular interest: two species of Clupeidae (sardines) and *Lates stappersi* dominate the biomass and are the target of industrial and artisanal fishing lake. With more than 1,300 species of vertebrates and invertebrates, this lake is a freshwater ecosystems richest in the world. Among these species, 500 are endemic. Also, Lake Tanganyika has been for a long time a way of marketing so important to the riparian countries. Indeed, in the mid 19th century, products (cotton, son of brass beads) from the Indian Ocean passing through the lake path. And since it still plays an important role economically. Initiatives for its protection are taken by the riparian countries, including: a Strategic Action Plan for Sustainable Management of Lake Tanganyika and sub-regional Convention on the Protection of Lake Tanganyika, Burundi ratified the July 22, 2004. Despite threats (factors of erosion, pollution, sedimentation and fishing techniques) facing Lake Tanganyika, it retains its integrity because of its natural biodiversity characterized by an extremely rich and complex, with over 1 500 species plants and animals which nearly half are endemic. Comparison with other similar properties Lake Tanganyika is part of Rift Valley lakes of the Western East Africa. The lake is distinguished by its natural appearance characterized by an extremely rich biodiversity and complex: 4 500 species of plants and animals which nearly half are endemic to its ecosystem, a vital water source for people along the lake.

Justification for Outstanding Universal Value

Statements of authenticity and / or integrity

Despite threats (factors of erosion, pollution, sedimentation and fishing techniques) facing Lake Tanganyika, it retains its integrity because of its natural biodiversity characterized by an extremely rich and complex, with over 1 500 species plants and animals which nearly half are endemic.

Comparison with other similar properties

Lake Tanganyika is part of Rift Valley lakes of the Western East Africa. The lake is distinguished by its natural appearance characterized by an extremely rich biodiversity and complex: 4 500 species of plants and animals which nearly half are endemic to its ecosystem, a vital water source for people along the lake.

3.4. Les Chutes de La Karera of Burundi

Date of Submission: 09/05/2007

Criteria: (vi)(vii)

Category: Mixed

Ministère de l'Éducation Nationale et de la Culture

State, Province or Region: Rutana

Shanga S3 04 36 E30 54 36 Nyakazu S3 53 43 E30 07 37

Ref.: 5150

On the massive Nkoma located in the province of Rutana south-eastern

Burundi, two aspects stand out as exceptional nature. On the one hand, falls and cave Karera and partly the fault and the forest Nyakazu.

These falls are oriented from north to south and extend over 142 ha. They are divided into six branches and spread over three levels.

On one level, there is a fall divided into two main branches parallel with a length estimated at about 80 m which drains a basin. This drop includes several waterfalls of various sizes interspersed with two platforms. To the west of the main falls is another waterfall less than 50 meters. The waters of these two falls converge on a second tier to form the third waterfall that flows into the valley. These waters flow through a gallery forest surrounded by savanna and *Parinari curatellifolia*, *Pericopsis angolensis* and large trees such as *Newtonia* *buchananii*.

It is from 1980 that falls and the cave Karera had been established as protected areas.

a - The Cave It is located at the point of first falls waterfalls. This cave is a place of worship where people of different regions come to collect.

Guest facilities and access on all levels have been established, including location of benches to watch the various waterfalls.

II / The fault Nyakazu

The hole opens Nyakazu depression Kumoso. It is a notch in the massive Nkoma overlooking the plain and extends to the border with Tanzania. This issue is of tectonic origin and recent covers 600 ha. It has a unique structure and there are remnants of the historic German fort. There is also a large seasonal fall from a height of over 100 m, which is poured over a valley covered with a forest of different species *Entandrophragma excelsum*. Around the fault exists in *Brachystegia* woodland. It is a conservation area of trees at high altitudes which enjoys a special microclimate.

Wildlife species are not all identified, but we observe 4 mammals and bird species. The remains of the fort is a prestige German history, an impressive structure.

Falls of the Karera in Shanghai and the fault Nyakazu retain their integrity because of their natural appearance. The site is maintained by INECN and access roads and other improvements are made to allow easy access of the site.

Comparison with other similar properties
We can compare the Karera Falls with a height of 80 m of Niagara USA and Canada that are comprised of cataracts by 51 m high in the U.S. and 49 m in Canada. The two were respectively 790 m and 305 m from the front. Fault Nyakazu recalls the great Midori fault occurred during the earthquake of 1891 in Japan, but that of Nyakazu required by its length of 112 m.

Justification for Outstanding Universal Value

Statements of authenticity and / or integrity

Despite threats (factors of erosion, pollution, sedimentation and fishing techniques) facing Lake Tanganyika, it retains its integrity because of its natural biodiversity characterized by an extremely rich and complex, with over 1 500 species plants and animals which nearly half are endemic.

Comparison with other similar properties

Lake Tanganyika is part of Rift Valley lakes of the Western East Africa. The lake is distinguished by its natural appearance characterized by an extremely rich biodiversity and complex: 4 500 species of plants and animals which nearly half are endemic to its ecosystem, a vital water source for people along the lake.

The Lake covers 107km² within a catchment basin that forms the arid and semiarid areas of northern Kenya.. The hot springs on the western edge of the lake attract a large number of visitors creating problems (solid wastes pollution, and destruction of fragile rocks at the hot-springs). The lake's biodiversity is seriously threatened by siltation and tourism is also expanding rapidly in the area. The lake supports large numbers of flamingos and in some occasions as many as 2 million can be found feeding in the lake. The lake has no macrophytes but its phytoplanktonic flora is dominated by *Spirulina platensis*, which is dominant in most parts of the lake.

3.5. Lake Naivasha

.3.6

State	Kenya (Africa)
Date of Submission:	16/08/1999
Category:	Natural
Submitted by:	Kenya Wildlife Service P.O.Box 40241, Nairobi, Kenya E-mail: KWS@AFRICAONLINE.CO.KE
Coordinates:	Lat. 0°42' - 0°50'S / Long. 36°16' - 36°26' E
Ref.:	1345

The lake has an area of 15,600ha (including islands), at an altitude of 1884m asl. The lake is a fresh water lake with a catchment of 2,378 km². Lake Naivasha was designated as a RAMSAR site in 1995 and is managed by the local property owners under the Lake Naivasha Riparian Association formed in 1934. The lake provides diverse habitats for a variety of mammals, birds and fish (tilapia, black bass, and cray fish). Lake Naivasha's biodiversity is critically threatened by human induced factors, including: habitat destruction, pollution (from pesticides, herbicides and fertilisers), sewage effluent, livestock feeding lots, acaricide, and water abstraction. A population of over 250,000 people lives around the lake. This high population has encroached wetlands and converted them into agricultural lands, residential areas, and tourist hotels. The continued harvesting of papyrus along edges has in particular destroyed the natural state of the lake. Current research findings show that the lake cannot sustain further development activities on the scale seen over the last fifteen years.

3.7. Lake Nakuru National Park

State	Kenya (Africa)
Date of Submission:	16/08/1999
Category:	Natural

Submitted by: Kenya Wildlife Service P.O.Box 40241, Nairobi, Kenya
E-mail: KWS@AFRICAONLINE.CO.KE

Coordinates: The lake is 2km north of Nakuru town at grid reference
0°19'- 0°24' S / 36°04'-36°07' E

Ref.: 1344

Lake Nakuru National Park is situated approximately 164 kilometres from Nairobi. The lake is 2km north of Nakuru town at grid reference 0°19'- 0°24' S/36°04'-36°07' E, and covers 49,00ha (9km long and 5.5km wide maximum) at an altitude of 1758m asl. The lake was established as a National Park in 1961. The park was expanded over the years to 188 km² to provide a perimeter buffer zone to protect the lake from encroachment by settlements and to minimise the impacts of urban and agricultural development in the immediate catchment. The park was declared a rhino sanctuary in 1983. The lake is also designated as a RAMSAR site. The lake water is highly saline but supports a habitat rich in biodiversity including a variety of aquatic flora and fauna. The lake also is inhabited by water mammals mainly hippopotamus and clawless otters while the terrestrial part of the park supports a large number of other African plain mammals. The park is also a sanctuary of rhinoceros and the Rothschild's Giraffe (*Giraffa camelopardalis rothschildi*). The introduction of a species of salt-tolerant *Tilapia* (for mosquito control) opened the way for the colonisation of the lake by many species of fish eating birds (Cormorants, pelicans, hammerhead, etc). The park has a large reserve of over 300 species of birds, which make it an ideal site of bird lovers.

3.8. The Prince Edward Islands

State South Africa (Africa)

Date of Submission: 08/07/2009

Criteria: (vii)(viii)(ix)(x)

Category: Natural

Submitted by: Department of Water & Environmental Affairs

State, Province or Region: Southern Ocean. For administrative purposes, the Prince Edward Islands are regarded as part of the Cape Town Magisterial District of the Western Cape Province.

Ref.: 5457

Prince Edward Island is located approximately 19km northeast of Marion Island. Prince Edward Island rises to 672m ASL at its highest point (Van Zinderen Bakker Peak) and consists of a central highland that slopes gently to the east and drops to the western lowland in the form of a 400m high escarpment. The coastlines of both islands consist mostly of coastal cliffs rising abruptly from the sea, interspersed by small pebble and boulder beaches in protected bays. The island group has a cool climate with an annual mean temperature of 5.9°C. The absolute maximum and minimum temperatures ever recorded at the base are 23°C and -6.8°C respectively. The island group experiences high precipitation (an average of 2,500 mm per

annum), mainly in the form of rain, which is distributed fairly every throughout the year.

Two factors in particular have contributed to a relatively low floral and faunal diversity on the sub-Antarctic islands in general and on this island group in particular. The first factor is that the island group is geologically very young. The second factor is the remoteness of the islands from continents.

Some 147 species of indigenous and introduced invertebrates are known from Marion Island. This includes 19 alien species that have become naturalized and 13 introduced species that have not, as yet, established themselves. 39 species of soil ciliates have been found on Marion Island.

There are three seal species on the land group. Their numbers are indicated in parentheses: the Southern elephant seal, *Mirounga leonine* (2,000), Antarctica fur seal *Arctocephalus gazella* (330), and sub-Antarctic fur seal, *A. tropicalis* (44,800).

The island group supports 29 species of breeding birds as well as 22 species of vagrant seabirds and 28 species of non-marine vagrant species.

Four orders of seabirds are present on the island group: *Sphenisciformes* (penguins), *Procellariiformes* (albatrosses and petrels), *Charadriiformes* (skuas, gulls and terns) and *Pelecaniformes* (cormorant).

There are no indigenous fish in the freshwater environments (the introduced brown and rainbow trout are now extinct), and zooplankton, therefore, represents the highest level in the freshwater food chain. Two species of copepods, *Pseudoboeckella volucris* and *Daphniopsus studeri*, dominate fresh waters and there are also a number of species of mites and a common freshwater midge, *Linophyes minimus*.

33 species of fish from 13 families are known from the oceans around the island group.

The island group is one of the most important and well-conserved examples of sub-Antarctic islands and is one of only six groups of islands that represent this ecosystem on earth.

The variety of landforms and terrain types are outstanding in that they are of sufficient size and diversity to support the full range of sub-Antarctic vegetation in communities.

The island group supports one endemic subspecies of bird, as well as seven known endemic invertebrate species..

The island group also contains exceptional examples of volcanic processes and is an outstanding example of a shield volcano with a range of landforms of volcanic and glacial origin.

The island group supports three marine mammal species, which similar to marine birds of the Southern Ocean, have very restricted global breeding

habitats. Southern elephant seal, Antarctic Fur seal and sub-Antarctic Fur seal breed on the island group.

The island group supports three a full range of vegetation assemblages that are characteristic of sub-Antarctic islands.

Statements of authenticity and/or integrity

The Prince Edward Islands remain an authentic largely undisturbed natural landscape. The management and conservation of the island group by the Prince Edward Islands Management Committee, in accordance with the provisions of the Prince Edward Islands Management Plan, ensures that these islands will not change significantly.

Comparison with other similar properties

Of all the Southern Ocean islands (including cool-temperate, sub-Antarctic islands) Prince Edward Island emerges as the island with the best combination of biodiversity and state of "pristine" or absence of human impacts.

A preliminary assessment of the World Heritage values of Southern Ocean islands by an IUCN Working Group, prepared according to the Delphi method, ranked the Prince Edward Islands, South Georgia and Heard and MacDonald Islands highest amongst all the sub-Antarctic islands. This assessment found these islands to be *"so closely related that it is not practical to distinguish among them as the highest ranked candidates"*.

The Delphi assessment highlighted the island group as one of the islands groups with the greatest value in terms of biodiversity and lack of human impact.

On South Georgia, which has two introduced land mammals (Norway rat and reindeer), the rats probably have a much greater impact on seabirds than do the mice that are present on Marion Island.

3.9 Lagune de Khnifiss

State	Morocco (Arab States)
Date of Submission:	12/10/1998
Criteria:	(vii)(x)
Category:	Natural
Submitted by:	Direction du Patrimoine Culturel
Coordinates:	Long. 12°15' W ; Lat. 28°03' N
Ref.:	1182

With a total area of 60,000 ha in north-eastern Tarfaya Lagoon Khnifiss is a jewel of Moroccan reserves offers a surprising variety of habitats in a desert environment austere but beautiful landscape magnificent. The natural values of the site are enhanced by the presence of prehistoric archaeological and historical research which is **multidisciplinary in recent lean years**.

3.10. Chott El Jerid

State : Tunisia (Arab States)

Date of Submission : 28/05/2008

Criteria : (vii) (viii) (ix) (x)

Category : Natural

Submitted by : Ministry of Agriculture and Hydraulic Resources

State, Province or Region: Governorate of Tozeur and Kebili

Coordinates : N33 42 E8 24

Ref. : 5385

Chott El Jerid is located in mainland south-west. It covers an area of 586.187ha .

Chott el Jerid is a large salt depression, situated between the mountains of Cherbai north and desert in the south and is connected to the Chott Fejaj and is the largest in the chain of depressions between the steppe and the desert, typical of northern Sahara. Jerid region (that is to say "the region of the palm") includes the entire area north of Tozeur Chott. The wetland itself is difficult to access, crossed by a single road that extends approximately eighty kilometers from Tozeur to the northwest and the region Kebili (called Nefiaoua) south-east . It is very dangerous to deviate from this route for crossing the Chott because the surface is unstable. At the foot of the chain and northern edge of the Chott, lies the oasis of which Dghoumes National Park, included in the Ramsar site, is home to flora and fauna steppe. South of Chott is the Sahara. Type climate with dry summer hot and dry, during which average temperatures vary between 25 ° and 40 ° C and a winter period during which average temperatures vary between 10 ° and 24 °, the absolute values vary between -3 ° and +50 ° C. The average annual rainfall is between 75 and 100 mm, but actual values vary widely from year to year. Evaporation is very intense, especially in summer. The sandstorms are frequent, especially in spring. Chott El Jerid plays an essential role in the hydrological regime of the surrounding region. In areas of loam glaze northern edge of the Chott unsalted he was formerly a steppe of *Acacia raddiana*, disappeared for several decades. Currently this area supports a vegetation dominated by *périplaque* *Periploca laevigata*, the *Rhus* *Rhus tripartitum* and *retam* *Retama* *Retama*. The halophytes essential "hmadha" closer to the Chott are *samphire* *Salicornia Arabica* *Halocnemum*, *Arthrocnemum indicum*, *Atriplex* *Atriplex* sp. and *Suaeda Souidi* .

Nesting of flamingo in the wet season was already recognized in 1940 by Doumergue, and there was 3800 couples in the spring of 1991. Large numbers of flamingos, far exceeding the threshold of 1% can be observed wet winters (sometimes more than 20,000 individuals: 17,000 individuals in winter 1990/91 in WNVO Johnson, 1993). It also notes waterbird specialist subservient to arid as *Tadoma ferruginea* Ruddy Shelduck. Among the ants have included *Cataglyphis halophila*; among crustacean *Artemia* .

Dghoumes, near the Chott includes the following mammals: Barbary sheep, hare, wild cat, jackal, sand fox and porcupine. Among birds include the following species steppe, typical Biome Sindo-Sahara: the gang spotted *Pterocles senegallus*; the Desert Lark *Alaemon alaudipes*; *Iammomane* *Ammomanes deserti* desert, the Sahara dromoïque *inquieta* *Scotocerca*, and various species of wheatear *Oenanthe* sp. There among reptiles the presence

of black-tailed snake of the viper the pyramids, the desert monitor lizard and the tail-whip .

The presence of the flamingo in periods of nesting and wintering, the total number of waterbirds, and nine out of sixteen species of the Mediterranean Biome - North Africa and four in thirteen species of Biome-Saharan Sindo, has earned the site be classified by BirdLife International as Area Imports for the Preservation of Birds (ZICOJBA), TN site 035 (Fishpool & Evans 2001).

Social values and worship :

Prehistoric sites exist in the region Kebili. At the entrance of almost every gorge north of Chott, there are snail Capsian age (8,000 years) or Neolithic (5,000 years). The city names often reflect their origins Roman: Tozeur (Thusuros); Nafta (NEPT). Along the mountains north of Chott found traces of Limes, stone wall designed by the Romans as a fortified defensive line against the Berber tribes of the south .

Currently, the oases of the Jerid region and Nefzaoua have a culture and a unique atmosphere, based partly on production "three levels" in the oases (dates, fruit trees in the shade of palm trees, and vegetables ground) and other activities on the edge of the desert (camel breeding).

In the Chott itself is practiced near the cross road salt production. The edge of the Chott, particularly in northern border, is used for grazing cattle .

The Lake covers 107km² within a catchment basin that forms the arid and semiarid areas of northern Kenya.. The hot springs on the western edge of the lake attract a large number of visitors creating problems (solid wastes pollution, and destruction of fragile rocks at the hot-springs). The lake's biodiversity is seriously threatened by siltation and tourism is also expanding rapidly in the area. The lake supports large numbers of flamingos and in some occasions as many as 2 million can be found feeding in the lake. The lake has no macrophytes but its phytoplanktonic flora is dominated by *Spirulina platensis*, which is dominant in most parts of the lake .

- Chott El Jerid is a lake of great extent in the wet season, an outstanding natural beauty unique.

- This site is a testimony of life, geological processes in the development of landforms or geomorphic or physiographic features with high significance; regions surrounding the Chott el Jerid contain prehistoric sites in the region Kebili (Capsian snail age (8,000 years) or Neolithic (5,000 years). Chott experienced, there is 100,000 or 200,000 years before the present era, wetter periods, during which he turned into a permanent lake, mainly due to the sources. In places the lake bottom was covered with a layer of water 25 meters deep (Ben Ouezdou, 1998). Traces of aquatic life were discovered on the edges of current chotts the form shells in a fossil state, dominated by Cadmium.

- The ecological analysis shows a richness and a spectacular development of ecological and biological processes in the evolution of ecosystems.

- The presence of people in the Mediterranean Biome, Biome of Sindo-Saharan (the total number of waterbirds, and nine out of sixteen species of the Mediterranean Biome - North Africa and four in thirteen species of Biome Sindo-Saharan has earned the site be classified by BirdLife International as Important Area for Conservation of Birds) in addition to large numbers of flamingos, far exceeding the threshold of 1%, the observed wet winters

(sometimes more than 20,000 individuals) as well as mammals and reptiles that are highly endangered species across international scale.

Justification of Outstanding Universal Value

- Chott El Jerid is a lake of great extent in the wet season, an outstanding natural beauty unique.
- This site is a testimony of life, geological processes in the development of landforms or geomorphic or physiographic features with high significance; regions surrounding the Chott el Jerid contain prehistoric sites in the region Kebili (Capsian snail age (8,000 years) or Neolithic (5,000 years). Chott experienced, there is 100,000 or 200,000 years before the present era, wetter periods, during which he turned into a permanent lake, mainly due to the sources. In places the lake bottom was covered with a layer of water 25 meters deep (Ben Ouezdou, 1998). Traces of aquatic life were discovered on the edges of current chotts the form shells in a fossil state, dominated by Cadmium.
- The ecological analysis shows a richness and a spectacular development of ecological and biological processes in the evolution of ecosystems.
- The presence of people in the Mediterranean Biome, Biome of Sindo-Saharan (the total number of waterbirds, and nine out of sixteen species of the Mediterranean Biome - North Africa and four in thirteen species of Biome Sindo-Saharan has earned the site be classified by BirdLife International as Important Area for Conservation of Birds) in addition to large numbers of flamingos, far exceeding the threshold of 1%, the observed wet winters (sometimes more than 20,000 individuals) as well as mammals and reptiles that are highly endangered species across international scale.

4. Comply with the four criteria of UNESCO for natural site selection

The document of each site which prepared by the concerned country has been examined to find out which criteria fit with each site. Table 1. Show the obtained results.

Table 1. Compatibility of the presented sites with UNESCO criteria of natural site

Site	Criteria 6	Criteria 7	Criteria 8	Criteria 9	Criteria 10	Category
Gasumo of Burundi		✓	☒	☒	☒	Natural
Rihinda of Burundi	☒	✓	☒	✓	☒	Natural
Le Lac Tangangika of Burundi	☒	✓	☒	☒	✓	Natural
Les Chutes de La Karera of Burundi	✓	✓	☒	☒	☒	Mixed
Lake Bogoria of	☒	☒	☒	☒	☒	Natural

Kenya						
Lake Nakuru of Kenya	☒	☒	☒	☒	☒	Natural
Lake Naivasha of Kenya	☒	☒	☒	☒	☒	Natural
The Prince Edward Islands	☒	✓	✓	✓	✓	Natural
Lagune de Khnifiss of Morocco	☒	✓			✓	Natural
Chott El Jerid of Tunisia	☒	✓	✓	✓	✓	Natural

Note 1: Criteria as stated in the description of properties/sites on tentative lists of the states parties participating in Cairo workshop 14-16 Dec. 2009 .

Note 2: The descriptive lists of the three sites of Kenya are not including criteria which match with that ones determined by UNESCO.

5. Compatibility with the tentative list submission format as defined by UNESCO

Table 2 shows the compatibility with the tentative list submission format as defined by UNESCO for the mentioned ten sites

Table 2. Compatibility with the tentative list submission format as defined by UNESCO

Site	Gasumo	Rihinda	Le Lac Tangangika	Les Chutes de La Karera	Lake Bogoria	Lake Nakuru	Lake Naivasha	The Prince Edward Islands	Lagune de Khnifiss	Chott El Jerid
STATE PARTY	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DATE OF SUBMISSION	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
prepared by Name	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
E-mail:-	☒	☒	☒	☒	✓	✓	✓	☒	☒	☒
Address	☒	☒	☒	☒	✓	✓	✓	☒	☒	☒
Fax	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Institution	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Telephone	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Criteria	✓	✓	✓	✓	☒	☒	☒	✓	✓	✓
NAME OF PROPERTY	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
State, Province or Region	✓	✓	✓	✓	☒	☒	☒	✓	☒	✓
DESCRIPTION	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Justification of Outstanding Universal Value	✓	✓	✓	✓	☒	☒	☒	✓	☒	☒
Criteria met	✓	✓	✓	✓	☒	☒	☒	✓	☒	☒
Statements of authenticity and/or integrity	✓	✓	✓	✓	☒	☒	☒	✓	☒	☒
Comparison with other similar properties	✓	✓	✓	✓	☒	☒	☒	✓	☒	☒

6. Developing a priority list for the mentioned sites

Based on what is mentioned above and after examining the description list of the ten sites, the priority list can be developed where the first site is that one met with UNESCO requirements as stated in form and with the determined criteria. The developed list is indicated in the table 3.

Table3. Priority list for the mentioned sites

Number	Site
1	The Prince Edward Islands of South Afreca
2	Chott El Jerid of Tunesia
3	Rihinda of Burundi
4	Le Lac Tangangika of Burundi
5	Les Chutes de La Karera of Burundi
6	Lagune de Khnifiss of Morocco
7	Gasumo of Burundi
8	Lake Bogoria of Kenya
9	Lake Nakuru of Kenya
10	Lake Naivasha of Kenya

7. Conclusion

Based on the criteria developed by UNESCO for Nature Site selection and considering the submitted formats for the ten sites and its fulfillments with the format developed also by UNESCO, a priority list has been determined as shown in Table 3.

A Comparative Study on the Plant Fossils and Palaeobotanical Sites of North- and East- African Countries

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There is no doubt that understanding the nature of fossil plants and animals is of extreme importance for enhancing our understanding of the planet we live on. Studying these fossil remains provides us with loads of information about the earth's history, they represent the sole record on the evolution of life forms, the palaeo-biodiversity, and can also give us insight into the pattern by which the climate and the different aquatic and terrestrial environments changed through time. The maximum and urgent need for preserving these fossiliferous sites emerges from the impossibility of restoration upon damage or loss, which give these sites the ultimate priority over the other natural history sites that on the other hand can be restored one way or another in case of damage. In addition to their extreme importance and rarity, fossiliferous sites must be preserved *in situ* and protected for the coming generations.

The main aim of this study is to shed some light on some of the main palaeobotanical sites in countries of North and East Africa. The study is based on the available cited literature, accordingly the details of the proposed sites depends on the information given in the literature used. In cases where the literature does not provide the location details, the fossil plants recorded will be mentioned as an indicator of the richness of fossil plant remains in this site/country.

I. North-African Countries

1. Algeria

According to Dupéron-Laudoueneix and Dupéron (1995), 40 species (25 genera) of petrified wood were recorded from Algeria. 35 of these species (23 genera) were referred to 13 dicot families, these families are as follows, (the number of species and genera, respectively, for each family is given in brackets): Bombaceae (2,1),

Combretaceae (3,2), Euphorbiaceae (1,1), Fagaceae (1,1), Guttiferae (1,1), Hypericaceae (1,1), Leguminosae (17,9), Meliaceae (4,2), Rubiaceae (1,1), Rutaceae (1,1), Sapindaceae (1,1), Scyttopetalaceae (1,1), and Tamaricaceae (1,1). Two species (one genus) were referred to family Palmae. In addition to

three species of the same gymnospermic genus (Araucarian and “mixed” coniferous wood).

2 . Egypt

Plaeobotanically speaking, Egypt is to be considered one of the richest African countries. There is a great number of fossil plants localities that exist within the Egyptian boundaries. Of these numerous fossiliferous sites, only five are nominated here. These five sites were chosen based on their unique nature and tremendous importance in addition to the fact that they were not previously submitted for inscription on the World Heritage list. The six sites are (in alphabetical order) : Abou-Darag (Western side of Gulf of Suez), Bahariya Oasis (Western Desert), Cairo Petrified Forest (Eastern Desert), Gebel/Djebel Uweinat, Gilf Kebir and their surroundings, Kiseiba Formation, Qaret El-Raml and Gebel Ruzza (Western Desert), see figure 1

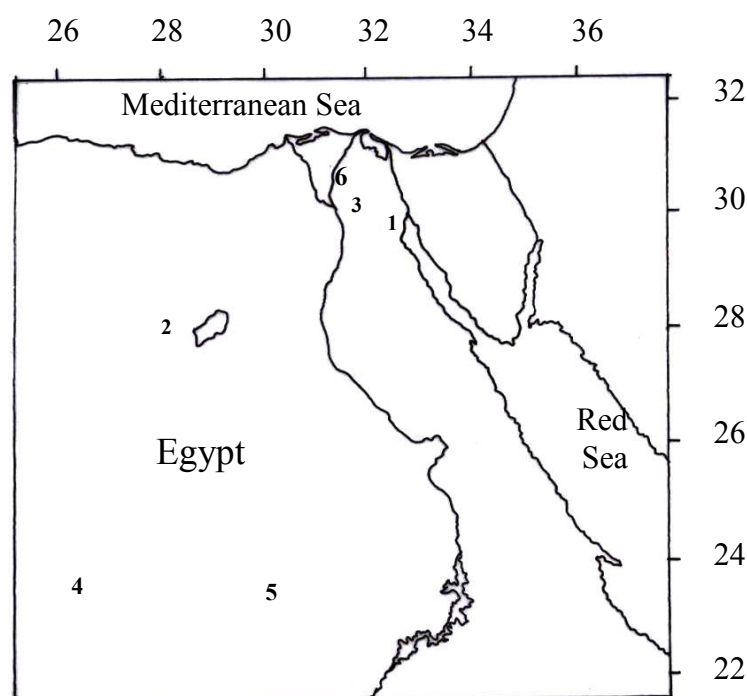


Figure 1: Map of Egypt showing the six proposed plant fossil site; 1.Abu Darag, 2. Bahariya Formation, 3. Cairo Petrified Forest, 4. Gilf Kebir and Gebel Uweinat, 5. Kiseiba Formation, and 6. Qaret El-Raml and Gebel Ruzza.

A . Abu-Darag:

Area lies along the western coast of the Gulf of Suez at about 80 km south of Suez near the Abu-Darag light-house, (see figure 2). The area is of about 60 km², extending between lat. 29° 21' 05'' - 29° 22' 30'' N, and long. 32° 32' 00''-32° 33' 30'' E.

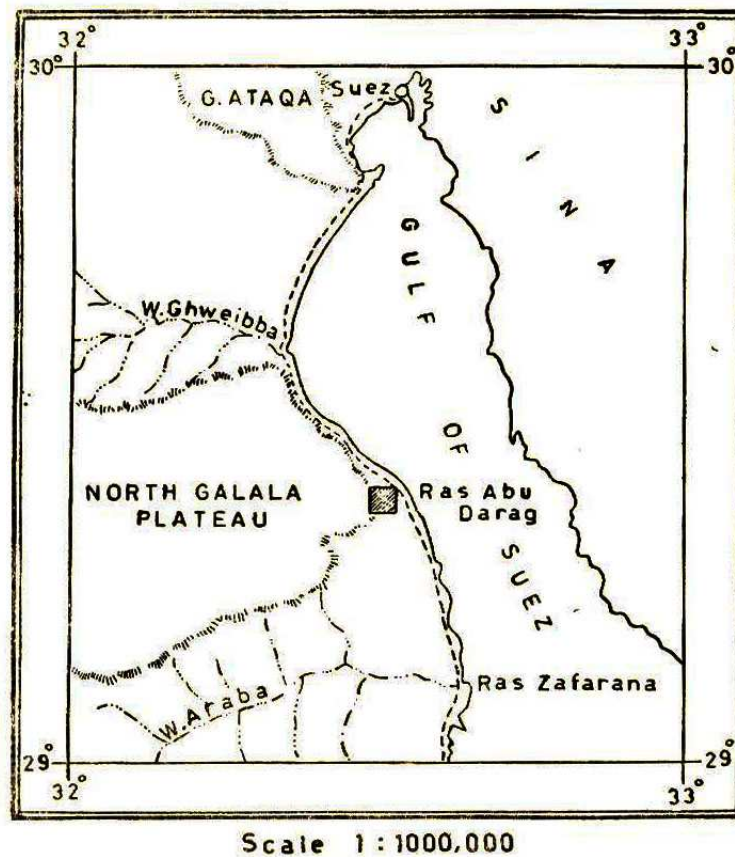


Figure 2 : Map showing location of Abu-Darag, El-Saadawi and Farag (1972).

Geologically, the deposits of Abu-Darag area are differentiated into two kaolin quarries referred to as D and H, these two quarries are of different strata. However, both quarries are basically made up from alternating fossiliferous limestone and marls, and almost exclusively cut by more or less east-west basaltic and doleritic dykes, sills and plugs. Well preserved plant

remains as well as several fossil animal remains (brachiopods, pelecypods and fragments of ammonites) were recorded.

Plant remains were recorded in two beds of quarry H, and in only one bed in quarry D. of these plants *Otozamites major* sp. nov. (leaf impression), *Otozamites daragii* sp.nov., *Williamsonia aegyptiaca* sp.nov. (fragments of male organs), and mold and cast of *Ovulate* cone, *Pinus* sp. stem fragment, seed, scale, and cone impressions, *Araucaria* twig, stem fragment with an attached cone base, seeds and ovuliferous scales impressions as well as spores, pollen grains, and plant tissues remains, Pteropsida (a Fern Class) tracheids and gymnospermic secondary xylem fragments, *Phlebopteris* (Fern) leaves impressions. For more details please refer to El-Saadawi and Farag (1972) and El-Saadawi and Kedves (1991).

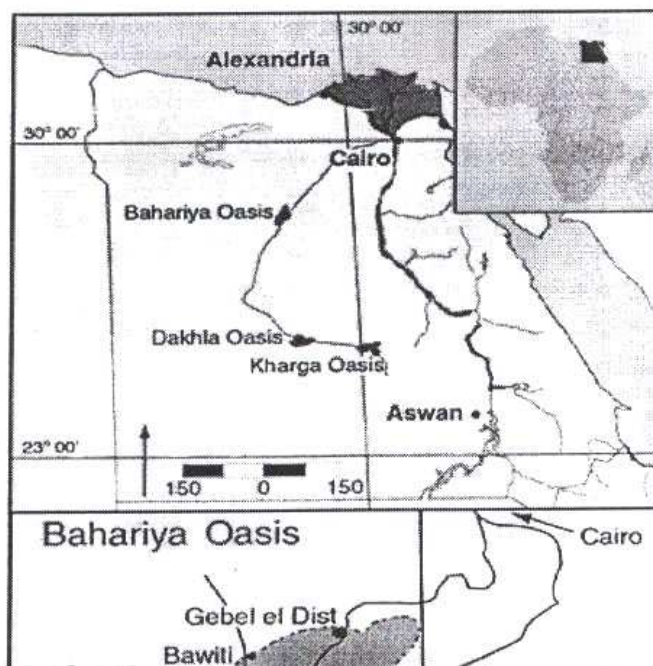
B . Bahariya Formation:

Mangrove-Dinosaur Unit of Cretaceous Bahariya Formation

Bahariya Oasis lies about 340 km South-West of Cairo in the Western Desert. Reports on plant remains collected from the Mangrove-Dinosaur site which belong to Gebel El-Dist or Gebel Dist (Member of the Late Cenomanian Bahariya Formation), that lies 5 km south of Gebel Ghorabi and about 14 km North-East of Gebel Dist, see figure 3.

The age of this site is Early-Late Cenomania (i.e. from 93.5 to 99.0 million years ago). Geologically, the Bahariya Formation is sub-divided into three Members; the Gebel Ghorabi Member, the overlying Gebel Dist Member, and El-Heiz Member at top.

In addition to the discovery of the second largest known creature ever to walk on earth (*Paralititan stromeri*), the megaflora of the studied area include more than 62 types of plant remains (pteridophytes, gymnosperms, and angiosperms), however, the most frequent are the dicot plant remains (leaves impressions in particular). Of the recorded plants: *Avicennia* (Verbenaceae), *Ficus* (Moraceae), *Laurophyllum* (Lauraceae), *Nymphaea* (Nymphaeaceae), *Platanus* (Platanaceae), *Salix* (Salicaceae), Proteaceae and Vitaceae. For the full list please refer to Darwish and Attia (2007) and Lyon et al. (2001).



Cairo Petrified Forest (Qattamiya Petrified Forest):

The Petrified Forest is located east of Cairo, extending along Al-Qattamiya–Al-Sokhna highway, however, due to human manipulation of the area by construction works and individuals thefts, the only authentic Petrified Forest area would be that area of 6 km² between long. 31° 27' 30"–31° 28' 30" E and lat. 29° 58' 30"–29° 59' 40" N, located 1 km from the old toll station on that highway, (see figure 4). This defined area, which was declared as a natural protectorate by the decree 944/1989, represents an exquisite cultural, scientific and touristic site, that is why this site is being nominated for inscription on the World Heritage List.

Geologically, Qattamiya is located on the passageway between Gebel Mokattam and the Gulf of Suez. Accordingly, it is considered an extension of the eastern side of Gebel Mokattam. For geological details see Gingerich (1992). The age of the site is Early Oligocene inside the protectorate and Late Eocene-Early Oligocene in the surrounding areas.

So far, the recorded plant petrified remains found in the protectorate are exclusively trunks (no roots, leaves, fruits,...). The trunks vary in their size, condition and direction; they are 15-25m long and 0.4-1m across. They are found mostly aligned in two main directions; 30° toward the Eastern North, and 20° toward the Western North. However, plenty of other petrified remains (trunks/part of trunks/fragments) were found taking other local and random direction-angles (these were usually smaller in size).

According to El-Faramawi (2008), the number of recorded wood species from Cairo Petrified Forest and its near vicinities raises up to 21, three of which are monocots and 18 are dicots, see table 1.

Table (1): The recorded fossil wood species of Cairo Petrified Forest and its near vicinities, El-Faramawi (2008).

Species	Families
Monocots	
1. <i>Palmoxylon aschersoni</i>	Palmae
2. <i>Palmoxylon libycum</i>	Palmae
3. <i>Palmoxylon pyriforme</i>	Palmae
Dicots	
1. <i>Quercoxylon retzianum</i>	Fagaceae
2. <i>Ficoxylon cretaceum</i>	Moraceae
3. <i>Atherospermoxylon aegyptiacum</i>	Monimiaceae
4. " <i>Acacioxylon</i> " <i>vegae</i>	Leguminosae
5. <i>Afzelioxylon kiliani</i> *	Leguminosae
6. <i>Copaiferoxylon migiurtinum</i> *	Leguminosae
7. <i>Cynometroxylon tunesense</i> *	Leguminosae
8. <i>Dalbergioxylon dicorynioides</i> *	Leguminosae
9. <i>Detarioxylon aegyptiacum</i> *	Leguminosae
10. <i>Mimosoxylon calpocalycoides</i> *	Leguminosae
11. <i>Mimosoxylon forestii</i>	Leguminosae
12. <i>Tetrapleuroxylon zaccarinii</i> *	Leguminosae
13. <i>Tetrapleuroxylon</i> sp.	Leguminosae
14. <i>Terminalioxylon primigenium</i>	Combretaceae
15. <i>Terminalioxylon geinitzii</i>	Combretaceae
16. <i>Bombacoxylon oweni</i>	Bombacaceae
17. <i>Sterculioxylon giarabubense</i>	Sterculiaceae
18. <i>Ebenoxylon aegyptiacum</i>	Ebenaceae

D . Gilf Kebir, Gebel/Djebel Uweinat, and their surroundings:

Gilf Kebir, (Gilf al-Kebir, Jilf al Kabir) is a plateau in the remote southwest corner of Egypt. Its name translates as "the Great Barrier". While Gebel Uweinat, also spelled *Jabal*, *Djebel Al Awaynat*, *Auenat*, *Ouenat*, *Ouinat*, *Owainat*, *Oweinat*, *Uwaynat*, *Uweinat*, *Uwenat*, *Uweynat*, is a mountain range in the area of the Egyptian-Libyan-Sudanese border.

Geologically, Gilf Kebir which is a 7770-square-kilometre sandstone plateau roughly the size of Puerto Rico rises 300m from the desert floor. It is subdivided into three main divisions; Gebel Uweinat, Abu Ras Plateau, and Claytor Craters. Gebel Uweinat western part consists of intrusive granite,

arranged in a ring shape of some 25 km diameter, ending in three valleys (wadis) towards the west, Karkur Hamid, Karkur Idriss and Karkur Ibrahim. Its eastern part consists of sandstone, ending in Karkur Talh. In Karkur Murr there is a permanent oasis (*Guelta*), Ain al-Brins (Bir Murr).

Not only that Gilf Kebir is known for its rugged beauty, remoteness, geological interest, and the dramatic cliff paintings and rock carvings which depict an era of abundant animal life and human habitation, but also it was reported to be a very rich site from the palaeobotanical point of view. The area of Gebel Uweinat as well is notable for its prehistoric petroglyphs first reported by the Egyptian explorer Ahmed Pasha Hassanein--the discoverer of Uweinat.

The predominant quantity of finds were recorded from Wadi Abdel Malik area (northern part of the Gilf Kebir = Abu Ras Plateau) and Karkur Murr (Gebel Uweinat). The age of the finds is Lower Carboniferous age. The recorded plant remains were found to belong mainly to the order Lycophyta (*Lepidodendron*, etc.). However, there were other records made from the southern part of Gilf Kebir (Kemal-El-Din Plateau) and in the western foreland of the Aqaba passage and Wadi Wassa, where the deposits are younger in age (Upper Jurassic - Lower Cretaceous). There are records for older *Lepidodendron* stem print (Devonian) in Wadi Karkur talh. For names and images of the recorded plants please refer to Klitzsch and Lejal-Nicol (1984), Lejal-Nicol (1987), and the links <http://www.geo2all.com/articles/egyptology/4-a-new-fossil-plant-remain-egypt.html> and <http://www.b14643.de/sahara/Permo-Carboniferous/index.htm>.

E . Kiseiba Formation, (Klitzsch and lejal-Nicol, 1984):

It lies to the south of the Egyptian Western Desert, see figure 5.

Strata of the Kiseiba – el shab- Dungul area are named the Kaseiba Formation. Marine fossils are present including ichnofossils within the basal sand stone as well as small Lamellibranchiate on shale and fish remains, in addition to the presence of benthonic Foraminifera. The bone-bed of basal part of Kiseiba Formation (east and north-east of Berqet el shab), contains mainly fresh water faunal remains like *Planorbis* sp. and bone-fragments of *Chelonia*, *Crocodylia* and *Sauischia*, in addition to the presence of *Dipnoia* (*Caratodus* sp.) teeth.

In the same general area around 22° 58' N and 31° 05' E, the sandstone laying 15m below the top of the Formation is rich with plant remains that are of Campanian to Maastrichtian age. The recorded species include cf. *Cinnamomum* sp., *Ficophyllum* sp., *Cornaephyllum* sp. or cf., *Salix molesta*,

Drupe sp. (fruit), *Typhales* sp., *Tiliaephyllum*, *Nelumbites* sp., and *Credneria* sp., these species were found similar to the end of Cretaceous flora suggesting the same age for these deposits in Kiseiba Formation.

It was also found that several other parts of Kiseiba Formation are full of root structures, as well as plant remains (petrified wood, leaves), in addition to fresh water fossil faunal remains. At the basal part of the escarpment west of

the water well (at Bir Kiseiba), there is a paleo-flora rich in Angiosperms such as *Dipterocarphyllum* sp., *Nelumbites* sp., *Laurophyllum* sp., cf. *Rogersia*, *Magnoliaephyllum* sp., and *Typhaephyllum* sp.

One of the important findings at Bir el shab is the presence of *Credneria* sp. leaves associated with leaves of Typhaceae, in addition to gymnospermic remains at Bir Kiseiba.

The most important remark about the recorded fossil plant leaves in the area of Kiseiba Formation, (specifically *Cinnamomum* sp., *Tiliaephyllum*, *Typhaephyllum* sp., *Magnoliaephyllum* sp., and *Dipterocarphyllum* sp.), is the fact that the petrified wood representatives of these leaves haven't yet been recorded from Egypt. On the other hand there are records for the petrified wood equivalents of the leaves *Ficophyllum* sp. and *Nelumbites* sp.

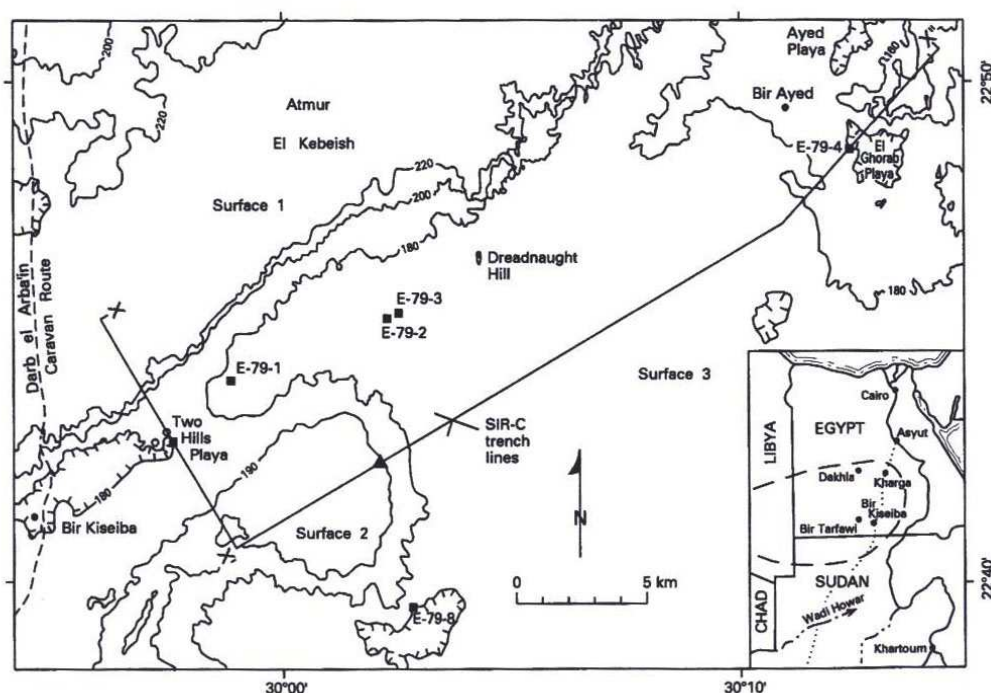


Figure 5 : Map showing location of the Kiseiba Formation, Vans Haynes et al., 1997.

F. Qaret El-Raml and Gebel Ruzza:

Qaret (or Garet) El-Raml lies about 45 km northwest of Giza Pyramids, and about 9 km south east of Gebel Ruzza (fig. 6). The slightly elevated sands of Qaret El-Raml are surrounded in almost all directions by petrified trees or "Forests". The word "forest" is used here and throughout this work to refer to any assemblage of fossil trunks, whether preserved in place of growth or transported to where they lie. Although this is a deviation from the proper meaning of the word, yet it is used here for convenience and in the absence of any other suitable equivalent word.

Numerous palm remains (stems and petioles *Palmocaulon*) were recorded only in the northwest direction of Qaret El-Raml (together with a few trees). Which is considered the first report on the presence of petrified petioles from Egypt (El-Saadawi *et al.*, 2004).

Note: in the field the petrified wood of palm trunks could be easily differentiated by naked eye from dicot or gymnospermic wood by the scattered fibrovascular bundles (fig. 7). The petrified petioles of palm leaves could also be recognized by external appearance (fig. 8), as they have a slightly concave adaxial surface and a slightly convex abaxial surface.

As for Gebel Ruzza, it lies approximately 54 km northwest of Giza Pyramids and about 20 km to the south of Wadi Faregh (fig. 6). Petrified palm remains were reported from the surrounding desert, 4 km east of Gebel Ruzza. The fossil palm trunks are so numerous where as petrified trees are quite few, consequently it may be referred to as a "petrified palm forest".

Gebel Ruzza and Qaret El-Raml together represent the richest localities in Egypt that have *Palmoxydon* sp (see table 2).

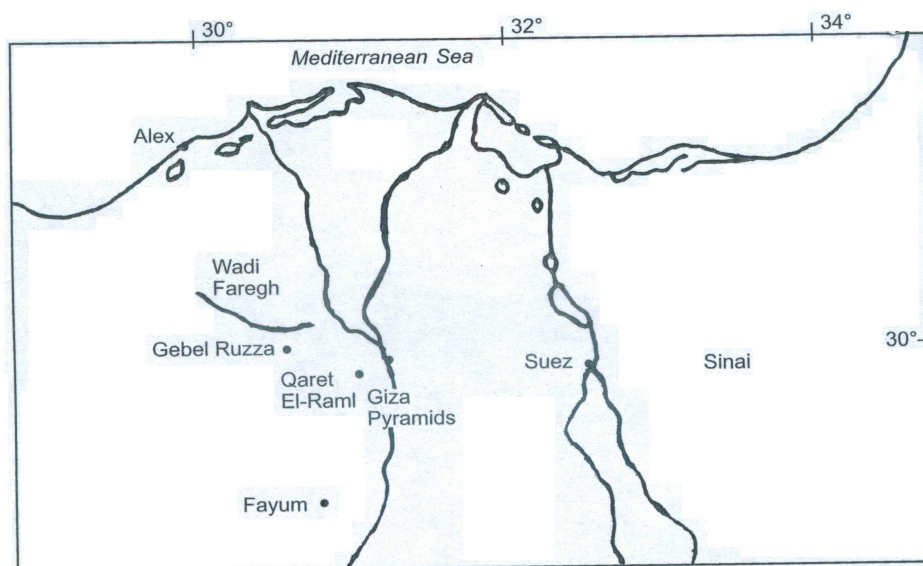


Figure 6: Map of the northern part of Egypt showing the location of Gebel Ruzza & Qaret El-Raml.



Figure 7: A petrified palm hand specimen, showing scattered fibrovascular bundles.



Figure 8: A petrified palm sheathing leaf base and lower part of petiole from Qaret El-Raml, x 0.27.

Table 2: Distribution of the 16 *Palmoxylon* species reported, up till now from Egypt. Certain localities are put together as one locality in this table (Kamal El-Din, 1999).

Locality	<i>Palmoxydon</i> species in Egypt .																No. of spp. in each locality
	<i>P. aschersoni</i>	<i>P. compactum</i>	<i>P. geometricum</i>	<i>P. indicum</i>	<i>P. lacunosum</i>	<i>P. libycum</i>	<i>P. natrui</i>	<i>P. pondicherriense</i>	<i>P. pyriforme</i>	<i>P. ramli</i>	<i>P. rewahense</i>	<i>P. ruzzi</i>	<i>P. stromeri</i>	<i>P. wadii</i>	<i>P. zalati</i>	<i>P. ziteli</i>	
1. Gebel Ahmer	+				+	+											3
2. Qattamiya	+					+			+								3
3. Wadi Natrun	+	+				+	+			+							5
4. Moghra	+					+											2
5. Wadi Faregh	+					+											2
6. Gebel Ruzza and Qaret El-Raml	+	+	+						+	+	+	+		+			8
7. Gebel Qatrani			+					+									2
8. Tall El-Zalat and 40km West Abu Roasch	+														+		2
9. Gebel El-Khashab, and Giza Pyramids	+		+	+	+	+											5
10. Fayum and Birket Qurun	+				+	+											3
11. Dakhla Oasis																+	1
12. Kharga Oasis																+	
13. Road between Esna and Wadi Halfa													+				1
Number	1	2	3	1	3	7	1	1	2	2	1	1	1	1	1	2	

of localities for each species	0																
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13 species were recorded from Qaret El-Raml and Gebel Ruzza, from 7 localities, mainly from the area extending from Qaret El-Raml to the neighboring Gebel Ruzza. This area has the largest number of species and specimens, i.e. it is richest in palms. It is also the only place, up till now, where petrified petioles have been found in Egypt. Furthermore, the largest and longest palm trunks were found in this area, whereas trunks of trees were found to be quite rare, to the extent that this area can be considered an ancient palm forest.

Qaret El-Raml and Gebel Ruzza are the more of an "absolute universal value"

The species recorded from Qaret El-Raml and Gebel Ruzza which include 4 stem species [most probably new to science (*P. natruni*, *P. ramli*, *P. ruzzi*, *P. zalati*)], and seven species [new to Egypt (*P. compactum*, *P. geometricum*, *P. indicum*, *P. pondicherriense*, *P. pyriforme*, *P. rewahense*, and *P. wadiai*)], shows that not only further work in this field (fossil palm remains in Egypt) will certainly add more to our knowledge about the "Princess of the plant kingdom" in the past ages, but also to our knowledge of the history of life on earth as well.

The fossil palm flora of Egypt:

Fossil palm remains, in Egypt, like in other parts of the world, are mainly of Tertiary (Oligocene-Miocene) age. However, a few are of Upper-Cretaceous age. The petrified palm remains of Egypt, (Qaret El-Raml and Gebel Ruzza included), represent trunks (16 species or 15 if *P. lacunosum* is equal to *P. stromeri*), fruits (5 species), a leaf and ? petioles. The number of petiole species cannot be given at present because their detailed study is not yet complete.

Distribution of *Palmoxylon* in the world including Egypt:

Fossil palm trunks (*Palmoxylon*) have been reported from Asia (India, Pakistan, Sumatra, Japan, Java), Europe (Belgium, Austria, Hungary, France, Germany, Sardinia), Africa (Egypt, Libya, Somalia, Algeria, Tunisia, Ethiopia), see table 3, and the New World (USA, Mexico, Argentina), Asia is the richest continent (having 65 species) followed by Europe (39 species) then Africa (21 species) and finally the New World (16 species). It is natural that new discoveries may alter the picture. It is peculiar that almost every country has its own species of *Palmoxylon*. This puts further emphasis that careful reinvestigation of the 131 species of this genus will probably reduce this number. Given the number of the recorded *Palmoxylon* species so far in Egypt, it is thought that Egypt might be the origin of the African *Palmoxylon* species.

Table 3. the number of *Palmoxylon* species in Algeria, Egypt, Libya, Tunisia and Ethiopia.

Country	No. of <i>Palmoxylon</i> sp.
Algeria	2
Egypt	12 + 4 (unpublished, new to science)
Libya	6
Tunisia	1
Ethiopia	1

But petioles are, *hitherto*, known only from the Tertiary of Asia (5 species) and the Tertiary of Africa (one species + ? species of the present work), cf. Shete and Kulkarni, (1980).

The significance of the distribution of the fossil palm flora in Egypt and India:

The closest fossil palm flora to that of Egypt is that of India because there are 8 *Palmoxylon* species, (7 species of which were recorded from Qaret El-Raml and Gebel Ruzza), mainly of Tertiary age were found to be common in both countries. There are 5 petrified petiole species in the Tertiary age of India but the number of species in Egypt is not yet known (as was previously mentioned). Furthermore, there are other fossil remains common to Egypt and India as; *Dipterocarpophyllum* (dicot leaf impressions) described from Nubian sandstone of Egypt and by Lakhanpal (1970) from India. Also fossil Leguminosae are abundant not only in both India and Egypt (Lakhanpal, 1970; Kamal El-Din, 1996) but in Africa at large (Lakhanpal, 1970). These similar floras are due to migration of floral elements between Africa and India which were close together before "Indian plate migration" during "Continental drift" (see fig. 9). It is envisaged that, there had been large scale migrations and intermingling of floras between continents (Lakhanpal, 1970).

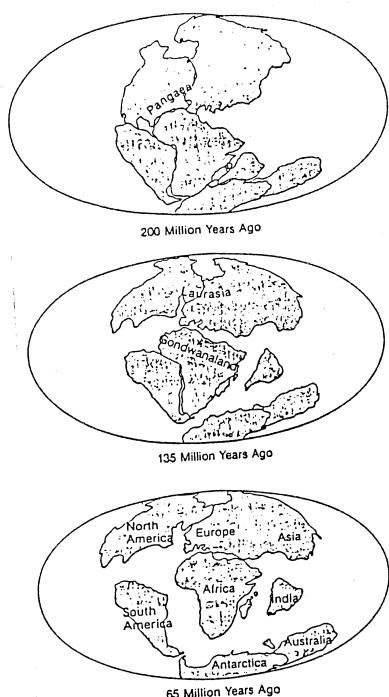


Figure 9: Continental drift, position of the major land masses during the last two hundred million years. Notice that the Indian plate (or India) was quite close to Egypt in particular and Africa in general. (After Nadakavukaren and McCracken, 1985).

General notes on the fossil wood flora of Egypt:

Up till now, the published citations reveal that 65 fossil wood species (of 37 genera) were recorded from Egypt. Eleven of which are gymnospermic species (of seven genera), twelve are monocots (all of one genus), and 42 are dicots (of 29 genera), (Dupéron-Laudoueneix and Dupéron, 1995; kamal El-Din and El-Saadawi, 2004; Kamal El-Din et al., 2006).

The eleven gymnospermic woods belong to three families in addition to woods that were not identified to the family level, (the number of species and genera, respectively, of each family are given in brackets); Araucariaceae (2,1), Cupressaceae (15,1), and Podocarpaceae (3,3). those other species, (5,2), were mentioned as Araucarian and “mixed” coniferous woods.

The twelve monocot species were referred to one family Plamae (*Palmoxylon* sp., palm petioles and unidentified species).

As for the 42 dicot species, they were referred to 17 families, (the number of species and genera, respectively, of each family are given in brackets); Anacardiaceae (1,1), Bombacaceae (2,1), Boraginaceae (1,1), Celastraceae (2,1), Combretaceae (5,2), Ebenaceae (3,2), Fagaceae (1,1), Guttiferae (1,1), Leguminosae (14,9), Malvaceae (1,1), Monimiaceae (1,1), Moraceae (3,1), Proteaceae (1,1), Sapindaceae (1,1), Sterculiaceae (1,1), Tamaricaceae (1,1), and Temstroemiaceae (1,1), in addition to three species (of three genera) that were related (uncertainly) to families Anacardiaceae, Lauraceae, Moraceae, Sonneratiaceae or Betulaceae.

3 . Libya

In his guide to the macrofossils localities of Libya, LeBlanc (2000-2002) mentioned that there are four main geological basins in Libya: Al Kufrah, Ghadamis, Murzuq, Sirte and Sabratah, see figure 10.

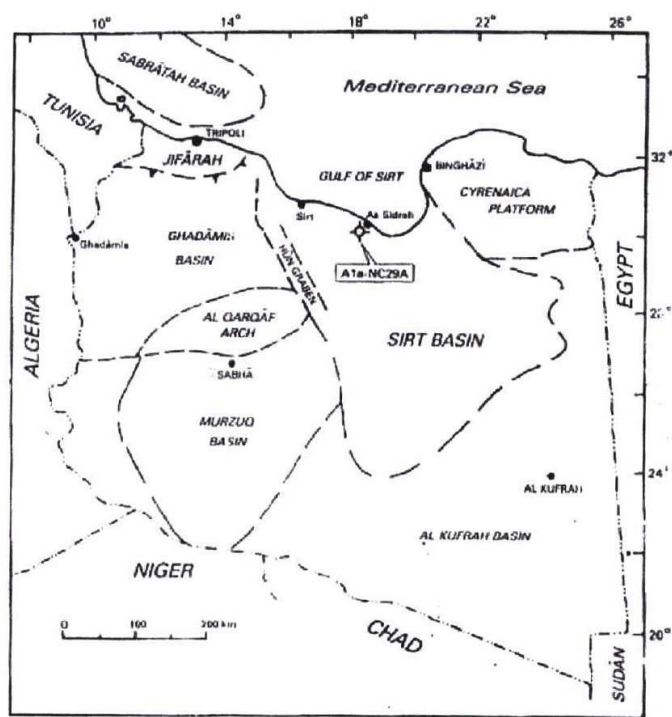


Figure 10: Map showing the four geological basins of Libya, LeBlanc (2000-2002)

In Al Kufrah basin there are three sites with fossil plant remains; Binem Formation where traces and plants remains are common (Middle-Upper Devonian), Dalma Formation where numerous Lycopodophytes were recorded (Carboniferous), and an unnamed locality at lat. $22^{\circ} 22' 55''$ and long. $19^{\circ} 51' 35''$ where fragments of silicified wood and small trunks of *Dadoxylon* exist.

In Ghadamis basin there are two sites known with fossil plant remains, these are; Chameau Mort Formation where *Piazopteris branerii*, *Pagiophyllum*, *Brachyphyllum*, *Hirmerella*, *Otozamites* and *Samaropsis* were recorded (Upper Jurassic), and Chicla Formation where plant fragments and large silicified wood trunks were recorded (Lower Cretaceous).

In Murzuq basin there is only one Formation that contains fossil plant remains, that is Acacus Formation, the Formation is of a Silurian age. It is considered a very important fossiliferous site because it displays some of the oldest different floras ever discovered.

While in Sirte basin, (including Cyrenaica Platform), two sites were known for their fossil algae, these are; Derna Limestone (Middle Eocene), and Faidia Formation (Lower to Middle Eocene). In addition to Marada Formation where plant remains were recorded (Lower Miocene).

LeBlanc also mentioned three plant fossil localities in Libya, these are; Dur at Talhah (Upper Eocene to Lower Oligocene), Oasis of Kufra (Middle to Upper Carboniferous, and Wadi ash Shati (Middle Devonian to Lower Carboniferous).

A . Dur at Talah:

The fossil plant remains are found in Dur at Talha in the Idam Unit, more specifically in the upper fossiliferous horizon where abundant limonitic casts of water-lily fruits (*Nymphaeopsis* sp.) were recorded along with silicified trees some of which with intact branches.

B . Oasis of Kufra:

Rare plant fragments were recorded from localities near Kufra Oasis, they are mainly stems and foliage fragments, they belong to *Pinakodendron* sp., *Sigillaria (Rhytidolepis) mamillaris-trigona*, and *Pecopteris* sp.

C . Wadi ash Shati:

Abundant lycophyte plants remains were recorded from the Paleozoic of Wadi ash Shati. They can be distinguished into at least three subsequent plant fossil assemblages.

- Bi`r al Qasr-Idri Flora: large specimens of polystelic trunks were recorded from Idri Formation, although their bad anatomical preservation allowed no identification. In addition there is abundant existence of ill preserved remains that include some delicate axes of *Protolpidodendron helleri* and *P. scharyanum*.
- Tarut-Ashkidah Flora: where numerous casts, impressions and compressions of lycopsids were recorded which include predominantly *Pseudolepidodendropsis scobiniformis*. In addition to another locality (Paul's Garden), where stems of arborescent Lycophytes were preserved *in situ*.
- Marar Flora: the plant fossil remains were recorded in the marine part of Marar formation. These fossils include cortical tissue fragments that were washed out into the sea. The majority of these fossils belong to lepidodendropsids and archaeosigillarian plants, mainly *Lepidodendropsis africanum*.

General notes on the fossil wood flora of Libya:

According to Dupéron-Laudoueneix and Dupéron (1995), there are 37 records of fossil wood species from Libya (of 20 genera). Eight of which are gymnospermic (of one genus; *Dadoxylon* under Araucarian and "mixed" coniferous wood). Six are monocots (of two genera; *Palmoxylon* and *Rhizopalmoxylon* "root", and one family; Palmae).

While there are records for 23 dicot wood species (of 17 genera), which belong to 12 families, (the number of species and genera, respectively, of each family are given in brackets); Bombacaceae (1,1), Combretaceae (4,1),

Euphorbiaceae (1,1), Flacourtiaceae (1,1), Lauraceae (1,1), Leguminosae (7,5), Meliaceae (2,1), Monimiaceae (1,1), Moraceae (2,2), Sapindaceae (1,1), Sonneratiaceae (1,1), and Sterculiaceae (1,1).

4 . Mauritania

According to Dupéron-Laudoueneix and Dupéron (1995), six fossil wood species (of 6 genera) were recorded from Mauritania, all of the six recorded species are dicots, they belong to three families, (the number of species and genera, respectively, of each family are given in brackets); Combretaceae (1,1), Leguminosae (3,3), and Tamaricaceae (2,2).

5 . Morocco

Three publications cited the occurrence of fossil plant remains in Morocco:

- Meyer-Berthaud and Gerrienne (2001), described for the first time *Aarabia brevicaulis* meyer-Berthaud and Gerrienne, gen.et sp. Nov., from the early Emsian of Central Morocco.
- Meyer-Berthaud et al. (2004), where anatomically preserved plant fragments were reported from Devonian marine deposits exposed in the Dra Valley of southern Anti-Atlas. The specimens were referred to *Callixylon henkei*, in addition to one specimen that was referred to *Xenocladia*. Upon comparison these shown similarity to similar aged deposits in Europe, which can be considered in accordance with Gondwana and Euramerica being in close position during the Late Devonian times.

According to Dupéron-Laudoueneix and Dupéron (1995), 14 wood species (of 6 genera) were recorded, only one species is dicot (of one genus, family Leguminosae), while all the other 13 are gymnospermic (of 5 genera), 12 species of which belong to 4 genera (*Dadoxylon*, *Protopodocarpoxyton*, *Prototaxodioxyton*, and *Metapodocarpoxyton*), these are classified as Araucarian and “mixed” coniferous woods. In addition to one species of one genus that belong to family Podocarpaceae.

6 . Rio de Oro (now Morocco).

According to Dupéron-Laudoueneix and Dupéron (1995), six fossil wood species (of 6 genera) were recorded from Rio de Oro, one of which belongs to gymnosperms (one genus from family Pinaceae). While the other five species are dicots (of 5 genera), belonging to three families, (the number of species and genera, respectively, of each family are given in brackets); Bombacaceae (1,1), Leguminosae (3,3), and Sapindaceae (1,1).

7 . Sudan

Based on the cited literature, four fossiliferous sites in Sudan are mentioned below:

A . Wadi Halfa area:

Recent work on the northern part of Sudan indicated the presence of Carboniferous to Permian deposits within which numerous fossil plants

were recorded including *Pecopteris* aff. *Permica*, *Cyclostigma*, *Calamites*, *Sigillaria* aff. *Boblayi*, *Arthrophyycus*, *Rhodea* sp., *Pterophyllum nubiense* (Lejal-Nicol, 1987), <http://www.b14643.de/sahara/Permo-carboniferous/index.htm>.

B . Umm Badda (Hassan, 1973):

Umm Badda, Om Durman, lies within Khartoum Province on the western part of the main Nile. The western part of Khartoum Province is considered a part of the Nubian Sandstone Formation which includes intraformational conglomerates, grits, sandstones, sandy mudstones and mudstones resting unconformably on the Basement complex.

The fossil flora of Umm Badda is represented mainly by leaves and leaves fragments impressions as well as impressions of seeds (winged Hippocretaceous seed, winged seeds of Rhamnaceous plants) and flowers (pentamerous dicot flower impression).

The recorded leaves impressions belong to 12 families; Amaranthaceae, Apocynaceae, Begoniaceae, Euphorbiaceae, Hippocrataceae, Loganiaceae, Malvaceae, Menispermaceae, Moraceae, Nymphaeaceae, Sterculiaceae, and Verbenaceae.

C . Central Sudan (Tertiary):

Another flora from the Upper Nubian sandstone Formation near Khartoum in Central Sudan was reported by Prasad and Lejal-Nicol (1986), the flora is well preserved and comprises leaves, flowers, and fruits. They are comparable to forms that are known precisely from the Eocene to Miocene age.

D. Eastern Darfur:

In 1926 Edwards recorded a fossil plant which he referred it to the species *Frenelopsis hoheneggeri*, his identification was further confirmed by Watson and Alvin in 1976. The samples were collected from Jebel Dirra, about 75 km east of El Fasher. This was the first fossils to be found in Darfur in the Nubian Sandstone.

According to Dupéron-Laudoueneix and Dupéron (1995), seven species (of 4 genera) were reported from Sudan, four of which (of one genus; *Dadoxylon* under Araucarian and “mixed” coniferous woods) belong to gymnosperms. While the other three species (of three genera) are dicots. Belonging to three families; Combretaceae, Leguminosae, and Theaceae.

8 . Tunisia

According to Dupéron-Laudoueneix and Dupéron (1995), 26 fossil wood species (of 19 genera) were recorded from Tunisia, six of which (of 3 genera; *Dadoxylon*, *Brachyoxylon* and *Protopodocarpoxylon*) are gymnospermic. One of these species is monocot of one genus (*Palmoxylon*), and one family (palmae). 19 are dicots (of 16 genera), they belong to seven families, (the number of species and genera, respectively, of each family are given in brackets); Bombacaceae (1,1), Combretaceae (2,2), Ebenaceae (1,1),

Euphorbiaceae (3,2), Hypericaceae (1,1), leguminosae (9,7), and Moraceae (2,1).

II . East-African Countries

1 . Burundi

According to Dupéron-Laudoueneix and Dupéron (1995), two fossil wood species (of two genera) were reported from Burundi, both are dicots, these two species are referred to family Leguminosae and family Meliaceae.

2 . Djibouti

According to Dupéron-Laudoueneix and Dupéron (1995), three fossil wood species (of three genera) were recorded from Djibouti, all of the three are dicots, they belong to two families; Leguminosae (one genus, one species), and Tamricaceae (two genera, two species).

3 . Ethiopia

There are several palaeobotanical sites that deserve great scientific attention, these are:

A . The Guang River Flora, (Pan and Jacobs, 2009):

This flora is located in the northwestern Plateau region of Ethiopia, about 60km west of Gondar (Chilga Woreda, Amhara region).The Ethiopian Late Oligocene (28-27 Ma) flora is a moderately diverse assemblage, where approximately 40 morphotypes (assumed to be species) of well preserved plant remains (compressions of leaves, flowers, logs and stumps). The flora was found to be reflecting a moist tropical forest community growing in a swampy conditions.

B . Omo basin (Ghibi river), (Lemoigne, 1978):

Omo basin (Ghibi river) the fossiliferous zone has six new genera, many petridophytes, gymnosperms as well as angiosperms. The fossil specimens are diverse including impressions, compressions and silicified wood. The plant fossil remains exist in the upper part of the Omo basin (Ghibie river), see figure 11. The trap series are covered by well-expanded welded tuffs which is rich with silicified woods; 42 species including six new genera: Guareoxylon, Vitecoxylon, Milietioxylon, Combretoxylon, Craibioxylon, Mammeoxylon, and 25 new species. This fossiliferous zone contains many pteridophytes, gymnosperms as well as angiosperms. The fossil specimens are diverse including impressions, compressions, and silicified wood.

C . Chilga fossil site:

This fossiliferous site is locted in the northwestern part of Ethiopia (near Chilga), the location is being studied by a research team, including John Kappelman and Bonnie Jacobs, through a funded project (a National Science Foundation three-year grant). The results obtained revealed that the plant fossils are in the form of leaf litter assemblages with well preserved cellular details, in addition to seeds, flowers, fruits and silicified wood assemblages. For more information please visit the following links:

<http://smu.edu/smunews/ethiopia/>

<http://smu.edu/smunews/ethiopia/about.asp>

http://www.redorbit.com/news/science/33329/new_creatures_found_in_ethiopian_fossil_deposits/index.html

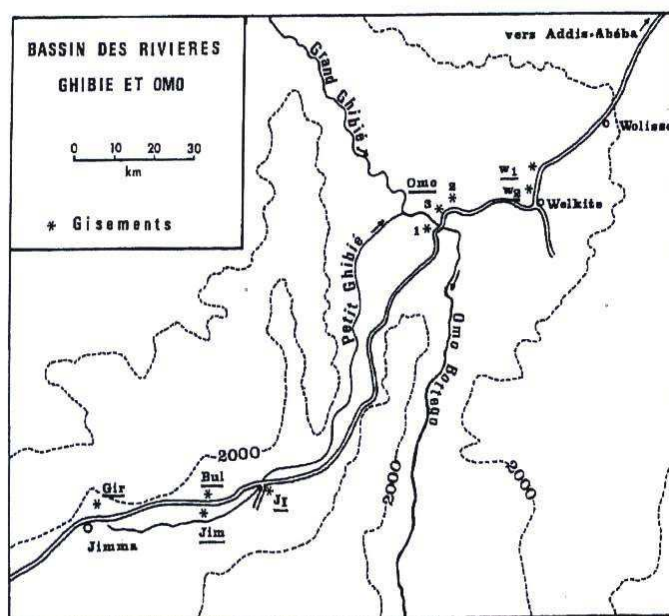


Figure 11 : Map showing location of the Omo basin, Ethiopia,
Lemoigne (1978).

D . Bakate Formation, Fejej Plain, (Wheeler et al., 2007):

Twelve wood types were recorded from this permineralized wood assemblage. This fossil wood assemblage was found to be quite different from other recorded Ethiopian fossil wood assemblages. The majority of the studied woods were referred to several families such as; Bignoniaceae, Combretaceae, leguminosae and Sapotaceae, however, none of the recorded fruits and seeds from the same location matched these defined fossil wood families. The fossil flora of this site is unique and extremely important to preserve and study in order to better understand the Miocene vegetation and environment of Fejej.

According to Dupéron-Laudoueneix and Dupéron (1995), Ethiopia is one of the richest African countries concerning their huge recorded fossil wood flora. This fossil wood flora includes 86 species (of 56 genera), only one species (one genus) is monocot from the family Palmae. The fossil wood flora of Ethiopia includes also three species (of 2 genera) of gymnospermic wood one that belong to family Podocarpaceae and the other two are classified under Araucarian and “mixed” coniferous wood. 82 species (of 53 genera) are dicots, they belong to 26 families, (the number of species and genera,

respectively, of each family are given in brackets); Anacardiaceae (2,2), Bignoniaceae (4,2), Bombacaceae (4,1), Burseraceae (1,1), Celastraceae (1,1), Combretaceae (5,3), Dipterocarpaceae (1,1), Euphorbiaceae (3,1), Guttiferae (5,3), Irvingiaceae (2,1), Leguminosae (20,16), Malvaceae (1,1), Meliaceae (4,3), Moraceae (5,2), Myrisricaceae (2,1), Myrtaceae (1,1), Rosaceae (1,1), Rubiaceae (4,3), Rutaceae (1,1), Sapindaceae (2,1), Sapotaceae (4,1), Sterculiaceae-Bombacaceae (1), Ternstroemiaceae (1,1), Umbelliferae (1,1), Verbenaceae (3,1), Vitaceae (1,1), in addition to *incertae sedis* (2,1).

4 . Kenya

Kenya is very famous for its unparalleled and priceless fossil heritage that is distributed throughout the Rift Valley and the lake Victoria region. These sites are subjects for palaeontological and palaeobotanical research.

One of these Kenyan localities is a locality near Fort Ternan, (Retallack,1992), where a grassy open vegetation was recorded on a high plateau of phonolite at the foot of a carbonatite-nephelinite stratovolcano, that probably supported the presence of dry Afromontane forest, alpine meadows and marshes. The locality is of Middle Miocene age.

According to Dupéron-Laudoueneix and Dupéron (1995), there are 11 species (of 8 genera) of fossil wood reported from Kenya, all of which are dicots that belong to six families, (the number of species and genera, respectively, of each family are given in brackets); Anacardiaceae (1,1), Annonaceae (1,1), Bombacaceae (1,1), Dipterocarpaceae (1,1), Euphorpiaceae (1,1), Leguminosae (1,1), in addition to *incertae sedis* (5,2).

5 . Somalia

According to Dupéron-Laudoueneix and Dupéron (1995), 16 fossil wood species (of 10 genera) were recorded from Somalia, three of which are monocots of the same genus; *Palmoxylon*, and the same family; Palmae. While 13 species of 9 genera are dicots that belong to six families, (the number of species and genera, respectively, of each family are given in brackets); Bombacaceae (1,1), Combretaceae (2,1), Dipterocarpaceae (3,1), Guttiferae (2,1), Leguminosae (4,4), and Tamaricaceae (1,1).

6 . South Africa

Molteno Formation (Upper Triassic):

One of the palaeobotanically rich African sites is the Molteno Formation that exists in South Africa, this Formation received great scientific attention due to the presence of numerous plant remains that when studied revealed evidences on the first recorded Plant-Insects interactions. The palaeoflora of this Formation is enormous, it was thoroughly investigated and identified by many researchers , such as John M. Anderson and Heidi M. Anderson who documented this palaeoflora in 1983 in their book intituled “Palaeoflora of Southern Africa: Molteno Formation” that is available to read online.

The Molteno Formation of Late Triassic (Carnian) age in South Africa has yielded more than 200 plant species from 100 plant assemblages at 69 localities (30 000 catalogued slabs) as well as more than 300 species of insect. Damaged taxa include a wide variety of gymnosperms including the conifer

Heidiphyllum, the ginkgoaleans *Ginkgo* and *Sphenobaiera*, the peltasperms *Dicroidium* and *Dejerseya*, the pentoxylean *Taeniopteris* and the gnetopsid *Yabeiella*, (Scott et al., 2004).

7 . Tanzania

There are two sites mentioned in the available literature on the plant fossil flora of Tanzania these are:

A . Singida (Mahenge flora, Middle Eocene), (Herendeen and Jacobs, 2000):

The Middle Eocene Mahenge site of Singida District has produced extremely significant plant remains mainly the leaf macrofossils. The documented fossil flora is considered relatively diverse, it includes the leaves of at least five leguminose species. In addition to a new species of bipinnate *Acacia* leaf (Mimosoideae), a new species of *Aphanocalyx* (Caesalpinoideae), a leaf type related to *Cynometra* (Caesalpinoideae), and two other leaf types that are yet un-classified.

B . Olduvai Gorge (Early Pleistocene), (Bamford, 2005):

Olduvai Gorge is a well-known East African site for early hominid and faunal remains, as well as stone tools and artefacts. Numerous fossil plants have been recovered from these sediments, including sedges, grasses, twigs, pollen, phytoliths and wood. One sample of fossil wood has been identified as *Guibourtia coleosperma* (Caesalpiniaceae).

In addition, according to Dupéron-Laudoueneix and Dupéron (1995), four fossil gymnospermic wood species of four genera were reported from Tanzania, they are all classified under Araucarian and “mixed” coniferous woods.

8 . Uganda

Bukwa, Mount Elgon (Early Miocene, 17.5 Ma ago) :

According to Pickford (2002), some of the evidences reported from his research in Bukwa site I in 1997 and 1998 indicates the presence of grasslands *in situ*, however, additional evidences also support the presence of woodland forest nearby.

According to Dupéron-Laudoueneix and Dupéron (1995), there is one record on one dicot fossil wood species, (of one genus), that is referred to family Oleaceae from Uganda.

Unfortunately, no records for fossil plants of **Rwanda** or **Zimbabwe** were cited in the available literature.

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Potential Animal Fossils and Geological World Heritage Sites in North and East Africa

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Libya

In southern Libya, there is an outstanding upper Eocene paleontological site called Dor El Talha. In this locality many important vertebrate fossils were discovered. At least 3 crocodilian taxa, many early proboscidiens (ancestors of modern elephants), like the extinct genus *Numidotherium*, together with other primitive proboscidiens like *Barytherium* comparable with that of Qatrani area in Egypt, and *Moeritherium* have been discovered. Afrotherian mammals and arthropoid primates of the Subfamily Oligopithecinae (e.g. *Oligopithecus*), were also found in this late Eocene locality that dates back to about 40 mya and shed light on Afro-Arabian fauna of that time.

Tunisia

In Tunisia, Chaanbi is an outstanding paleontological site that dates back to the late early Eocene-early Middle Eocene (about 45 mya). This site is situated on the northern slopes of Jabal Chaanbi in central Tunisia. It contains various fossils of vertebrate mammals including Marsupials, Chiroptera, Hyracoids and rodents, which have importance in shedding light on Afro-Arabian mammals and their evolution.

East Africa

The Great African Rift Valley is a large crack in the earth's crust whose length reaches about 7000 kms running through 22 countries. It began to appear since about 25 million years, resulting from the horizontal movement of two major tectonic crustal plates: the Arabian plate in the east and the African shield in the west, moving towards the north. The Arabian plate, however, moves more quickly, thus widening the crack between them.

The Rift passes from Mozambique to Zimbabwe to Tanzania and then branches into an eastern rift that continues to Ethiopia, the Gulf of Aden, the Red Sea, the Dead Sea, towards the Taurus Mountains between Syria and Turkey. The western branch surrounds the Great Lakes Plateau in Central Africa but does extend further north. Its width varies from 7 to 20 kms on land. Its highest elevation is 1170 masl, near Baalbek in Lebanon. Its lowest point is in the Dead Sea, where it reaches 400 mbsl. Areas adjacent to the Rift are exposed to earthquake risks, such as Jericho, which has a long record.

The Rift was given its name near the end of the 19th century by the British traveler John Walter Gregory who described it as an interconnected chain, appearing in some places and inconspicuous in some others. The northern part of the Rift at Biqaa Valley, Lake Tiberius, the Golan Heights, the Jordan Valley, the Dead Sea, Wadi Araba, and Aqaba Gulf, to the Dead Sea, is called the Dead Sea Transform. This meets the East African Rift and the Aden Heights Rift. The three rifts meet in Afar Triple Junction in East Africa, which is divided into 2 parts: the Eastern and the Western Rifts. The western rift is called the Albertine Rift and is flanked by high mountain chains. It is characterized by many very deep lakes. The depth of Lake Tanganyika reaches 1470 m. Lake Victoria is the second largest freshwater lake in the world and is considered part of the Rift, as it is situated between its two western and eastern branches. Most lakes of East Africa are part of the Rift, since in Kenya the Rift is very deep north of Nairobi.

The following countries share in the Rift: Syria, Lebanon, Palestine, Israel, Egypt, Saudi Arabia, Sudan, Eritrea, Djibouti, Yemen, Ethiopia, Kenya, Uganda, Rwanda, Burundi, RD Congo, Tanzania, Zambia, Malawi, Mozambique.

Negative aspects of declaring it as a World Heritage site are twofold:

- 1 – Environmental projects require exchange of sensitive information,
- 2 – Overt objectives of the declaration are the conservation of sites of great importance as having an outstanding universal cultural and/or natural value. This will include the areas of the Great Lakes and will be considered “untouchable” areas. It is probable that when Upper Nile irrigation projects will be implemented, or projects such as the Jonglei Canal, will be impeded by the declaration of the area or certain of its components as World Heritage sites.

As is well known, the essence of Cultural World Heritage sites should comprise human groups having the same homogeneous cultural backgrounds, the same customs and traditions, which is obviously the case of the Rift Valley countries. Moreover, its geomorphology varies from one place to another, and is not concordant. A fact which will make it difficult for neighbouring countries to be joined in one natural World Heritage site.

Therefore bringing these countries together into one cultural and natural World Heritage site is a highly doubtful venture.

[creatures found in ethiopian fossil deposits/index.html](#)

PREHISTORIC SITES IN NORTH AFRICA

Nabta Playa

EGYPT

By

Samir I. GHABBOUR

- **NABTA PLAYA**
- **AN ARCHEOASTRONOMICAL SITE**
- On the dusty planes of Nabta in southern Egypt, ancient nomads stopped for a short time to bask in the Nile's intense summer sunshine.
- Beneath the Tropic of Cancer, they erected stones that cast no shadows, aligned with the rising and setting of the sun.

A large basin known as Nabta Playa, located about 100 km west of Abu Simbel near the Egyptian-Sudanese border

Latitude 22 32 00 N.

Longitude: 30 42 00 E

- The site, known as Nabta, is between 6,000 and 6,500 years old,
- or about 1,000 years older than Stonehenge.

The Nabta site was discovered several years ago by a team led by Southern Methodist University anthropology Professor Fred Wendorf. It appears to have been constructed by nomadic cattle-herders living in southern Egypt.

The complex isn't circular like Stonehenge. It is .8 miles wide and 1.8 miles long. It includes 10 slabs some 9 feet high, 30 rock-lined ovals, nine burial sites for cows, each under a pile of 40 to 50 rocks weighing up to 200 or 300 pounds apiece, and a "calendar circle" of stones.

- Many of these features line up in five radiating lines, one of them running east-west. The calendar circle is a 12-foot-wide arrangement of slabs about 18 inches long, most of them lying down.

Because Nabta lies near the Tropic of Cancer, the noon sun is at its zenith about three weeks before and three weeks after the summer solstice, preventing upright objects from casting shadows.

- . "These vertical sighting stones in the circle correspond to the zenith sun during the summer solstice," said Malville, an archaeoastronomer at the University of Colorado.

"For many cultures in the tropics, the zenith sun has been a major event for millennia." Two pairs of upright stones stand directly across the circle from each other, defining a view that would have displayed sunrise at the summer solstice.

- The circle also contains two other pairs of standing stones that defined a north-south view.
- An assembly of huge stone slabs found in Egypt's Sahara Desert that date from about 6500 years to 6000 years ago has been confirmed by scientists to be the oldest known astronomical alignment of megaliths in the world. Photo credit: J. M. Malville (U. Colorado) & F. Wendorf (SMU).

Nabta Playa is a natural depression with an area of about 5000 square kilometers (2000 square miles) located west of the Nile River in what is today southern Egypt. Until roughly 11,000 years ago, the wide plains of Nabta Playa were too dry to support permanent human settlement.

- But by then, weather patterns began to shift and scientists think that summer monsoons of Central Africa began to reach into the area, creating large
- Scientists have hypothesized that over time these lakes encouraged increasingly complex human societies to form. Evidence points to early transhumant cattle pastoralism (meaning humans migrated with their animals every year), as well as the elaboration of religious beliefs and cultural practices.

But beginning about 9000 years ago, larger permanent settlements developed that relied on wells in addition to sheep, cattle, and goat herding.

- After a period of intense drought between 8000 and 7000 years ago, the climate again shifted to support permanent settlement in the playa, and scientists believe these groups developed a sophisticated society centered on religious beliefs.

Most importantly, it appears that by about 6500 years ago, inhabitants at Nabta Playa developed a sophisticated, accurate way of marking time and seasons, using the stars as their guides.

- About 4800 years ago, another climate change occurred, and today scientists believe that the Nabta inhabitants may have gradually made their way into the more fertile Nile River Valley—but no one knows for sure. Are these people the ancestors of ancient Egypt? Maybe, but much more research is required.

Astronomical significance:

- Nabta Playa is currently the oldest known archaeoastronomy site in the world, older than Stonehenge by at least 1000 years.
- There are five known alignments of megaliths stretching out from a group of central megalithic structures at the settlement.

When archaeoastronomers began to draw lines along the alignments, they realized that the lines very closely matched the direction of sunrise on the summer solstice, as well as the rising points of Sirius, Dubhe, and Orion's Belt.

- In addition, vertical stones—which would cast no shadow when the Sun passes directly overhead—marked the sun's zenith passage, which happens each year about three weeks before and three weeks after the solstice, and may have signaled the onset of the summer monsoons. Scientists also found several strong north-south and east-west alignments that might have helped Nabtians navigate and track stellar movements.

Why are megaliths important to us today?

- Why are megaliths important to us today? Well, building a megalith isn't easy. And building a megalith that actually accurately measures the movement of stars across seasons is even harder.

Think of it: first you have to know a lot of people to help you move some very large rocks. Each megalith at Nabta Playa is about 2 m (6 feet) wide by 3 m (9 feet) high. Then you have to convince your friends that moving a large slab is worthwhile.

- The megaliths at Nabta Playa probably came from a quarry at least 0.5 km (0.3 mile) away from where Nabtians finally placed them. That's quite an effort. And then you have to carefully watch the sky and track stars as they move across the sky over the years, so that the megaliths can be properly aligned.
- Finally, the Nabta megalith slabs are actually carved, which might have shown certain stellar alignments based on the shape of the stone. So the complexities of building a megalith can tell us quite a bit about the society that built it.
- The archaeological site of Nabta Playa is located approximately 70 miles west of Abu Simbel in the south of Egypt.
- *Holocene Settlement of the Egyptian Sahara: The Archaeology of Nabta Playa*, Fred Wendorf, Romuald Schild, Kit Nelson, eds., Kluwer Academic/Plenum Publishers, New York, 2001.

Because building the megaliths at Nabta Playa took significant organization and skills, scientists think that the Nabtians had, by about 6500 years ago, developed a fairly advanced society. They could organize labor to move the slabs, build a number of houses, dig wells, and perhaps even specialize in certain kinds of tasks, sharing the burdens of everyday life.

Because building the megaliths at Nabta Playa took significant organization and skills, scientists think that the Nabtians had, by about 6500 years ago, developed a fairly advanced society. They could organize labor to move the slabs, build a number of houses, dig wells, and perhaps even specialize in certain kinds of tasks, sharing the burdens of everyday life.

The sophistication and accuracy of the megaliths themselves, along with evidence of cattle worship that anthropologists and archaeologists recently

discovered, also tell us that this society probably developed in complexity over time.

Nabta Playa is an internally drained basin that served as an important ceremonial center for nomadic tribes during the early part of 9560 BC. Located 62 miles west of Abu Simbel some 60 miles west of the Nile near the Egyptian-Sudanese border.

Nabta contains a number of standing and toppled megaliths. They include flat, tomb-like stone structures and a small stone circle that predates Stonehenge (2600 B.C.), and other similar prehistoric sites by 1000's of years.

Although some believe the high culture of subsequent Egyptian dynasties was borrowed from Mesopotamia and Syria, University of Colorado at Boulder astronomy Professor J. McKim Malville and others believe the complex and symbolic Nabta culture may have stimulated the growth of the society that eventually constructed the first pyramids along the Nile about 4500 years ago.

Neolithic herders that began coming to Nabta about 10,000 years ago -- probably from central Africa -- used cattle in their rituals just as the African Massai do today, he said. Analysis of human remains suggest migration from sub-Saharan Africa (1).

The Nabta culture may have been a trigger for the development of social complexity in Egypt that later led to the Pharaonic dynasty he said.

- "The symbolic richness and spatial awareness seen in the Nabta complex of the Late Neolithic age may have developed from adaptation by nomadic peoples to the stress of survival in the desert.

The ceremonial complex could not be more recent than the onset of hyperaridity in the region around 4800 years ago, suggesting that the astronomy and ceremonialism of Nabta occurred before most of the megalithic features of Europe, Great Britain, and Brittany were established.

- Within some 500 years after the exodus from Nabta, the step pyramid at Saqqara was constructed, indicating that there was a pre-existing cultural base, which may have originated in the desert of Upper Egypt.

An exodus from the Nubian desert at 5000 years ago could have precipitated the development of social differentiation in predynastic cultures through the arrival in the Nile valley of nomadic groups who were better organized and possessed a more complex cosmology."

- **Reference:** Oldest Astronomical Megalith Alignment Discovered In Egypt By Science Team
- *Malville, Wendorf, Mazar & Schild, Megaliths and Neolithic Astronomy in Southern Egypt, Nature, pp. 392, 488-491 (April 2, 1998)*

The site was first discovered in 1974 by a group of scientists headed by Fred Wendorf, an Anthropology Professor from Southern Methodist University in Texas. The team had stopped for a break from their uncomfortable drive from the Libyan border to the Nile Valley when, as Wendorf stated, "we were standing there minding our own business, when we noticed potsherds and other artifacts."

Throughout the 1970's and 1980's, Wendorf returned to Nabta several times. He determined that humans had occupied the Nabta area off and on for thousands of years, dating from as early as 11,000 years ago up until about 4800 years ago.

- Although the area was occupied for more than 5000 years, the majority of the stone structures and other artifacts originated between 7000 and 6500 years ago. It was considered by most to be the height of human occupation at Nabta

Nabta became a habitable area because of a climatic change that occurred over North Africa around 12,000 years ago. This climatic change was caused by a northward shift of the summer monsoons. This shift brought enough rain to the Nabta region to enable it to sustain life for both humans and animals. Although it was a small amount of rain, usually around four to eight inches (10-15 cm) per year, it was enough to fill the playas with water for months at a time.

- Between 11,000 and 9300 years ago, Nabta saw its first settlements. The people living at Nabta herded cattle, made ceramic vessels, and set up seasonal camps around the playa. These people regarded cattle in much the same way as modern peoples of West Africa regard them.

The blood and milk of the cattle was more significant than the meat. The ceramics that were found from this period are minimal, but are considered to be some of the oldest identified in Africa.

Once fall came and the playa dried up, these people had to migrate to areas where more water was available, possibly to the Nile in the east or perhaps to areas further south. Larger settlements began to pop up shortly after 9000 years ago. These people were able to dig wells that supplied them with enough water to live at Nabta year round.

They survived on a number of wild plants and small animals like hares and gazelles. By around 8100 years ago there is evidence for the domestication of larger animals including goats and sheep. This is also a time when the people of Nabta started to produce pottery locally.

Settlements became larger and more sophisticated. One settlement from this period contains 18 houses arranged in two, possibly three straight lines. It also contains numerous fire hearths and these amazing walk-in wells. This settlement also shows the establishment of an organized labor force.

This settlement and all the other settlements at Nabta were abandoned for a couple of long stretches between 8000 and 7000 years ago when two major droughts occurred. These droughts caused the water table to be lowered to around the same level as it is today, causing Nabta to be hyper-arid and virtually lifeless for long periods of time.

- The groups of people that returned to Nabta after the droughts exhibited substantial advancement toward a more complex society that expressed a greater degree of organization and control. This control and organization was probably centered around some ritual or religious belief system.

- This is the time period when most of the major structures were constructed at Nabta. They constructed five megalithic alignments that radiated from a cluster of stones that has been named E-96-1 Structure A.

These megaliths were constructed out of quartzite sandstone that came from exposed sandstone that was at least a half -kilometer away. The stones were erected and embedded into the playa.

- With the help of GPS satellite technology, recent surveys by Wendorf and University of Colorado at Boulder's Astronomy Professor J. McKim Malville have allowed them to map out the exact location of these stone alignments.

These studies confirm that one of the alignments of the megaliths form an east-west line and another alignment forms a north-south line.

- Although more research needs to be done, many scientists, including Malville, believe that the alignments had an astronomical significance. Three hundred meters north of these alignments is the stone calendar circle. Compared to Stonehenge, this circle is very small, measuring roughly 4 m in diameter.
- The calendar consists of a number of stones, the main ones being four pairs of larger ones. Each of these four pairs were set close together to form what Wendorf calls "gates." Two of these pairs align to form a line very close to a true north-south line, and the other two pairs or gates align to form an east-west line.

The east-west alignment is calculated to be where the sun would have risen and set from the summer solstice 6500 years ago.

- Fire hearths from around the circle date to around 6800 years ago. Another 300 meters north of the calendar circle is a stone covered tumuli that contained the remains of cattle. One of the tumuli contained a cow that was fully articulated. This particular tumulus was dug into the ground surrounded by a clay frame.

It had a roof made from the limbs of tamarisk. It was then covered with broken rocks that formed a mound eight meters in diameter and one meter high. Wood from the roof of the chamber has been dated to around 6500 years ago.

- Other tumuli that were found in the area were more basic and consisted of unshaped stones that contained disarticulated cattle bones. They had no subsurface structure and were basically piles of bones covered with stones. These tumuli were dated to about 5500 years ago.

Another major feature at Nabta is a group of thirty "complex structures." These structures are located about a kilometer south of the cattle tumuli measuring 500 meters in length and 200 meters in width.

- The framework was constructed by using roughly shaped or unshaped stones that were set upright to form a structure that was oval in shape

measuring 5 meters by 4 meters. Aside from a few minor details, all of the structures were basically the same.

They all face slightly west of north and they all have one or two large stone slabs that lay horizontally in the center of the structure. What makes them unique is that they have been built over large mushroom-shaped tablerocks. The tablerocks were shaped by years and years of erosion and then covered by two to three and a half meters of playa clays and silts.

- It is unclear as to how the Nabtians were able to locate these tablerocks. One theory is that they were located by accident when they were digging wells, but nobody knows for sure. The largest excavated structure reveals that a large pit was dug before the erection of the walls. The pit was about 6 m in diameter and 4 m deep. It was dug down to the tablerock.
- They shaped the rock to have three convex sides and one side that was worked to form a straight edge that face north. In the pit they placed another large shaped stone or sculpture that resembled a cow or some other large animal. The sculpture was placed upright with its axis facing north, the same way as the tablerock below it.

The pit was backfilled with playa clay one meter thick in order to support the sculpture. Two smaller stones were also placed in the pit to help secure the sculpture even more. Once the sculpture was in place and the pit was completely backfilled, the surface stones were then erected and placed into position.

Testing done on charcoal from around the structures indicates a date to 5500-5000 years ago. The actual function of the complex remains a mystery.

- About 4800 years ago there was another climatic change. The African monsoons shifted south to approximately the same area that they were prior to 12,000 years ago. The land became hyper-arid again and caused human habitation at Nabta to cease.

The cattle worshipping people of Nabta had to migrate to a more livable area. But to where did these people migrate? Some people believe that the people of Nabta eventually made their way to the Nile Valley.

Perhaps they were the people responsible for the rise of the Egyptian Empire. This theory is based on the prominence of cattle in the religious belief system of Pre-dynastic Egypt continuing into the Old Kingdom.

In ancient Egypt, cattle were deified and regarded as the earthly representative of the gods. Egyptian Pharaohs were said to represent two gods. Horus represented Upper Egypt and Seth represented Lower Egypt. Horus was the son of Hathor who was depicted as either a cow or a strong bull. Another Egyptian god that is represented by a bull is the god of rain, a very important entity to the people of Nabta, considering that life or death could have been determined by the amount of rain they received.

- Another point of interest is that pre-Egyptian societies did not place the same importance on cattle in either a social or religious capacity, indicating that outside influence must have played a part in the Old

Kingdom belief system. This may have happened because the pastoralists from Nabta came to the Nile to conquer and take over the land from their farming neighbours.

Perhaps they simply joined together with the farmers and their beliefs were blended with those of the farmers. No matter how you look at it, given the closeness of Nabta to the Nile, there had to have been interaction between them and ideas had to be exchanged to some degree.

Whether or not the people of Nabta had anything to do with the Egyptian civilization, it is still a site of great importance. It dates to a time when climatic and social changes were occurring.

- Whether or not the people of Nabta had anything to do with the Egyptian civilization, it is still a site of great importance. It dates to a time when climatic and social changes were occurring.
- Complex societies or civilizations were starting to emerge not only in Africa, but throughout the world.
- Nabta helps to provide us with a better understanding of what life was like during this time in history.

Bird Migration Routes

Prof. S. Ghabbour

Property names are listed in the language in which they have been submitted by the State Party.

	 Egypt (Arab States)
Date of Submission:	12/06/2003
Criteria:	(vii)(x)
Category:	Natural
Submitted by:	Egyptian National UNESCO Commission Egyptian National MAB Committee
Coordinates:	1) Lake Bardawil North Sinaï: 31°05' N – 33°05' E 2) Zaranik, North Sinaï; 3) Gebel Shayeb El-Banat and Gebel Dukhan, Eastern Desert, Red Sea Governorate 4) Saluga and Ghazal Nile Islands, Southern Egypt, Aswan Govern. 24°05' N – 32°50' E 5) 5) Lake Nasser, Southern Egypt, Aswan Governorate 22°00' - 23°58' N / 30°35' - 33°15' E (already inscribed on the World Heritage List, as Nubia)
Ref.:	1809

Description

Lake Bardawil

Site # 1: Lake Bardawil Lake Bardawil is situated on the Mediterranean coast, in the north of the Governorate of North Sinaï. It has an area of about 59,000 ha. It is a Ramsar Site (number 407) and was added to the Montreux Record on 4 July 1990. It consists of two interconnected hypersaline lagoons, with interspersed islands and peninsulas. The site provides important spawning areas for fish and supports commercially important fish stock, mainly the mullet, *Mugil cephalus*. It is also an important wintering and staging area for about half a million birds. About 244 bird species have been recorded here, including 24 species of raptors. There are also 18 species of reptiles, including two that are endangered: the green turtle *Chelonia mydas* and the loggerhead turtle *Caretta caretta*. An ongoing programme for the protection of the desert tortoise *Testudo kleinmanni* is reaping success. Considerable ecological changes have occurred in recent years due to the extension of salt extraction and the constant formation of sand bars (siltation), which tend to close the channels connecting the lagoons with the Sea. These channels are vital for the annual migration of mullets from the Sea to the Lake and vice

versa. Moreover, the El-Salam irrigation Canal, bringing water from the Nile mixed with agricultural drainage water from the eastern Delta (1part : 2 parts) threatens to pollute the Lake in a fairly short time.

Zaranik

Site # 2: Zaranik Scrubland This relatively recently discovered migration hotspot lies on the north coast of the Sinai Peninsula, east of Lake Bardawil. It is situated at about 35 km west of El-Arish, on the main road across northern Sinai and has an area of 250 sq. km. The site consists of a lagoon, beach, and desert scrub vegetation (68% water and 32% land). It is an excellent site for autumn migrants. Breeding species include large numbers of Kentish Plover and Little Tern, smaller numbers of Spur-winged Plover and Avocet, a rare breeding bird in Egypt. Also present in summer are Slender-billed Gull and Greater Sand Plover, as well as Greater Flamingo. Arid land species such as Desert Wheatear, Southern Grey Shrike and Hoopoe Lark can also be seen. It is recognized as a Wetland Site of International Importance since 1985.

Gebel Abu Dukhan

Site # 3: Gebel Shayeb El-Banat The complex of Gebel Shayeb El-Banat near Hurghada (Lat 26° 30' N to 27° 20' N) on the Red Sea coast, comprises four major mountains: Gebel Abu Dukhan (1705 masl), Gebel Qattar (or Gattar, 1963 masl), Gebel Shayeb El-Banat (2187 masl), and Gebel Umm Anab (1782 masl). Gebel Shayeb El-Banat is the highest peak from among the Red Sea coastal mountains in Egypt. The coastal area is organized into coastal desert plain and littoral salt marshes. Water sources in the area are mainly rainfall and underground water. The shoreline of the Red Sea is characterized by a chain of coral reefs, the width of which may exceed 100 m in some localities. Inhabitants of the Gebel Shayeb El-Banat area are of the Ma'aza tribe, known as Bani Attia. Their number is one thousand, living in an area of 90,000 sq. km. They are pastoral nomads, raising sheep, goats, and camels. They have no fixed dwellings.

Saluga and Ghazal Nile Islands and Lake Nasser

Site # 4: Saluga and Ghazal Nile Islands These two Islands are part of the group of the First Cataract Islands within the Nile stream in Aswan, just north of Lake Nasser. They are all granitic outcrops of fine grained granite with fine soil deposits accumulated behind the rocks. These islands vary in size from a few to hundreds of square meters. The remains of the semi-natural vegetation of the First Cataract Islands at Aswan are the relicts of a Nile Valley gallery forest. In just the last decade the floristic diversity of First Cataract Islands comprised 94 species belonging to 34 Families of Angiosperms. Trees of six species of Acacia dominate the plant communities of these islands. This is a unique assemblage of Acacia species, growing together in a very small area, which comprise half of all the Acacia species known in Egypt. Of these six Acacia species, three: *A. laeta*, *A. seyal*, and

Faidherbia albida (formerly *A. albida*), are very rare elsewhere in Egypt. Three vegetation types are recognized according to age of formation and position in the relief: the xeromorphic forest inhabiting the highest and presumably oldest silt terraces of the islands, xerohalophytic shrubs occupying slightly elevated ground which could be the old levee, with dominant *Tamarix nilotica* shrubs, and hydromesophytic meadow and swamp vegetation at lower positions in relief and regularly inundated. In this latter group, tree communities were identified depending on the duration of inundation. Submerged microphytes in shallow water in the protection of the islands, where the water current slows down, providing habitats for populations of submerged macrophytes, are dominated by *Ceratophyllum demersum*, *Potamogeton crispus*, and *Najas* spp. The First Cataract Islands are among the Important Bird Areas of Egypt. Islands are important for resident and migratory birds during the migration seasons, and particularly for water birds (herons, ducks, waders and terns). A total of at least 100 birds, both migratory and resident, were recorded in the Saluga and Ghazal Islands, within an area of not more than 100 acres, or approximately 42 ha. The ferruginous duck (*Aythya nyroca*) is in the List of Globally Threatened Bird Species. Although seen also in Luxor, these Islands are also the only place in Egypt where the Nile sunbird still exists in fairly viable numbers. Site # 5: Lake Nasser Lake Nasser is a huge man-made water reservoir extending for about 300 km upstream the Aswan High Dam in Egypt and continues as Lake Nubia for another 200 km in Sudan, till latitude 20° 27' N. It has an average width of 10 km, hence an area of about 5000 sq. km. On completion of the construction of the High Dam in the early 1970's, the Lake covered the entire Nubian Nile Valley in both Egypt and Sudan and deeply penetrated into the surrounding desert through the numerous wadis (dry desert rivers) that drained from the Eastern (the majority) and the Western Deserts, about 80 all in all, the largest of them being Wadi Allaqi. This gives the Lake its dendritic shape in satellite images. The climate is extremely arid with very hot summers and cold winters. The area is in the transition zone between the tropical climate with a summer rain regime and the Mediterranean climate with a winter rain regime. Therefore some of the very rare rain events fall in winter, summer, or in the transitional seasons, hence their utter unpredictability. Since the formation of the Lake, its fluctuating water level, as a function of the two factors of incoming flood water and drawdown for irrigation purposes, has a yearly rhythm of rise and fall. A yearly fluctuation of as much as 30 m has been recorded, which may lead to considerable expansion into the associated wadis, and shrinking down from them, according to changes in the Lake's surface area. The Lake is mainly lacustrine, except in its southern part, which has riverine characteristics. It has three types of bottom environments: sandy, clayey, and rocky. Fluctuations in Lake level has led, during recess, to temporal exposure of large areas, so that a wetland ecosystem prevails. In particular, large wetlands have been formed in the deltaic mouths of the dry wadis where they join the Lake. The pioneer plants that colonized the exposed land are *Tamarix nilotica*, *Glinus lotoides*, and *Heliotropium supinum*. Among the submerged euhydrophytes in shallow water the most common are *Najas* spp., *Ceratophyllum demersum*, *Vallisneria spiralis* (a new invasive species first discovered in a water channel in Aswan in 1966), and *Potamogeton crispus*. Lake Nasser, the huge

water body in the heart of the great Sahara Desert, is becoming increasingly important as a wintering area for migratory Palaearctic water birds, the reason for putting the Lake on the list of Important Bird Sites in Egypt. Among the most abundant birds are; the Black-necked Grebe, the White Pelican, the Tufted Duck, the Northern Pochard, the Northern Shoveler, the Wigeon, and the Black-headed Gull. During the summer, significant numbers of Yellow-billed Storks and Pink-backed Pelicans can be seen on the Lake. The creation of Lake Nasser offered new ecological niches for many species, particularly birds, as well as for locally breeding populations of the Egyptian Goose. Winter visitors of the Lake include the Ferruginous Duck, which is on the list of globally threatened species. The large numbers (more than 1% of a biogeographic population) of White Pelicans wintering on the Lake are also an endangered species. Regarding the country's important birds, the African Skimmer and the African Pied Wagtail bred at the Lake's wetlands and not elsewhere in Egypt. The Lake shores are also the only habitat of the northernmost populations of the Nile crocodile. Among land animals living near the shore are the hyaena and the endemic and extremely rare Sand Cat *Felis margarita*. The fish fauna of the Lake is undergoing drastic reduction in its diversity, from 94 species before the creation of the Lake, to nearly 50 at present. Such transformations are not known from other reservoirs and these calls for intensive studies. These transformations can be attributed neither to overfishing nor to pollution, as neither is a problem to reckon with here.

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- The phenomenon of bird migration is a well-known phenomenon and one of the greatest spectacles of the natural world. Many of the methods and routes used have been well studied and understood. Migration is an energetically costly activity that places the birds under considerable physiological stress.
- Many smaller bird species are active flyers and migrate on a “broad front” with birds moving in a wave, which spans a continent from east to west. Some of these birds store fat reserves before making their flights then climb to high elevations to make their long migratory “jumps”.
- Other birds, predominantly large broad-winged birds e.g. raptors, storks, cranes, pelicans, conserve energy by soaring on local rising air currents, either those deflected upwards by hills and mountains or hot air thermals formed over land, to provide uplift, circling in such currents to gain height and, where the lift ceases, gliding slowly down until they reach the bottom of another thermal where they repeat the process. In this way, many can fly over 300 km in a single day, almost without a wing-beat.
- These birds, termed migratory soaring birds (MSBs), tend to follow regular routes, termed “flyways”, that maximise opportunities for soaring whilst minimising migration distances.
- Because thermals do not form over large areas of water or tall mountain ranges, MSBs are restricted to traditional routes or “flyways” with large concentrations of birds occurring at migration “bottlenecks”, such as narrow sea crossings and mountain passes, and other strategic points where the birds are funnelled or guided by lines of hills, ridges or edges of valleys and other places where they can maintain their flying height.
- These include the classic world “land-bridges” such as the Panama isthmus in the Americas, Gibraltar and the Bosphorus in Europe and, in the Middle East, the Gulf of Suez and Bab al-Mandeb at the southern end of the Red Sea.

Dangers and threats

These large, highly visible slow-moving birds are susceptible to localised threats during migration, such as hunting and collision with wind turbines

(particularly when they fly low or come in to land), which could have severe impacts on global populations.

Because most MSBs are predators at the top of their food chain and occur across a wide range of habitats. Removing these birds, by allowing threats to their populations to continue, would upset the balance of prey populations and disrupt the assemblage of species in the critical ecosystems of both Europe-West Asia and Africa

Conservation issues

- Managing and protecting migratory bird populations, is particularly challenging because of the vast range of habitats they occupy during the course of their seasonal cycle, and the need to undertake work in very different ecological and political conditions in the breeding grounds, wintering areas and along the migratory routes.
- Also some birds are more vulnerable than others when on migration. For those making long migratory jumps along a broad front, habitat choice during migration can be wide and threats are generally few and dispersed.
- While MSBs are very vulnerable during their migration, not only from the physiological stress imposed by the effort of migration, but from the fact that a large proportion of the global or regional populations of these large, highly visible, slow-moving birds, become densely congregated as they migrate along narrow flyways, follow reasonably predictable timetables and are reliant on a small number of crossing points. As such, they can be disproportionately susceptible to localised threats.

The West Asian East African migratory route

- West Asian-East African migration flyway, which includes 11 countries, is the second most important flyway in the world for soaring birds in terms of numbers of birds involved.
- Systematic surveys conducted at bottleneck sites since the mid-1960s have revealed that over 1.2 million birds of prey and over 300,000 storks pass along this route each year on their annual migrations between breeding grounds in Eurasia and wintering grounds in Africa, but given many bottleneck sites have been only poorly surveyed, the numbers involved are thought to be much higher.

In broad terms, the northern end of the flyway is along the Syria-Turkey border. It includes the Jordan Valley through Syria, Lebanon, Jordan, and Palestine, and then splits into three, with two routes crossing the Gulf of Suez and passing down the Nile Valley and the west coast of the Red Sea (Egypt, Sudan, Eritrea, Ethiopia and Djibouti), and the third route along the east coast

of the Red Sea (Saudi Arabia, and Yemen) which crosses the southern end of the Red Sea at the Strait of Bab al-Mandeb to rejoin the other two before continuing south to the East African Rift Valley

Important for birds

- Thirty-seven species of MSB are recognised as using this flyway of which five are globally-threatened :
- Critically Endangered Northern Bald Ibis (*Geronticus eremite*);
- Endangered Saker Falcon (*Falco cherrug*);
- Vulnerable Greater Spotted and Imperial Eagles (*Aquila clanga* and *A. heliaca*), and Lesser Kestrel (*Falco naumanni*) –
- and three globally near-threatened : White-tailed Eagle (*Haliaeetus albicilla*) Cinereous Vulture (*Aegypius monachus*) and Pallid Harrier (*Circus macrourus*).

Add to these:

Almost 100% of the world population of Levant Sparrowhawk (*Accipiter brevipes*) pass along this flyway twice yearly,

along with >90% of the world population of Lesser Spotted Eagle (*Aquila pomarina*),

60% of Eurasian Honey Buzzard (*Pernis apivorus*),

and 50% of each of Short-toed Eagle (*Circaetus gallicus*), Booted Eagle (*Hieraaetus pennatus*), Egyptian Vulture (*Neophron percnopterus*) and White Stork (*Ciconia ciconia*).

Important for people

Many species are also part of European and African mythology, e.g. White Storks are still believed to bring good luck to the house that they nest on. MSBs are also valued highly by eco-tourists in their wintering grounds in eastern and southern Africa where they provide part of the “African safari experience”.

The tourism industry of which eco-tourism forms a big part, earns Botswana \$240m a year (10% of GDP) and Kenya US\$339 million (9.8% of GDP). The continued existence of these economic, cultural, and aesthetic values are dependent upon safeguarding passage along the migratory flyway.

- So, while these birds are relatively well conserved in Europe, and valued in east and southern Africa as part of the game park experience, they receive practically no conservation attention **during their migration**.

- Yet this is where the MSBs are the most physiologically stressed and in some species 50-100% of their global or regional populations pass along the route and through flyway “bottlenecks” (strategic points where soaring birds are funnelled, either to make water crossings or to maintain flying height) in the space of just a few weeks.
- As a result, MSBs are at their most vulnerable during the migration along the West Asian-East African migration flyway

In view of the importance of the Birds migratory routes, Egypt has put forward a nomination for the listing some migratory birds sites on the World Heritage list.

The sites are:

1) Lake Bardawil, North Sinai: 31°05' N – 33°05' E

2) Zaranik, North Sinai

3) Gebel Shayeb El-Banat and Gebel Dukhan, Eastern Desert,

Red Sea Governorate

4) Saluga and Ghazal Nile Islands, Southern Egypt, Aswan Govern.

24°05' N – 32°50' E

5) Lake Nasser, Southern Egypt, Aswan Governorate 22°00' - 23°58' N / 30°35' - 33°15' E

1: Lake Bardawil

- Lake Bardawil is situated on the Mediterranean coast, in the north of the Governorate of North Sinai. It has an area of about 59,000 ha. It is a Ramsar Site (number 407) and was added to the Montreux Record on 4 July 1990. It consists of two interconnected hypersaline lagoons, with interspersed islands and peninsulas. The site provides important spawning areas for fish and supports commercially important fish stock, mainly the mullet, *Mugil cephalus*.
- It is also an important wintering and staging area for about **half a million birds**.
- About 244 bird species have been recorded here, including 24 species of raptors.
- There are also 18 species of reptiles, including two that are endangered: the green turtle *Chelonia mydas* and the loggerhead turtle *Caretta caretta*.
- An ongoing programme for the protection of the desert *turtoise* *Testudo kleinmanni* is reaping success.

2: Zaranik

- Zaranik Scrubland –An important protected area and migration hotspot lies on the north coast of the Sinai Peninsula, east of Lake Bardawil.
- It is situated at about 35 km west of El-Arish, on the main road across northern Sinai and has an area of 250 sq. km.
- The site consists of a lagoon, beach, and desert scrub vegetation (68% water and 32% land).
- It is an excellent site for autumn migrants. Breeding species include large numbers of Kentish Plover and Little Tern, smaller numbers of Spur-winged Plover and Avocet, a rare breeding bird in Egypt.
- Also present in summer are Slender-billed Gull and Greater Sand Plover, as well as Greater Flamingo. Arid land species such as Desert Wheatear, Southern Grey Shrike and Hoopoe Lark can also be seen.
- It is recognized as a Wetland Site of International Importance since 1985.

3: Gebel Shayeb El-Banat

- The complex of Gebel Shayeb El-Banat near Hurghada (Lat 26° 30' N to 27° 20' N) on the Red Sea coast, comprises four major mountains: Gebel Abu Dukhan (1705 masl), Gebel Qattar (or Gattar, 1963 masl), Gebel Shayeb El-Banat (2187 masl), and Gebel Umm Anab (1782 masl).
- Gebel Shayeb El-Banat is the highest peak from among the Red Sea coastal mountains in Egypt. The coastal area is organized into coastal desert plain and littoral salt marshes. Water sources in the area are mainly rainfall and underground water. The shoreline of the Red Sea is characterized by a chain of coral reefs, the width of which may exceed 100 m in some localities. Inhabitants of the Gebel Shayeb El-Banat area are of the Ma'aza tribe, known as Bani Attia. Their number is one thousand, living in an area of 90,000 sq. km. They are pastoral nomads, raising sheep, goats, and camels. They have no fixed dwellings

4: Saluga and Ghazal Nile Islands

- These two Islands are protected area within the group of the First Cataract Islands within the Nile stream in Aswan.
- They are all granitic outcrops of fine grained granite with fine soil deposits accumulated behind the rocks. These islands vary in size from a few to hundreds of square meters.
- The remains of the semi-natural vegetation of the First Cataract Islands at Aswan are the relicts of a Nile Valley gallery forest. In just the last decade the floristic diversity of First Cataract Islands

comprised 94 species belonging to 34 Families of Angiosperms. Trees of six species of *Acacia* dominate the plant communities of these islands. This is a unique assemblage of *Acacia* species, growing together in a very small area, which comprise half of all the *Acacia* species known in Egypt. Of these six *Acacia* species, three: *A. laeta*, *A. seyal*, and *Faidherbia albida* (formerly *A. albida*), are very rare elsewhere in Egypt.

- The First Cataract Islands are also among the Important Bird Areas of Egypt. Islands are important for resident and migratory birds during the migration seasons, and particularly for water birds (herons, ducks, waders and terns).
- A total of at least 100 birds, both migratory and resident, were recorded in the Saluga and Ghazal Islands, within an area of not more than 100 acres, or approximately 42 ha. The ferruginous duck (*Aythya nyroca*) is in the List of Globally Threatened Bird Species.
- Although seen also in Luxor, these Islands are also the only place in Egypt where the Nile sunbird still exists in fairly viable numbers.

5: Lake Nasser

- Lake Nasser is a huge man-made water reservoir extending for about 300 km upstream the Aswan High Dam in Egypt and continues as Lake Nubia for another 200 km in Sudan, till latitude 20° 27' N.
- It has an average width of 10 km, hence an area of about 5000 sq. km.
- On completion of the construction of the High Dam in the early 1970's, the Lake covered the entire Nubian Nile Valley in both Egypt and Sudan and deeply penetrated into the surrounding desert through the numerous wadis (dry desert rivers) that drained from the Eastern (the majority) and the Western Deserts, about 80 all in all, the largest of them being Wadi Allaqi. This gives the Lake its dendritic shape in satellite images.
- The climate is extremely arid with very hot summers and cold winters. The area is in the transition zone between the tropical climate with a summer rain regime and the Mediterranean climate with a winter rain regime.
- Since the formation of the Lake, its fluctuating water level, as a function of the two factors of incoming flood water and drawdown for irrigation purposes, has a yearly rhythm of rise and fall
- The pioneer plants that colonized the exposed land are *Tamarix nilotica*, *Glinus lotoides*, and *Heliotropium supinum*. Among the submerged euhydrophytes in shallow water the most common are *Najas* spp., *Ceratophyllum demersum*, *Vallisneria spiralis* (a new invasive species first discovered in a water channel in Aswan in 1966), and *Potamogeton crispus*
- This huge water body in the heart of the great Sahara Desert, is becoming increasingly important as a wintering area for migratory

Palearctic water birds, the reason for putting the Lake on the list of Important Bird Sites in Egypt.

- The creation of Lake Nasser offered new ecological niches for many species, particularly migratory birds, as well as for locally breeding populations of the Egyptian Goose.
- During the summer, significant numbers of Yellow-billed Storks and Pink-backed Pelicans can be seen on the Lake.
- Winter visitors of the Lake include the Ferruginous Duck, which is on the list of globally threatened species.
- The large numbers (more than 1% of a biogeographic population) of White Pelicans wintering on the Lake are also an endangered species.
- Regarding the country's important birds, the African Skimmer and the African Pied Wagtail bred at the Lake's wetlands and not elsewhere in Egypt.
- The Lake shores are also the only habitat of the northernmost populations of the Nile crocodile. Among land animals living near the shore are the hyaena and the endemic and extremely rare Sand Cat *Felis margarita*.

Egypt's nominated sites though are not all declared Protected Areas, still abide with the World Heritage sites criteria as follows:

- contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance
- contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species
- of outstanding universal value from the point of view of science or conservation

But as far as the Birds' migratory routes are concerned the nomination misses very important areas one of which is:

The desert at Zait Bay, Egypt, a bird migration bottleneck of global importance

- The area at Zait Bay, Egypt (c. 700 km²) is situated in the middle of the West Asian-East African migration flyway used by very large numbers of soaring migrants. At this site the corridor narrows into a bottleneck. There exist only very few bottlenecks of this magnitude in the world.
- Gebel El Zeit itself serves as a stepping-stone for birds that make the crossing between the western coast of the Gulf of Suez and south Sinai in spring. Many of the birds observed at Elat, and further north in Israel, most probably pass through this area. For example, c.16,000

birds of prey belonging to 18 species and 20,000 *Ciconia ciconia* were counted in two weeks of observations spread over three spring seasons. The most numerous birds of prey are *Aquila nipalensis*, *Buteo buteo*, *Pernis apivorus* and *Accipiter brevipes*.

- In autumn the area is especially critical as many birds, after crossing the Gulf of Suez, arrive tired, flying at low altitudes and often land in large numbers. Almost all of the vast numbers of *Ciconia ciconia* that migrate over South Sinai in the autumn (most of the world population) pass through the Gebel El Zeit area. A one-day count on 7 September 1998 produced a total of 56,000 *Ciconia ciconia*. Up to 100,000 birds cross the Gulf of Suez in this region in a single day. *Ciconia nigra*, *Pelecanus onocrotalus* and many species of birds of prey also pass through the area in huge numbers.
- Moderate numbers of waterbirds utilize Ghubbet El Zeit and Ghubbet El Gems, particularly during migration. Some of the large flocks of ducks seen migrating far offshore, during spring and autumn, rest on the sheltered waters of these bays. Also, large numbers of seabirds from breeding colonies on neighbouring islands feed regularly in the sea off Gebel Zeit.
- The northern part of the area under investigation (19 observation sites) was situated within the Gebel El Zeit IBA (criteria A1 and A4iv), while the southernmost part (8 observation sites) was outside.
- The overall evaluation has shown that 179,681 soaring birds including 122,454 storks and 36,976 raptors were observed in total. Within a radius of 2.5 km from each observation site 97,143 soaring birds including 59,308 storks and 30,489 raptors were observed during the 604 hours of observation.
- Eleven species were recorded in numbers that exceed 1% of their flyway populations.

What is needed?

Two points come to the surface:

Unfortunately, the characteristics of the MSBs migration (it is difficult to predict where the birds will come down because their migrations are dependent upon weather conditions) make it unfeasible to improve the safety of the flyway simply through the protection of key sites.

From a conservation perspective, the quality of information is particularly good for many of these species when in their northern breeding grounds, and improving for their southern wintering grounds.

What is needed?

Coordination between countries sharing the flyways

Declaration of certain sites, bottlenecks and routes as IBAs, Protected Areas then as World Heritage Sites

However, relatively little attention has as yet been given to the protection of birds while in transit on their migratory routes. The conservation work that has been done has mainly concentrated on the bottleneck sites, and wider flyway issues have so far received little or no attention.

Meanwhile,

Collection of data extensively and sharing it for the purpose of designing a proper strategy for conservation along the routes.

BIODIVERSITY OF NORTH AFRICA

Dr. Samir Ghabbour

Dr. Boshra Salem

Dr. Manal Fawzy

Broad geographical patterns

- African ecosystems are broadly arranged in a latitudinal pattern, with increasing species richness towards the equator.
- Inbetween are the subtropical deserts, which are generally a zone of lower diversity: for example, a vast part of the Sahara, the Ténéré, is home to only 20 plant species in an area of about 200,000 km².

Biodiversity Hotspots Concept

- Biodiversity is not uniformly distributed across the geographical regions of the earth. Norman Myers developed the hot spots concept in 1988 to designate priority areas for in-situ conservation. The hot spots are the richest and the most threatened reservoirs of plant and animal life on earth.

The key criteria

The key criteria for determining a hot spot are:

- i) Number of endemic species i.e., the species that are found nowhere else
- ii) Degree of threat, which is measured in terms of habitat loss

Areas with High Biodiversity

New priorities for conservation management usually focus on areas with high biological diversity which has accumulated over long periods of geological time.

This method of selecting areas covers widespread species with ranges spanning continental areas but also recognizes that prioritization should reflect distinctive areas with high endemism.

Quality not Quantity!

- In North Africa, having the largest desert in the world, the Sahara,
- sheer number of species is not a workable criterion for designating some spots in it as “biodiversity hotspots”.

Quality?

- By quality we mean that plants and animals in the Sahara have adapted their anatomy, their physiology, and their behaviours,
- to the harsh ecological conditions under which they live
- And they most wonderfully won!!

THEREFORE

- Sheer number of species is a false indicator.
- What we need for identifying hotspots in the Sahara, and any other desert for that matter, is to protect these unique adaptations.

And What about Oases?

Considering that oases in the Sahara are as good as oceanic islands for applying the island biogeography concepts, and given their long existence time, attention should be directed to spots where are thriving – in spite of everything – such highly adapted species: to high temperatures, to drought, and to salinity.

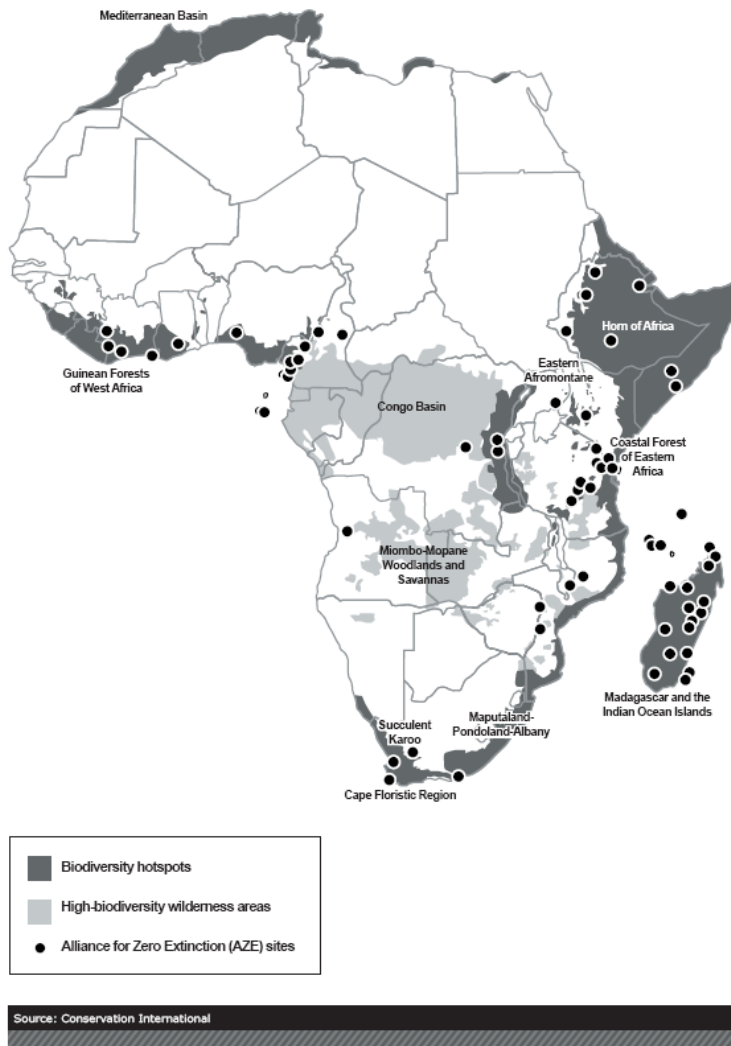
The Same Applies to Mountains

- Mountains are a curious store of unique biodiversity. The Gebel Elba Mountain in Egypt has several outgoing wadis
- Each wadi has its own flora and vegetation composition
- The same is true about the St. Catherine Mountain in South Sinai. It has 27 endemic species in a small area, due to isolation.

Why Use Quality Rather Than Quantity?

DID YOU KNOW?
NORTH AFRICA HAS NO BIODIVERSITY HOTSPOTS!
IS IT POSSIBLE?

Why Use Quality
Rather Than Quantity?



http://www.africananalystquarterly.com/Framework/Publication_Details.asp?SiloID=11&PageID=48

- It is these hardy desert species that are the store of genetic traits to produce hardy crops that can grow in deserts, or arid regions in general.
- They are humanity's hope for more food for mankind.
- It is not only a duty, it is a responsibility to conserve them.
- If they are not World Heritage, what is?

Priority Areas In North Africa

In North Africa, priority areas have been assessed based on information on endemic bird and mammal species (e.g. Algerian Nuthatch, Cuvier's Gazelle, Barbary Macaque), plants (succulents, cedars), and protected areas (e.g. National Parks, Forest Reserves).

Sites That Meet UN Protected Area Status

- The sites that meet UN protected area status are Haut Atlas (Morocco; Toukbal, Orientale National Park), Al Jabal al Akdar (Libya; Kouf National Park), Babor Mountains (Algeria; Petit Kabylie). These are all centres of plant diversity for Magrebian Flora RCE (regional centres of endemism) which is part of the Mediterranean/Sahara transition.

Terrestrial Mammal Biodiversity

- **Species richness**
- Terrestrial mammal biodiversity is higher in mountainous parts of the region, with particularly high concentrations of threatened species found in the mountains of north-west Africa. The Maghreb holds a large number of endemic species, which are unique to the Mediterranean and found nowhere else in the world.

Mediterranean Endemic Mammals

- 320 mammal species endemic to the Mediterranean region have been assessed by IUCN to provide the first regional overview of their conservation status, including all native terrestrial mammals in addition to one marine and coastal species, the Mediterranean Monk Seal.

Mediterranean Reptiles

There are 355 species of reptiles in the Mediterranean region (excluding marine turtles), a species richness higher than in central and northern Europe. Most of them are snakes (30%) or lizards (67%), although the group of reptiles also includes crocodiles and tortoises. The arid and semi-arid habitats found in the Mediterranean region are an ideal habitat for these reptiles, and almost half (48%) of the region's species (170 in total) are endemic. 47 spp. are currently threatened

- Of the total number of reptile species found in the Mediterranean, with extinction, and 13% of Mediterranean reptile species are globally threatened. 3.7% of the species were classified as Critically Endangered, 6.2% as Endangered, and 3.1% as Vulnerable. A total of 252 species were assessed as Least Concern, and 19 were considered to be Data Deficient.

One species listed as Extinct was rediscovered recently in the Canary Islands, the giant lizard from La Palma *Gallotia auaritae*. Furthermore, terrestrial tortoises are also regionally threatened in the Mediterranean; two of the five *Testudo* terrestrial tortoises being critically endangered.

Species Richness

- The eastern Mediterranean has a great diversity of reptile species (lizards, snakes, turtles, tortoises, and crocodilians) due to its characteristic arid lands. There are a few concentrations of species at risk, extending to the northern part of Sinai in northeast Egypt.
- Species of particular concern in this region include *Testudo wernerii*, *Cyrtopdion amictopholis*, *Acanthodactylus beershebensis*, *Lacerta fraasii*, *L. kulzeri* and *Montivipera bornmuelleri*. Another lesser concentration of threatened species occurs in northern Morocco and northeast Algeria.

Threats

Habitat loss and degradation are having by far the largest impact on both threatened and non-threatened species. Over-exploitation is the next biggest impact. Human disturbance, pollution, and invasive alien species are also significant threats for some species. Many species, mainly snakes, are being persecuted, and vehicle collisions are having an impact on several snake and turtle species, but not usually at levels which would qualify them as globally threatened.

Mediterranean Dragonflies

- One fifth of Mediterranean dragonflies and damselflies are threatened with extinction in the Mediterranean, with increasing water scarcity, climate change and habitat degradation being the main factors triggering the degradation of their freshwater habitats

Results

- 14% out of the 163 dragonfly and damselfly species assessed by IUCN are endemic (unique) in the Mediterranean region, which highlights the importance for Mediterranean countries to protect the natural richness of these species.
- Almost a fifth (19%) of the total species assessed are threatened with extinction (3% are Critically Endangered, 8% are Endangered, and 8% are Vulnerable). 16% are Near Threatened and 6 species are Data Deficient, due to lack of sufficient information to assess their status, but they might also be threatened.

Geographical distribution

- Threatened dragonflies are found all over the Mediterranean region. However, in North Africa, some areas have a particular high concentration of threatened species, namely northeastern Algeria

- The highest number of endemic species are found in the Maghreb and in the Levant whereas smaller numbers are found in the southern Balkans, Crete and the Western Mediterranean.

Main threats

- Habitat degradation and water pollution caused by human activities are currently affecting 97% of the 31 threatened species. In addition, natural disasters involving the disappearance of breeding habitats due to drought have the next biggest impact, affecting 75 of these Mediterranean species.
- An example of the effects of habitat degradation due to intensification of agricultural practices is the strong decline of the Spotted Darter (*Sympetrum depressicolum*), a species that used to be common in the Mediterranean and is now Vulnerable according to the IUCN Red List.

Recommendations for conservation

- Long-term coordinated actions are needed at regional, national and international level, and the results of the IUCN report highlight the responsibility that Mediterranean countries have to protect the global populations.
- Though some species are already receiving some conservation attention thanks to international laws, such as the Ornate Bluet (*Coenagrion ornatum*) which is included in the European Habitat Directive, others are not protected at all, despite their high risk of extinction.

Role of the WH Convention

- These IUCN surveys corroborate the need to take advantage of the WH Convention to inscribe these “Threatened Biodiversity Hotspots” on the WH List, to guarantee their protection.
- Aren’t they of “Absolute Outstanding Value” for humanity?

Hotspots of Molluscan Biodiversity management in North Africa

- New priorities for conservation management usually focus on areas with high biological diversity which has accumulated over long periods of geological time. This method of selecting areas covers widespread species with ranges spanning continental areas but also recognises that prioritisation should reflect distinctive areas with high endemism.

Mapping snails

Between 1984 and 1988 research was carried out for detailed mapping which resulted in the collection of live and dead shells from 765 sites over Morocco, Algeria and Tunisia. There was little standardization in the method of data collection, as the aim was to gather material for taxonomic revisions.

- However, the data-set is unfortunately biased, as no winter samples were taken. It is also biased towards rare species, so actual numbers of individuals cannot be used.
- Thus only the presence data has value: absence data is suspect, and must be used with care.

The North African molluscan fauna is essentially Palaearctic.

- However, the distinctive habitats support different molluscan faunas comprising widespread Mediterranean species, Iberian peninsula species, western and eastern Mediterranean species.
- The endemism in the region is usually restricted to montane regions (e.g. Moyen Atlas, Haut Atlas, Djurdjura). The highest levels of endemism and species' richness relate partly to suitable geological conditions (limestone areas) and partly to endemic vegetation zones (cedar forest). Other areas include semi-desert environments, steppe grasslands, marshes, springs and calcareous flushes.

Endemism of Land Snails

- The endemism in the region is usually restricted to montane regions (e.g. Moyen Atlas, Haut Atlas, Djurdjura). The highest levels of endemism and species' richness relate partly to suitable geological conditions (limestone areas) and partly to endemic vegetation zones (cedar forest). Other areas include semi-desert environments, steppe grasslands, marshes, springs and calcareous flushes.

In Morocco

- The main hot spot for land-snails is the Moyen Atlas which is selected for both species richness and endemism.
- This area was not previously highlighted on the basis of other flora and fauna. The Haut Atlas and Agadir to Tin-Tin coast have lower levels of species richness, but the endemic species require protection. The Rif mountains would also be selected on the basis of the links to Iberian molluscan fauna.

In Algeria

The main hot spots for land-snails are co-incident with the regions highlighted for their plant diversity: Babor (high molluscan species richness)

and the Djurdjura (for the endemism, as well as rare European species living at the edge of their range).

In Tunisia

- The Zaghouan - Kef region has many Roman archaeological sites which are protected monuments; this area is important for high molluscan species richness and endemism. The other two regions with reasonable levels of endemism are Cap Bon and Matmata. None of these areas are selected as regional centres of plant diversity, although there are Ramsar sites protecting bird species adjacent to Djebel Zaghouan.

Thus it is apparent that this data-set based on molluscs, despite the problems, can be used for assessing conservation needs.

EL FAIJA, Tunisia

Where the Atlas deer or stag is king

- Evergreen oak or *Quercus fagina* and cork or *Quercus suber*, form thick forests, quite mysterious in a natural space, where the Atlas deer or stag is king, and where a variety of mammals and birds live, including the woodpecker.
- Faija was accorded an important place by local and foreign ecologists, who established links and cooperation that culminated in the setting up of the park to protect the deer in 1968, as a first step to the setting up of the national park in 1980. Its “environment museum” led UNESCO to declare it a protected zone.
- A study carried out in 1995 by S. Ghabbour, on behalf of the WH Center, considered it a potential WH site, and recommended its inscription on the Natural World Heritage List.
- This recommendation was taken up by the Meeting of Arab Natural Heritage Experts, Cairo, Feb. 2003.

Proposals for Inclusion Of Egyptian Nature Reserves and Botanical Heritage Sites

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The World Heritage List includes 890 properties forming part of the cultural and natural heritage which the World Heritage Committee considers as having outstanding universal value. These include 689 cultural, 176 natural and 25 mixed properties in 148 States Parties. As of April 2009, 186 States Parties have ratified the World Heritage Convention.

In Egypt, altogether 7 heritage sites (6 cultural and one natural) were announced between 1979 and 2005. Abo Mena cultural site was inscribed on the List of World Heritage in Danger, while Wadi Al-Hitan (Whale Valley) was the only natural site announced in 2005. However, 27 natural reserves (or protectorates) were announced by the ministerial decree 102/1983.

In this context, other natural areas are proposed to be included and announced as heritage sites. When applying the 10 criteria for World Heritage Sites, the following sites (arranged according to their priority) can also be proposed:

(I) Wadi El-Natrun Area and its Surroundings

Date of Submission	Egypt (Africa)
Criteria	
Category	
Submitted by	
State, Province or Region	
Coordinates	
Ref.	

Description

Wadi Natrun (Wadi al-Natrun, Wadi el-Natrun, Wadi el-Natroun) is a narrow northwesterly oriented desert depression about 60 kilometers long located in the Western Desert near the delta about 90 kilometers northwest of

Cairo. It lies some 23 meters below sea level, and lakes fed from the water table of the Nile dot the landscape. Its name derived from the vast quantities of sodium hydroxide (natrun) obtained from a chain of some ten small lakes used for mummification purposes in ancient times and, in the Roman period, for glass manufacture. The natrun occurs in solution in the lakes, forms a crust around the edges of the lakes and in deposits on their bottom. The area continues to be a source of Natrun today.

Wadi El- Natrun contains a series of nine small lakes (total area over 200 km²), scattered along its general axis. *Typha* swamps occur at localities along the shores of the lakes where there is a plentiful freshwater supply. *Juncus* and *Cyperus* dominate the wet salt marshes on the waterlogged eastern shores. The latter species carpets most of the marsh areas in a dense cover that does not exceed a few centimeters height because of severe grazing pressure. This, however, creates one of the most characteristic and attractive habitats for water birds.

The second geomorphological feature of the Wadi El-Natron Depression is the formations of aeolian sand deposits (loose quartz) on the west of the lakes. These formations are represented by hummocks bordering the lakes and undulating sheets of sand further westwards. This part is also below sea level, the ground level showing a gradual rise westward, associated with a gradual decrease in the salt water. To the south and west of the depression is the sand-and-gravel country which includes fossil wood. These gravel deposits are associated with a network of water runnels lined with alluvial sand and silt.

Justification for Outstanding Universal Value

While Wadi El-Natron was mined for Natrun though much of Pharaonic history, its main importance and indeed, its fame today is as Egypt's most important Christian monastic center. The monasteries at Wadi Natrun and the surrounding region constitute some of the earliest, if not the earliest, Christian monasteries in the world. The district containing these monasteries has been known by many names, often derived from different languages, including Scetis, Scythia, al-Isqit (al-Askit), Shiet, Shihat (Shihet), Scitium and Wadi Habib.

Though there appears to be few ancient sites in the Wadi Natrun from the Pharaonic period of Egyptian history, it was nevertheless an important area if for no other reason than its abundance of Natrun, a naturally occurring combination of sodium carbonate and sodium bicarbonate, which was used in mummification, and soda (sodium oxide), used for glass manufacturing. Natrun was also important in ancient Egyptian medicine, rituals and crafts.

Wadi El-Natron is also an area known for bird watching. It is known to hold some of the largest winter concentrations in Egypt of *Tadorna tadorna* (Shelduck), *Gallinago gallinago* (Common Snipe), *Numenius arquata* (Curlew), *Calidris minuta* (Little Stint) and *Charadrius alexandrinus* (Kentish Plover). *Grus grus* (Common Crane) is known to pass through and rest in significant numbers during spring and autumn. Some 12 species of water birds are known or expected to breed in Wadi El Natrun, including the

largest breeding population of *Charadrius pecuarius* (Kittlitz's Plover) known in Egypt.

The history of the Wadi and its importance to Coptic Christians dates back to the 4th century AD. Christianity reached the area with St. Macarius the Great who retreated there in c.330, at a time when monastic life was not yet developed. During this period, holy men were hermits, living outside social structures. However, the reputation of St. Macarius soon attracted followers, who built cells nearby and thus began a loose confederation of monastic communities.

By the end of the fourth century AD, the loose agglomeration of Christian settlers had coalesced into four monastic communities. These were the monasteries of (old) Baramus, Macarius, Bishoi and John Kolobos (John the Little). Initially, these monasteries were simply collections of individual cells and dwellings centered on specific churches and communal facilities, but they gradually developed into enclosures with walls and watchtowers for protection, because, like Nitria and Kellia, Scetis was at times subject to raids from desert nomads.

The monasteries of Wadi El-Natrun played a crucial role in the history of the Coptic Christian Church. Ethiopian, Syrian, Franciscan and Armenian monks enriched the cultural life of the area in medieval times, endowing it with a multiethnic character. Beginning in the eighth century most of the Coptic patriarchs and many bishops were chosen from among its monks. The monasteries of Wadi El-Natrun also provide us today with indispensable data for the study of the Coptic heritage, and especially for Coptic literature, art and architecture.

Today, four active Monasteries remain at Wadi El-Natrun, consisting of the Monastery of the Romans (Deir Al Baramus), The Anba Beshoy (St. Boshoi's) Monastery, The Monastery of the Syrians (Deir al-Surian) and The Monastery of St. Macarius (Deir Abu Magar, Abu Maker). All of them are Coptic. However, the landscape is littered with the remains of hermitages, monasteries and caves where the early hermits lived.

In Wadi El-Natrun limited patches of *Typha domingensis* are recorded in some of the swamps. *Typha elephantina* is abundant along most of the lakes. It forms extensive reed thickets in the swamps and also on sandy terraces bordering the lakes from the west. The latter is widespread in Wadi El-Natrun but its presence elsewhere in Egypt is uncertain (Boulos, 1962). Information provided by local inhabitants indicates that in the past few decades, *T. elephantina* formed very dense thickets which were almost continuous along all the lakes. Among the obvious causes for the decline of *Typha* are cutting for fuel and for making mats and huts, grazing and lowering of the water-table due to gradual thickening of the sand deposits and to land reclamation operations (Zahran and Willis, 2009).

(II) Gebel Elba National Park

Date of Submission	Egypt (Africa)
Criteria	(vii)(x)
Category	Natural
Submitted by	
State, Province or Region	Province: Red Sea; coastal mountain ranges of the Red Sea
Coordinates	
Ref.	

Description

The coastal mountain ranges of the Red Sea represent a conspicuous habitat type of special interest for their complex patterns of natural communities interrelating the floras and faunas of Egypt, Sudan and Ethiopia. One of these ranges is the Gebel Elba mountains of south-eastern Egypt. This mountain range is considered a continuation of the granitic formation of the Red Sea highland complex between Egypt and Sudan, situated between 36° and 37° of the Eastern Longitudes and about 22° of the Northern Latitude. The flora and fauna of this area comprise hundreds of species of plants and animals; these include a number of endemics and a number of species that represent the northern outpost of the biota of the Ethiopian highlands.

The geographic position of this group of mountains combines the following: (a) the bend of the coastal line, (b) the proximity to a large water body (Red Sea), (c) altitudinal and seaward direction of slope, and (d) a coastal plain with few topographic features. The combination of these features allows for orographic condensation of cloud moisture, particularly on the seaward slopes, which forms an essential source of water for plants in this area. This provides for rich plant growth and creates "mountain oases" or "mist oases" (Troll, 1935; Kassas, 1955). The floristic richness of the Gebel Elba area is noticeable, compared to the rest of Egypt, and this is considered one of the main phytogeographical territories of the country (El Hadidi, 2000a) as it borders the Saharo-Arabian and Sudanian floristic regions.

The climate of the study area seems to occupy an intermediate position between those of the regions of the tropical rains and those of the dry Egyptian rocky deserts with their occasional precipitation in winter months (Fahmy, 1936). According to Ayyad and Ghabbour (1986), the study area lies in the arid climatic province characterised by spring rainfall ranges between 50 and 10 mm year⁻¹, mild winters (18-22°C) and hot summers (28-33°C). As for its geographical position and peculiar set of environmental conditions, Gebel Elba receives greater water revenue from orographic precipitation than the other northern blocks (Kassas and Zahran, 1971). It is worth noting that a complete recent flora and fauna (or at least checklist giving a precise account of its extant plant taxa) is still lacking.

Justification for Outstanding Universal Value

In spite of the interesting biogeographical and botanical features of the Gebel Elba mountain range, it has been overlooked in most global biodiversity assessments (Heywood and Watson, 1995). Of the 142 woody perennial threatened plant species that were included in the Plant Red Data Book of Egypt (El Hadidi *et al.*, 1992), 56 or 39.4% were known from the Gebel Elba district. Therefore, this area was protected in 1986 as the Gebel Elba National Park (Prime Ministerial Decrees 450/1986, 1185/1986 and 642/1995), covering 35,600 km², aiming to promote the sustainable management of natural resources and maintain its biodiversity. To fulfill this mandate, it is essential that each national park has adequate knowledge of its biodiversity (Hawksworth and Kalin-Arroyo, 1995). Inventorying is, therefore, the fundamental starting point for any strategy of conservation, sustainable use, or management (Strok and Samways, 1995).

Within the complex biological and physical framework that constitutes the biodiversity resources of the Gebel Elba National Park, rich ethnic inheritance has lived in, used and modified the natural habitats in different ways through time. The Bishari tribe, the principal of 3 tribes, inhabit the immediate vicinity of Gebel Elba. They are sedentary to semi-nomadic, related to the tribes in Sudan and Ethiopia and speak their own language. The Ababda tribe, ranked second, is a sedentary to semi-nomadic people found in the northern areas of the park, and is considered Arab in origin. The Rashayda tribe is a non-indigenous tribe inhabiting the coastal plain. The human activities from ancient up to the present time must be considered factors which have contributed to the disturbance of the natural ecosystems, the banality of the flora, and the more or less uniformity of the vegetation in our area. The main socio-economic activities of the local community are livestock herding and charcoal production (especially from *Acacia* Mill. trees). The local community relies heavily on the natural flora for their way of life, particularly wood for fuel, building materials, fodder, tools, handicrafts and other goods, some of which are sold or traded. Plants and animals are also used for medicinal purposes. Other activities include small-scale cultivation along the coastal plain and fisheries in the offshore waters. In the coastal communities there are commercial enterprises, including trade between the Sudan and Egypt. These activities have produced environmental alterations and in some instances positively influenced the genetic maintenance of some ecosystems.

The flora and vegetation of the Gebel Elba group is much richer than that of the other coastal mountain groups (Drar, 1936; Hassib, 1951), where the Palaearctic and Afro-tropical regions meet. It comprises elements of the Sahelian regional transition zone (*sensu* White and L. onard, 1991) and represents the northern limit of this geoelement in Africa. Within its massive, the vegetation on the north and north-east flanks is much richer than that on the south and south-west (Kassas and Zahran, 1971). Its ecological features, together with its particular geographic position, seem to have promoted plant diversity, singularity and endemism in this area, and favoured the persistence of an extensive woodland landscape dominated by thickets of *Acacia tortilis*

(Forssk.) Hayne subsp. *tortilis*; not known elsewhere in the Eastern Desert of Egypt (Zahran and Willis, 1992).

(III) The Old Natural Springs of Bawiti (Bahariya Oasis)

Date of Submission	Egypt (Africa)
Criteria	(vii), (ix), (x)
Category	Natural
Submitted by	
State, Province or Region	Province: Giza; Ain Bishmu (Bawiti, Bahariya Oasis)
Coordinates	
Ref.	

Description

Bahariya Oasis is the smallest of the four depressions of the Western Desert of Egypt. Its area of ca 2000 km² in the middle of the Western Desert, about 365 km south-west of Cairo, and it is the best starting point for the Black and White Desert. It is surrounded by black hills made up of ferruginous quartzite and dolorite. Its desert floor and lower escarpments formed of Cretaceous sandstone, overlaid by limestone and basalt from the Eocene period. In the Late Cretaceous era, 94 million years ago, the environment resembled the Florida Everglades, with mangrove swamps inhabited by dinosaurs such as the plant-eating paratitan and the carnivorous carcharodontosaurus, whose bones have been found at Jebel el-Dist and Jebel el-Fagga. There are plenty of hills and mountains in Bahariya Depression and they form the dominant feature of the oasis. Among the dominant mountains are Gebel Hafuf, Gebel al-Ghaba, Mountain of the Forest, Gebel Ghurabi, Mountain of the Crow; Gebel Dist, Mountain of the Pot. The oasis is provided with water by many springs. The most famous of these, a thermal spring with medicinal and restorative properties, comes out in the Bedouin village of Bawiti. Despite the fact that Bahariya is the highest oasis in elevation, the water makes its way to the surface through natural fissures. Bahariya also has a number of ancient aqueduct systems.

Justification for Outstanding Universal Value

The conditions of integrity require that the area essential for maintaining the beauty of the property are included in the proposed site. The landscape of the Oasis can be distinguished into three main ecosystems: (1) the adjoining desert with sand dunes; (2) the arable lands with date palm groves, orchards, croplands, and the "well" and irrigation channels system; and (3) the salt marshes with wet land vegetation.

Bahariya Oasis includes some thermal old springs that flow naturally from the mountains. One of these springs is the picturesque Ain Bishmu, with its spectacular scenery of the extensive areas of date palm orchards. Along its

irrigation channels the pteridophyte *Marsilea minuta* L. (Dwarf Waterclover) is grown, which is not known elsewhere in the Oases of the Western Desert.

Medicinally, *Marsilea minuta* L. (Marsileaceae) has been referred in Indian traditional medicine system (Ayurveda) for the treatment of insomnia and other mental disorders. Marsiline isolated from *Marsilea minuta* was reported to have sedative and anticonvulsant property.

(IV) Bramley's Cistern in Burg El-Arab

Date of Submission	Egypt (Africa)
Criteria	(vii), (ix), (x)
Category	Natural
Submitted by	
State, Province or Region	Province: Alexandria; Burg El-Arab; Mediterranean coast
Coordinates	
Ref.	

Description

Burg El-Arab represents the natural western extension of Alexandria City on the western Mediterranean coast. Geological studies on the western Mediterranean coast of Egypt suggested that its formations are essentially Quaternary and Tertiary. The surface is formed of Miocene strata, overlain by pink limestone, tentatively assigned to Pliocene. Surface deposits are Pleistocene. Physiographically, the coastal plain consists of a series of elongated ridges alternating with depressions and running parallel to the coast in NE–SW direction. These ridges (10–60 m above sea level) from north to south are the coastal, Abu Sir, Gebel Mariut and Khashm El-Eish. They are composed of oolitic limestone. Most studies consider them as representing retrogressive stages of the Mediterranean in Pleistocene times. The northern (seaward) slopes of these ridges are gentle, whereas the leeward slopes are steep. Transitional areas adjacent to the bordering ridges are covered with deep layers of downwash material transported during the rainy season.

Justification for Outstanding Universal Value

Remains of the old hydrological system that was used during the last century still preserved. One of these old systems is the Cistern of Bramley. It is an old place in the limestone plateau overlooks the remnants of Mariut Lake. This is the only location where few individuals of the very rare succulent cassulaceous plant *Umbilicus horizontalis* (Guss.) DC. still grow on the rocky substratum of the cistern. It is considered as the type locality of this plant in the country.

(V) Small Oases on the Edge of Qattara Depression

Date of Submission	Egypt (Africa)
Criteria	(vii), (ix), (x)
Category	Natural
Submitted by	
State, Province or Region	Province: Qattara Depression, Western Desert
Coordinates	
Ref.	

Description

The Qattara Depression in the northern part of the Western Desert is the largest natural closed depression of the Eastern Sahara. It has an area of about 18,130 to 19,500 km² with an average depth of 60 m below sea level (BSL); the lowest point, at the SW part, being 134 m BSL. The Qattara Depression forms one of the most significant geomorphological features of the NW desert of Egypt. It is a closed inland basin bounded from the north and west by steep escarpments, with an average elevation of 200 m ASL. Towards the south and east the floor of the Depression rises gradually from 60 m BSL to the general desert level of 200 m ASL again. The Depression is estimated to have an excavated volume of 3200 km³. Within the Depression, cones, towers, mushrooms, and plateau-like hills, ranging in height from 5 to 30 m, are common, especially near the western scarp. Sinkholes and caves are also common in the northern Diffa Plateau, separating the Depression from the Mediterranean frontal plain. The northern and western escarpments are dominated by large mass-wasted blocks. Since the Qattara Depression forms the deepest point in the Western Desert, groundwater flow in all aquifers bordering the area is consequently directed to this final base level. Most of the groundwater comes from the Moghra Aquifer system, recharged from four sources: the Nubia Sandstone aquifer in the south, Nile water in the east, saline water from the Mediterranean Sea to the north, and rain water. In contrast, in the western part of the Depression, groundwater seepage is recharged from Nubian and Upper Cretaceous-Eocene aquifer systems.

Justification for Outstanding Universal Value

Unlike other Oases of the Western Desert, Qara Oasis (known also as *Um Al-Saghier*) is the smallest and poorest. It has a compelling fascination lies on the western side of the lowlands. Approximately 150 people live in the settlement perched on a scenic fortress-like cliff. The cultivation of date palms is the most important source of income. Qara was used by Alexander the Great as a resting place on his return from the oasis of Siwa. During the Middle Ages, the oasis was an important base for slave traders. It includes

some old springs that still flow. Relicts of the wild cotton *Gossypium arboreum* L. tree are known to grow in certain areas (e.g., Ain Sheikh Makhoulf). The plant is of a significant genetic resource as a wild relative of the cultivated *Gossypium barbadense* L. Inhabitants usually use woods of the tree to roof their houses, which directly lead to continuous decrease in their number. It is considered as one of the threatened plants in Egypt.

(VI) The Orman Botanical Garden

Date of Submission	Egypt (Africa)
Criteria	(i)
Category	Cultural
Submitted by	
State, Province or Region	Province: Giza; The Orman Botanical Garden
Coordinates	
Ref.	

Description

The Orman garden was a part of the Giza gardens (200 Feddans), established in 1873, characterized by its natural style and covered an area of about 95.2 Feddans for supplying the Khedivial palaces with vegetables and fruits introduced from the Sicily Island, 10,000 Citrus trees were cultivated there (Delchevalrie, 1899). In 1919, the Ministry of Agriculture converted the Orman garden into a botanical garden known at that time as the "Lemon Garden" of a total area reaching 58 Feddans. Recently, the area of this garden has been diminished to 28 Feddans as 28 other Feddans were given to the Zoo garden, Cairo University and its street, Authority of the Survey of Egypt and the Giza Security Department.

Among the major and conspicuous landmarks of this garden are: (1) the rocky garden (1.5 Feddans) containing 200 species of Cactus and succulents belonging to 11 families; (2) the rose garden (2 Feddans); and (3) the water pond containing water plants such as: *Cyperus papyrus*, *Nelumbo nucifera*, *Nymphaea caerulea* and *Aeschynomene elaphroxylon*. It also includes a herbarium containing King Farouk I private collections of wild and medicinal plants, fifteen green houses and seed exchange unit. The plants are cultivated in the garden in 12 sections, e.g., *Strelitzia*, *Ficus* and *Roses*.

Justification for Outstanding Universal Value

The Orman garden is the most diversified and species rich among the historical botanical gardens in Cairo (Hamdy *et al.*, 2007). A total of 835 species representing 115 families and 434 genera of the seed plants are included. The families that comprise high number of species are Cactaceae, Leguminosae, Agavaceae, Palmae, Euphorbiaceae, Moraceae, Aloaceae,

Crassulaceae, Bignoniaceae and Verbenaceae. In addition 57 families comprise 1-2 species; amongst others, Guttiferae, Magnoliaceae, Podocarpaceae and Vitaceae. There is a suite of 24 families represented only in this garden, and included Asphodelaceae, Berberidaceae, Cephalotaxaceae, Ginkgoaceae, Myrsinaceae, and Nymphaeaceae. The genera richest in species are *Ficus* (31 species), *Agave* and *Euphorbia* (23 species each), *Opuntia* (21 species), *Aloe* (15 species), *Kalanchoa* (11 species), *Ferocactus*, *Clerodendrum*, *Yucca* and *Erythrina* (8 species each), and *Cupressus* (6 species).

The **section of succulent plants** is remarkable and peculiar, and represents one of the most prominent features of this garden. Twelve families comprise the succulent plants with 140 species: Agavaceae (45 species), Euphorbiaceae (28 species), Aloaceae (25 species), Crassulaceae (21 species) and Aizoaceae (7 species). *Euphorbia* and *Agave* are the largest genera of succulent plants (23 species).

The cactus section that covers an area of about 1.5 Feddans is among the characteristic features of the Orman botanic garden. It is interesting to note that 74 cactus species are recorded in this garden. The cacti are comprised of 24

genera were found, of which *Opuntia* includes the largest number of species (21 species) followed by *Ferocactus* (8 species). Other genera are represented by only 3 – 4 species; e.g. *Cleistocactus*, *Coryphantha* and *Mammillaria* (4 species each), *Cereus* and *Echinocactus* (3 species each).

Trees are represented with 250 species belonging to 45 families, Leguminosae, Moraceae, Bignoniaceae, Myrtaceae, Sapotaceae and Anacardiaceae are the families with high number of species. Cold region trees, for instance, include *Pinus canariensis*, *Sequoia sempervirens* and *Cephalotaxus fortunei*. Tropical region trees such as *Khaya*, *Tectona*, *Spathodea*, *Tabebuia*, *Bixa*, *Euclea* and *Antidesma* are also grown in this garden.

Forty-seven climber plant species belonging to 24 families are recorded. The most rich families are Bignoniaceae (6 species), Oleaceae (5 species), Nyctaginaceae (4 species), Apocynaceae, Solanaceae and Convolvulaceae (3 species). Among the rare species of climbers are *Carrisa macrocarpa*, *Hoya carnosae*, *Anredera cordifolia*, *Hiptage madablota*, *Passiflora edulis*, *Asparagus setaceus* and *Aristolochia elegans* were observed.

(VII) Cairo University Botanical Museum

Date of Submission	Egypt (Africa)
Criteria	(i)
Category	Cultural
Submitted by	

State, Province or Region	Province: Giza; Cairo University, The Herbarium
Coordinates	
Ref.	

Description

In 1925, Egypt established its first Faculty of Science as a part of the Egyptian University (now Cairo University). Gunnar Täckholm (Swedish) was invited to be the first professor of Botany in this new Faculty. In summer, he married Vivi Laurent, who joined him to Egypt in 1926.

The Täckholms spent the following academic years (1927-29) working together with some Egyptian colleagues with the aim of establishing the Department of Botany and its Herbarium. Together they made several expeditions to various parts of the country. Their plant collections during that period served as the nucleus of this Herbarium.

Index Herbariorum (ed.8: 99, 1990) reported 1926 as the starting year of this Herbarium. The earliest collection, however, date back to 1927 which is regarded as the foundation of Cairo University Herbarium.

It is known that the herbaria hold a historical record of more than two hundred years of changes to the vegetation-unparalleled data for conservation and revegetation work, and a permanent reference collection to monitor changes in plant names. It is the only regional plant information system based on scientifically verifiable voucher specimens, maintained by herbaria to ensure the currency of names as knowledge improves.

About 250.000 plant collections not only from Egypt but from allover the world, and arranged according to Engler's system of plant classification distributed in three separate halls: the largest (Vivi Täckholm's Hall) include families of the Dicotyledoneae except Compositae kept in 40 woody cases, while the second houses about 50,000 collections of Compositae and the families of Monocotyledoneae kept in 40 metallic cases. Another minor annex includes about 5,000 specimens of Thallophyta, Vascular Cryptogams and Gymnosperms kept in 10 metallic cases.

A very specialized unique library in the herbarium houses standard works, monographs and world floras serving researchers and scientists. In addition to an almost complete set of the monumental work "*Description de l'Egypte*" of Napoleon's expedition. The periodicals library is attached to the second hall. The library comprises a selection of specialized publications received as exchange with some institutions abroad. The collection of maps, geography and travel works are partly housed in this hall as well. The library section of the second hall comprises literature in Cryptogamic Botany, Economic Botany, Cytology, Genetics, etc.

Justification for Outstanding Universal Value

The significance of any herbarium not only measured by the number of plant collections it houses, but also with the historical value of its collections. Valuable historical records are preserved in the Herbarium of Cairo University; some dating back to the 19th century. It also includes plant collections from many locations that are now completely changed either by urbanization, road construction ...etc.

Among these valuable historical records, the following can be mentioned:

- Collections of Hérbarium G. Maire (1928) that comprising valuable accessions, mainly from the Mediterranean costal land,
- Collections of Gunnar Täckholm (1929) to Gebel Elba district, which represent the earliest from this area in the Herbarium,
- Collections of pioneer Egyptian botanists (1930-1948) to many localities, which are now disappeared and replaced by new settlements near Cairo,
- Notable collections from places visited by Vivi Täckholm in Kharga and Dakhla Oases (1952), and the Wadis dissecting the Galala Mountains (1954) and those of South Sinai Mountains (1956),
- Valuable collections of the UNESCO project (1959-64) which aimed to survey the natural vegetation of Egypt,
- Important historical plant collections from the southern reaches of the Nile Valley (1961-1962) preceded the inundation of the Abu Simbel area with the waters of the Lake of the Aswan High Dam,
- Collections of the pioneer work on the weed flora of the farmlands of Egypt (1966-1976) in collaboration with the Prague botanists; namely: J. Chrtek, J. Osbornova-Kosinova and the Swedish Gun Romée,
- The notable collections from Sinai Peninsula between 1960-1970,
- Enormous collection of cultivated plants from Botanical Gardens and National parks that were regularly visited for more than five decades are well preserved in the Herbarium,
- The efficient exchange program carried out with the leading herbaria of the world, enriched the Herbarium in valuable collections from all over the world. Such collections have been serving as a reference material for candidates conducting taxonomical research,
- The type collection in Cairo University Herbarium amounts to 99 specimens which represent the most valuable collection in this Herbarium.

Statements of authenticity and/or integrity

The property is unique as it includes well preserved plant collections that exhibits variation in plant diversity. It serves and supplies the scientific community allover the country with all botanical information required for conservation measures, rarity and commonness of species, taxonomic singularity, endemism, temporal and spatial geographical distribution of the species, etc. It also contributes largely to studies related to the biodiversity as ethnobotany, palaeobotany, pharmacognosy, palynology, phylogeography, evolution, etc. Development projects are recommended. This type of Cultural Heritage Criteria is underrepresented.

CULTURAL LANDSCAPES


Presented by Prof. S. Ghabbour

Nedroma et les Trara

Nedroma

les Trara

Property names are listed in the language in which they have been submitted by the State Party.

 Algeria (Arab States)

Date of Submission: 30/12/2002

Criteria: (ii)(iii)(iv)(v)

Category: Cultural

Submitted by: Ministère de la Communication et de la Culture, Direction du patrimoine culturel.

State, Province or Region: Région ouest de l'Algérie à proximité de la Frontière marocaine. A 77 km de Tlemcen sur le CW 46.420 m en aval du djebel Fillaoucen. Ils sont insérés dans un massif montagneux exceptionnel.

Ref.: 1774

Themes

- Cultural landscapes

Description

Capitale des Trara bâtie sur le revers de djebel Filaoussene par Abdelmoumen Ben Ali en 1150 sur les ruines d'une cité berbère. Elle a accueilli de nombreux immigrants andalous chassés par la reconquista. Elle devint un important centre de textile au 16 ème siècle.

C'est une ville étagée sur les flancs du djebel Filaoussène entre 400 et 500 m d'altitude sur un site verdoyant arrosé par des sources d'eau importantes où les maisons bleues, blanches, vertes et brunes forment un cadre enchanteur.

Le géographe El Yacoubi la cite et la décrit comme grande cité ; El Bekri au XI ème siècle en donne une description brillante ainsi qu' El Idrissi qui signale ses fonctions agricoles et Commerciales. Cette cité jouissait d'une grande dignité religieuse comparable à celles des grandes villes musulmanes; elle possède une grande mosquée Almohade, la mosquée de Sidi Bou Ali, la mosquée de Ben Aoufine aux coupes multiples et d'importants remparts. Nedroma est connue pour ses multiples koubbas où reposent des saints et savants outre méditerranéens mais elle est également connue pour ses

traditions musicales andalouses. Au XVI^e siècle, Léon l'Africain attribue la richesse de Nedroma au nombre de ses tisserands.

La ville au cachet local propre rappelle les anciennes villes musulmanes maghrébines et dispose de quartiers traditionnels au nombre de 4 dont deux réservés aux activités artisanales. Son plan est assez bien conservé avec ses dédales de ruelles sinueuses étroites et de multiples impasses.

Mais la cité est indissociable de sa région: les monts du Trara, belle région rurale traditionnelle très dynamique où regorge des dechras, des oliviers et des jardins.

Ce massif montagneux est le berceau des Almohades ; c'est là que Abdelmoumène est né et de là que fut entreprise la conquête du royaume Almoravide. Cette montagne a été une pépinière de saints, de réformateurs et d'ascètes. Il renferme également des vestiges historiques de haute valeur et des stations estivales très recherchées tel :


-Honaine distante de 30 km au sud est , escale phénicienne et cité numide , elle joua le rôle de port de Tlemcen au XIII^e siècle. Elle fut la voie méditerranéenne pour le commerce avec le tafilale et l'ancien soudan. Il subsiste encore des restes de la ville kharidjite , des remparts en pisé flanqués de tours et les restes d'une casbah.

-le site de Sidna Youcha à 12 km au nord ;

-l'Ile de Rachgoun où d'importants vestiges phéniciens ont été identifiés et datés au VI^e siècle avant J.C .

Oued Souf

Property names are listed in the language in which they have been submitted by the State Party.

	 Algeria (Arab States)
Date of Submission:	30/12/2002
Criteria:	(ii)(iii)(iv)(v)
Category:	Cultural
Submitted by:	Ministère de la Communication et de la Culture.Direction du patrimoine culturel.
State, Province or Region:	Sud est du Chott Melrhir dans le Sahara oriental.
Ref.:	1775

Themes

- Cultural landscapes

Description

Ensemble d'oasis unique implanté en plein erg imposant un mode particulier de mise en valeur (technique du Ghout) et un système de culture originale:


les palmiers sont plantés directement au dessus de la nappe au fond de vastes entonnoirs creusés dans le sable. Des cultures secondaires sont faites sur le bord des entonnoirs et irrigués par des puits à balancier. Ce type d'oasis ne se base pas sur une structure géomorphologique ou sur un système hydrographique apparent. L'existence des oasis s'avère une création complètement artificielle dont chaque pouce de terrain est directement disputé aux dunes. Le travail de maintenance ne peut jamais s'interrompre, étant donné l'impossibilité de bloquer l'action continue du vent et des sables contre laquelle toute opposition drastique est vouée à l'échec. Des barrières artificielles de palmes provoquent l'accumulation de sable et favorisent le système protectif des entonnoirs creusés.

C'est une région ayant une identité spécifique mais dont l'histoire est très mal connue. Sa population métissée comprend des descendants d'ancêtres nomades de Troud et Adouane venus du Yemen mêlés à des populations zénètes préexistantes. Le souf est aussi le pays des roses des sables, des fennecs et des tapis de haute laine ou en poil de chameau. A 15 km à l'ouest d'El Oued : l'oasis de Ourmes.

El oued : la ville aux mille coupoles, capitale du Souf. L'architecture s'y distingue de celle des autres villes sahariennes. Au lieu de terrasses, ce sont des coupoles qui coiffent les maisons.

Les oasis à foggaras et les ksour du Grand Erg Occidental

Property names are listed in the language in which they have been submitted by the State Party.

 Algeria (Arab States)

Date of Submission:	30/12/2002
Criteria:	(ii)(iii)(iv)(v)
Category:	Cultural
Submitted by:	Ministère de la Communication et de la Culture, Direction du patrimoine culturel.
State, Province or Region:	Sahara occidental. Le trait d'union de cet ensemble est le réseau hydraulique de la Saoura, avec le Gourara, le Touat et le Tidikelt.
Ref.:	1772

Themes

- Cultural landscapes

Description

Dans le complexe spatial formé du Grand Erg Occidental et de la vallée de la Saoura la stratification dans le temps de l'action anthropique a donné lieu à un modèle original d'implantation d'oasis où le cadre naturel et les interventions dues à l'homme concourent à la formation de l'écosystème.

L'oued Saoura a été défini comme un « événement unique dans tout le Sahara africain » et comparé, pour ce qui est de l'importance géographique et de l'impact sur les civilisation, au Nil d'Egypte.

La Saoura a creusé sa vallée au cours du quaternaire en s'encaissant dans les terrains du tertiaire continental du piedmont sud atlantique. La vallée étroite et bien dessinée s'insère entre la chaîne de Ouargla et le tertiaire continental. Elle a été une grande voie caravanière transaharienne qui joignait Gao en territoire malien après la traversée de Tanezrouft. Elle présente un des paysages les plus marquants de part et d'autre de l'oued Saoura, ici se juxtaposent les escarpements rougeâtres de la Hamada du Guir à l'ouest et les dunes blondes du grand erg occidental à l'est. Entre les deux, s'égrènent palmeraies et ksours jalonnant l'oued. Partout des puits à balancier destinés à élever l'eau ; beaucoup de ksour sont encore occupés (Aguedel, El ouarta, Guerzim, Kerzaz...).

Le Touat et Gourara sont des oasis à Foggaras. Des galeries souterraines ont été creusées dans les couches des grès du continental intercalaire. Elles pénètrent dans la partie supérieure de la nappe et assurent l'écoulement de l'eau par gravité vers les dépressions basses ou sont plantés les palmiers. Ce sont des galeries drainantes, reliées au sol par des bouches d'évacuation suivant une technique archaïque qui remonte au 1^{er} millénaire de notre Ere. Le système est partie intégrante du paysage et de l'organisation sociale de la région. Les populations sédentaires de ces deux régions sont éparpillées dans une multitude de petits ksour Adrar et Timimoun en sont les capitales.

Le Touat, situé entre le plateau de Tadmait à l'est et l'erg chech au sud ouest, il est jalonné de pas moins de 135 ksour s'échelonnant sur 200 km du nord au sud. Le touat a été longtemps un grand axe de communication entre Maghreb et Soudan. Les caravanes transportant les esclaves et l'or du sud, le blé et les étoffes du nord empruntaient cette voie commerciale. S'y croisaient les caravanes venant de Sigilmassa, de Fès, de Tlemcen, de Tunis ou de Tombouctou. Une des spécificités de la région sont les vastes maisons fortifiées avec des tours d'angles et des greniers fortifiés. Cette région renferme de multiples foggaras qui irriguaient et irriguent encore les palmeraies. On en dénombre 995 dont 600 sont encore productives aujourd'hui et 200 km de galeries.

Timimoun: l'oasis rouge, capitale du Gourara est une des plus belles oasis du Sahara. Le rouge prédomine dans l'argile (matériaux) et la couleur du sable. Toute la ville en porte la marque. Le vieux ksar, enfermé dans ses murailles, offre la fraîcheur du dédale de ses ruelles. C'est le type de la cité héritée du passé et en même temps très vivante. Sa population est constituée par les zénètes berbérophones. En contrebas, la palmeraie est un jardin de verdure, d'arbres de tous types, de seguias à « peines » répartissant les eaux. Quelques monuments de style soudanais marquent les influences de l'Afrique noire.

La Sebkha de Timimoun:

La cité de Timimoun domine un vaste lac salé, la sebkha aux abords de laquelle sont bâtis des dizaines de ksours (Messin, El Gasba, Tlalit...) et dont les casbah s'accrochent aux escarpements rocheux. La sebkha que l'on


traverse pour aboutir à la grande palmeraie des Ouled Saïd est un lac salé de 75 km de long.

Le Tidikelt et le gisement d'In Rhar :

Les oasis du Tidikelt présentent beaucoup d'analogies avec celles du Touat et du Gourara. Elles sont localisées dans des cuvettes au pied du plateau de Tadmait. Ses palmeraies renferment 300 000 Palmiers organisés en 28 oasis et sont irriguées à partir de 125 foggaras qui atteignent la nappe du continental ; des puits artésiens renforcent ces débits dans la partie orientale. Cette région de sédentaires visitée par les caravanes touareg est une étape importante sur la grande voie de circulation qui suit la dorsale méridienne; elle gravite autour d'In Salah. A 10 km à l'est se trouve un gisement de bois pétrifié (anciens arbres silicifiés dont les troncs atteignent un diamètre de 1m. Ces vestiges remontent à l'ère secondaire).

Paysage culturel d'Azougui

Property names are listed in the language in which they have been submitted by the State Party.

 Mauritania (Arab States)

Date of Submission: 14/06/2001
Criteria: (iii)(iv)(v)(vi)
Category: Cultural
Submitted by: Min. de la Culture et de l'Orientation Islamique Institut Mauritanien de Recherche Scientifique
Coordinates: Adrar (environ 450 km au nord de Nouakchott)
Ref.: 1545

Description

Le paysage culturel d'Azougui se compose de plusieurs structures culturelles dont l'existence est étroitement liée au milieu, et ce dernier est également soit une production culturelle soit un phénomène naturel qui porte maintenant les empreintes de toutes les valeurs culturelles qu'il abrite. Les composantes essentielles de ce paysage sont: L'Oasis L'apparition du phénomène des Oasis est étroitement lié à la création d'Azougui, dont les vestiges témoignent de ce passé florissant, dans un milieu de plus en plus désertique n'acceptant plus les autres formes d'agriculture. Cette activité économique est devenue rapidement une forme culturelle de la vie quotidienne des populations ; ces dernières ont créé autour de l'oasis l'essentiel de leur mythes et légendes qu'ils continuent d'enraciner dans leur mémoire collective et de vivre sous forme de festivités liées à la saison annuelle des dattes. Cette palmeraie, la plus ancienne de la région, compte maintenant plus de vingt mille palmiers et conserve encore le système traditionnel de canalisation et d'exploitation. Ce dernier constitue un véritable métier traditionnel qui risque de disparaître sous l'effet de la modernisation. Le site archéologique Le site archéologique d'Azougui : Première capitale des Almoravides, c'est une forteresse construite en pierre sèche comportant un mur d'enceinte et plusieurs concessions. Cette

forteresse a été agrandie au fil des temps, ce qui se justifie par l'urbanisation à l'intérieur du mur de l'enceinte sur un périmètre de plusieurs kilomètres. Le site a été signalé en 1068 par El Bekry et plusieurs autres chroniqueurs arabes l'ont mentionné, nous citons à titre d'exemple Ibn Said, El Kalakshandy et Ibn Khaldoun. Le Mouvement almoravide est une formation politique très importante qui naquit au sein des tribus Sanhaja de Lemtouna et Guedala en Adrar Mauritanien, sous l'autorité d'un chef spirituel d'une rigueur religieuse extraordinaire, Abdullah Ibn Yassin. Ce mouvement a pu unifier l'Afrique occidentale, le Maghreb et la Péninsule Ibérique pendant plusieurs siècles, après avoir investis l'Empire du Ghana, les Idrissides et le royaume de Bourghouata. En 1860, Azougui a été reconnu par Vincent et en 1922 Modat le visite mais c'était TH. Monod (1948) qui a établi un premier plan du site qui sera détaillé par Mauny plus tard. Les fouilles du site commencèrent en 1979 et se poursuivent actuellement, permettant ainsi de dégager plusieurs concessions et le mur d'enceinte. Les objets archéologiques exhumés fournissent une information éloquent sur le rôle que jouait le site dans le commerce transsaharien à travers la céramique et le verre, tous importés d'horizons différents, notamment le Maghreb, la Péninsule Ibérique et le proche Orient. En outre la tradition orale fournit des témoignages cohérents et concordants sur le rôle de l'Imam El Mejdoub, personnalité mythique et religieuse d'envergure et son adepte l'Imam El Hadramy El Morady dont la tombe se situe au coeur du site et dont l'oeuvre manuscrite « El Ichara-Vy Tadbiri El Imara » fut la première en politique dans la région. La falaise est, en effet, un élément naturel important qui a favorisé l'installation humaine dans ce paysage. Elle forme un îlot quasi fermé dont les passages sont contrôlables, permettant ainsi aux populations de se maintenir à l'abri des invasions éventuelles, phénomène très répandu dans l'histoire de la région. Ce milieu fermé a pu être prospère à la vie humaine grâce à la sécurité qu'assure la falaise et à l'oued fertile qui l'entoure et qui traverse le paysage en question.

Bigo bya Mugenyi (Archaeological Earthworks)

Property names are listed in the language in which they have been submitted by the State Party.

 Uganda (Africa)

Date of Submission:	10/09/1997
Criteria:	(i)(ii)(iii)(vi)
Category:	Cultural
Submitted by:	Department of Antiquities and Museums
Coordinates:	Ntusi sub-county and County, Sembabule District Lat. 0°09' N ; Long. 31°15' E
Ref.:	911

Themes

- Cultural landscapes

Description

Bigo bya Mugyenyi is 10 sq. kms series of archaeological earthworks dating to between the 14th and 16th centuries A.D. There is an outer trench system which runs around the ridge and joins the Katonga river banks on the north and south (see plan I attached). The inner trench system is composed of four enclosures which open into each other (see plan II attached). Bigo bya Mugyenyi earthworks is associated in oral traditions with legendary Bacwezi, a two-reigns dynasty which was short lived. These were Ndahura and Wamala. The oral traditions also associate the Bacwezi with introduction of long horn cattle which came to dominate the economy of the Great Lakes region.

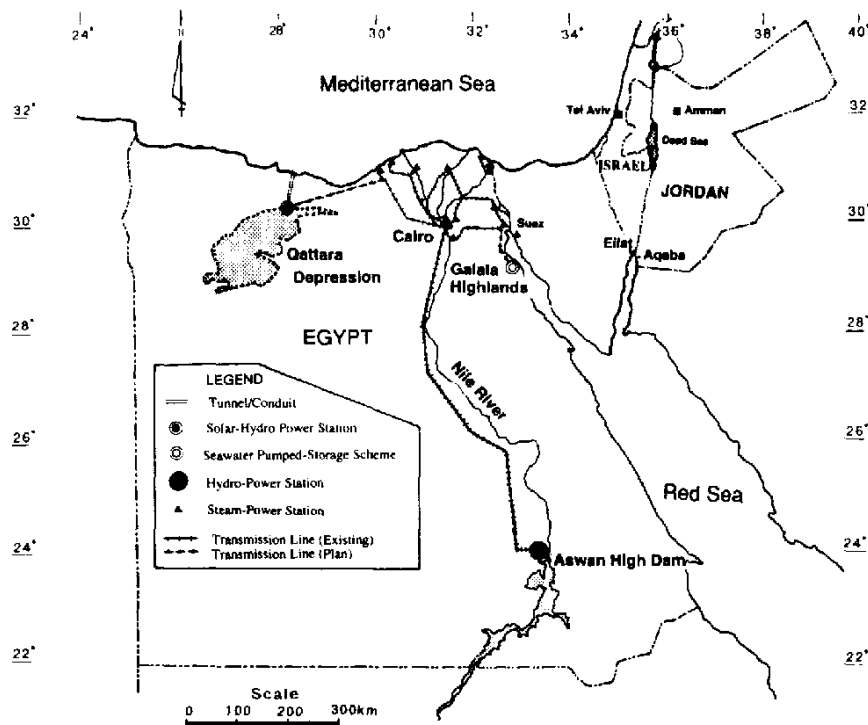
Natural Landscapes in North Africa

By
Samir I. GHABBOUR
 &
Eman GHONEIM

THE SITES

- QATTARA DEPRESSION
-
- GREAT SAND SEA
-
- WADI SANNOUR CAVE
-
- GEBEL QATRANI
-
- IMPACT CRATERS

QATTARA DEPRESSION



Location

The Qattara Depression in the northern part of the Western Desert is the largest natural closed depression of the Eastern Sahara. It is a region where salt weathering appears to be particularly effective. In spite of earlier research in the 1940's and 1950's, the origin of this Depression is still a geological puzzle.

Second World's deepest depression

Name	Location	Lowest Point (m)	Area below sea level (km ²)
Dead Sea	Palestine - Jordan	-401	3,800
Qattara	Egypt-56	-133	44,000

DESCRIPTION

- Towards the south and east the floor of the Depression rises gradually from 60 mbsl to the general desert level of 200 masl again. The Depression has an area of some 18,130 to 19,500 sq. km and an average depth of 60 m below sea level (bsl); the lowest point, at the SW part, being 134 mbsl. The Depression is estimated to have an excavated volume of 3200 cu. Km.

ORIGIN

A common origin by wind deflation to a base level controlled by the ground water table, is the generally accepted explanation. Other explanations include solution, mass-wasting followed by wind deflation, or that the depression was originally excavated as a stream valley, to be subsequently modified by karstic activity, and was further deepened and extended by mass-wasting, deflation, and fluvial processes.

ALSO

It has also been suggested that the Depression is of structural control origin. The Qattara Depression forms one of the most significant geomorphological features of the NW desert of Egypt. It is a closed inland basin bounded from the north and west by steep escarpments, with an average elevation of 200 masl.

Within the Depression

Within the Depression, cones, towers, mushrooms, and plateau-like hills, ranging in height from 5 to 30 m, are common, especially near the western scarp. Sinkholes and caves are also common in the northern Diffa Plateau, separating the Depression from the Mediterranean frontal plain.

Northern and Western Escarpments

- The northern and western escarpments are dominated by large mass-wasted blocks. The Depression is excavated into northerly dipping

Miocene and Eocene rocks. Sandy and clayey layers of the Lower Miocene Moghra Formation form its bottom and surroundings, where the elevation ranges from 50 to 80 m bsl. In some areas, the Moghra sediments occur as small plateaus and dissected hills within the sabkhas. Middle Eocene calcareous sediments of the Mokattam Formation form the southern scarp of the Depression.

FORMATIONS Within

- The Upper Eocene-Oligocene Dab'aa Formation underlies the SW part of the Depression, including all areas below 100 m bsl. It consists of black shales and contains abundant gypsum veins and shark teeth and remains. The northern steep escarpment is associated with the Middle Miocene calcareous sediments of the Marmarica Formation, with a thickness of a few meters at the rim of the Depression, increasing to several hundred meters at the coast, where Pliocene carbonate rocks are exposed.

DEPOSITS

- Over large areas of the floor of the Depression, the bedrock is covered by younger deposits including wind-blown sand, sabkhas, and Quaternary evaporite sediments. The sands that cover most of the Depression are associated with moist sand sheets with adhesion ripples at the surface in the NE part, and large parallel longitudinal lunette, seif, and complex dune belts in the southern part. The dune axes trend north-north-west-south-southeast, parallel with the prevailing wind direction.

DUNES

- The dunes are composed mostly of quartz sand mixed with minor carbonate, mud, shale, and gypsum fragments. Near the SW part of the Depression, the dunes are black, named El-Ghoorood El-Sood (= black dunes), due to their high content of black shale fragments, derived from the Dab'aa Formation. Since the Qattara Depression forms the deepest point in the Western Desert, groundwater flow in all aquifers bordering the area is consequently directed to this final base level.

GROUNDWATER

- Most of the groundwater comes from the Moghra Aquifer system, recharged from four sources: the Nubia Sandstone aquifer in the south, Nile water in the east, saline water from the Mediterranean Sea to the north, and rain water. In contrast, in the western part of the Depression, groundwater seepage is recharged from Nubian and Upper Cretaceous-Eocene aquifer systems. The near-surface groundwater ranges in salinity (mostly sodium chloride) from 3.3 g/l around the Moghra Lake, to 38.4 g/l at the center, to about 300 g/l in the sabkha area to the west.

An exception

An exception to this east-west increase in salinity is found around fresh water springs such as Bir (= well) Qifar area. This increase in salinity from 43.6 to 421.0 g/l, has been attributed to the leaching of salts by surface water and groundwater, and to excessive evaporation of groundwater at or slightly below the surface in the lowest part of the depression.

The Great Sand Sea

- The Great Sand Sea is one of the largest unbroken mass of sand dune areas of the world, and home to not one living soul.
- It was first discovered by the German explorer Gerhard Rohlfs in 1875. It is in fact the third largest. It is a desert in its own right, spanning 650 km between Siwa Oasis in the north and the Gilf Kebir Plateau in the south.

Description

Its average width is about 300 km from the Libyan border to the west and Farafra Oasis Depression to the east. Parallel dune ridges run north-south for hundreds of kilometers. There is not a single water point in the whole area. Totalling the size of England, the sand accumulation varies in shape, colour, and geologic origin from one place to another. In the northern region of the dunes, south of Siwa, there is minor greenery, with calcareous outcroppings that reveal the marine origin of the strata. Further south and towards the central parts of the dune field, is a land of pristine sands with undulating whaleback dunes and minor crest dunes.

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The Enigmatic Silica Glass

- On the eastern edge lie the Nummulite scarp and the only water source, Ain Dalla. The southern region of the Great Sand Sea is a mysterious place dotted with legends of lost oases, disappearing armies, and secret caravan routes. In the west of this region lies the enigmatic silica glass – ultra pure glass, 98% silica - discovered by P. Clayton in 1932 and believed by some scientists to be the result of a meteoritic impact.

Another theory

Another theory has it that these pieces are remains of a dried up lake. The silica field is located in the Great Sand Sea around 25° 17' N and 25° 33' E, and about 50 km from the Libyan border, between two dune ridges 200 m high. It is the world's only known field of silica glass. Some chunks weigh 5 kgm, half-buried like icebergs in the reddish sand. Some lying windblown on the desert floor, scoured by millennia of sand storms, into lustrous prisms of glass.

Not a New Discovery !

- Prehistoric Man had discovered this Libyan Desert Glass (LDG) and carved knives and other sharp-edged tools from it. The Ancient Egyptians carved a scarab from it, deposited in Tutankhamon's tomb. They are the purest glass ever found.

HOW MUCH?

Over a thousand tons of it are strewn across hundreds of kilometers of bleak desert. Some of the chunks weigh 26 kilograms, but most exist in smaller, angular pieces looking like sherds left when a giant green bottle is smashed by colossal forces. Pure as it is, LDG does contain tiny bubbles, white wisps, and inky black swirls. The whitish inclusions consist of refractory minerals, such as cristobalite. The ink-like swirls, are rich in iridium, diagnostic of an extra-terrestrial impact – meteorite or comet.

The Iridium Problem!

- Iridium leads to the heart of the LDG problem. At least three “minor” problems bedevil the generally acceptable impact theory:
- (1) The surface of the Great Sand Sea shows no sign of a giant crater. Neither do microwave probes deep into the sand by satellite radar.
- (2) LDG seems too pure to be derived from a messy cosmic collision. Known impact craters, such as that at Wabar, Saudi Arabia, are littered with bits of iron and other meteorite debris. Not so at the LDG site.
- (3) LDG is concentrated in two areas. One is oval-shaped, the other circular, 6 km wide and 21 km in diameter. The wide ring's center is devoid of LDG.

Could there have been a “soft” projectile impact?

- The detonation of a meteorite, perhaps 30 meters in diameter, 10 km or so above the Great Sand Sea?
- The blast of hot air might have melted the sand beneath. Such a crater-less impact is thought to have occurred in the 1908 Tunguska Event in Siberia.

Another theory

Another theory has a meteorite glancing off the desert surface, leaving a glassy crust and a shallow crater that was soon filled in. But if there are two known fields of LDG, where there two meteorites in tandem. How much

more LDG lurks beneath those sands (G. Wright 1999). Through this region the Senussi used to travel between Kufra Oasis in southern Libya to Dakhla Oasis in southern Egypt. The area hides underground a huge fossil water reservoir joining Egypt, Libya, the Sudan, and Chad.

Wadi Sannur Cave

Wadi Sannur Cave was discovered during blasting for alabaster in the famous alabaster quarries, 70 kms south- east of the city of Beni Suef, in the Eastern Desert of Egypt. These quarries produce some of the finest alabaster material the world has ever known, and it is from these quarries that the Ancient Egyptians fabricated the wonderful alabaster ware, like those found in King Tutankhamon's tomb. The Wadi Sannur Cave dates back to the Middle Eocene, 40-45 million years ago.


Stalactites and Stalagmitic Formations

- It contains structures known as stalactites and stalagmitic formations, in a fantastic presentation. It is the largest natural subterranean chamber known in Egypt, with a characteristic crescent shape that may be unique in the world. Such caves are extremely rare in arid environments and are therefore useful for understanding the geological history of these regions and the evolution of their palaeoclimatology, their geohydrology, their geomorphology, and their biota.

Gebel Qatrani Area, Lake Qaroun Nature Reserve

See photo in Photo Album

Property names are listed in the language in which they have been submitted by the State Party.

	 Egypt (Arab States)
Date of Submission:	10/02/2003
Category:	Mixed
Submitted by:	Egyptian National Commission for UNESCO 17 Ismail Abo El Fotouh St. - Dokki, Cairo
Coordinates:	Western Desert, Fayoum Governorate
Ref.:	1797

Description


The fossil ancestors of monkeys (Proconsul, elephants (Moeritherium, Arsinoetherium, etc.), and other terrestrial and marshland mammals were found in other quarries near the Fayoum Depression, particularly in Gabal Qatrani. The Fayoum Depression was inhabited by Neolithic Man whose sites reveal a remarkable stage in the evolution of the use of the stone tool

artefacts. King Amenemhat of the 12th Dynasty undertook huge engineering works, mainly the construction of a barrage at the entrance of the Fayoum Depression from the Nile, the Al-Lahoon Barrage (not functioning at present), to regulate the flow of flood waters into and out of the Depression. At high flood, water entered into the Depression and irrigated it. It also filled in the farthest and deepest part in the north of the Depression and formed Lake Moeris, the ancient ancestor of today's Lake Qaroun. At low flood season, water flowed back from the Depression into the Nile and helped to irrigate the Delta. The basalt quarry of Widan el-Faras and the Umm es-Sawan gypsum quarries (located 20 km northeast of Widan el-Faras, both north of Lake Qaroun) are ancient quarry sites that were exploited from at least the 3rd millennium BC (ca. 3000 BC). The basalt from Widan el-Faras was principally used to pave the floors of the Old Kingdom (4th and 5th Dynasties) mortuary temples at Giza and Abu Sir. The gypsum from Umm es-Sawan was used to manufacture stone vessels associated with elite burials from as early as the Predynastic period (4th millennium BC). Both these quarries are exceptional archaeological sites as they contain rare artefactual and settlement evidence associated with a period in Egyptian antiquity that is greatly under-represented in the archaeological record. A description of and explanation of the basalt quarries, settlement and ancient quarry road at Widan el-Faras will appear in the forthcoming *Journal of Egyptian Archaeology* (vol. 88, 2002). It was clear from this work that the quarry holds enormous potential for future research into ancient quarrying activities and the lives of the non-élite in the desert north of Fayoum, in antiquity. In particular, due to the rare ancient quarry road this can allow for insights into the enormous feats of mass stone transportation during the pyramid age and its connection with ancient Lake Moeris.

Oasis de Gabès

See photo in Photo Album

Property names are listed in the language in which they have been submitted by the State Party.

	 Tunisia (Arab States)
Date of Submission:	28/05/2008
Criteria:	(iv)(vii)(x)
Category:	Mixed
Submitted by:	Ministère de l'Environnement et du Développement Durable
State, Province or Region:	Gouvernorat de Gabès
Coordinates:	N33 51.971 E10 2.979
Ref.:	5386
Description	

L'oasis de la région de Gabès est une ancienne oasis traditionnelle littorale qui doit son existence à trois ressources naturelles et patrimoniales: (i) Un sol, généralement sablonneux, qui à travers du temps a acquis sa caractéristique propre suite à l'utilisation des engrais naturels. (ii) Une eau jaillissante aux endroits où les nappes profondes affleuraient à la surface. (iii) un palmier dattier qui forme leur parasol qui crée leur climat exceptionnel. Ces trois ressources vitales ont permis la création d'un écosystème unique et originale, situé dans un désert environnant. L'attraction qu'exerce l'eau et la verdure confère à cet espace les caractéristiques d'un refuge et d'un lieu de vie pour des nombreuses espèces végétales et animales. Les hommes ont contribué, grâce à une relation d'équilibre et à un système d'irrigation collective, à l'existence et à la pérennité de ces agro-écosystèmes oasiens. Cet ensemble des paramètres (ressources naturelles, végétales, animales, et humaines) constitue ainsi les piliers interdépendants du système oasien. Les composantes biologiques du système oasien : L'oasis se distingue par son microclimat qui permet l'existence d'une importante diversité végétale, elle-même génératrice d'une grande diversité animale. En effet la présence du palmier dattier rend possible l'existence d'autres cultures en jouant le rôle de brise vent, en fournissant de l'ombre et en diminuant le degré de sécheresse de l'air. L'oasis est donc un milieu riche en biodiversité végétale et animale. En outre, dans la région de Gabes, caractérisée par son climat aride, les faibles ressources en eau obligeait à une occupation intensive des parcelles qui est matérialisée par un système de culture à trois étages: palmiers, arbres fruitiers et cultures annuelles ou pluriannuelles. De plus, les impératifs d'une économie vivrière imposaient la diversification des cultures et des productions agricoles, ce qui explique la grande diversité de la flore oasienne.

La flore oasienne: La flore se trouve à la base du processus de production biologique, une meilleure connaissance des ressources végétales permet la préservation du patrimoine génétique local global et sa réhabilitation. - Le palmier dattier: L'oasis de Gabès était connue par l'extrême richesse des variétés des palmiers. Le palmier dattier est considéré comme pilier de l'écosystème oasien. 45 variétés ont été inventoriées dans l'oasis de Gabès. Il s'agit pour la plupart de variétés communes. Il existe cependant plusieurs autres variétés moins répandues. - Les arbres fruitiers: L'homme a intégré dans la palmeraie la culture à étage afin d'optimiser la rentabilité. Ainsi, une multitude d'espèce d'arbres fruitiers poussent à l'ombre des palmiers dattiers et constituent le deuxième étage de ce système de culture. Parmi elles, les principales sont représentées par les grenadiers, les abricotiers et les figuiers. Il y a d'autres espèces qui sont moins cultivées, mais qui sont connues depuis l'antiquité, comme les pommiers, les vînes, les pêchers et les mûriers. - Les cultures de l'étage inférieur: L'oasis de Gabès est très riche en diverses cultures et plantes fourragères. En effet, depuis l'antiquité cette oasis s'est distinguée par son culture maraîchère (carottes, navets, oignons, . . .) ce qui permettait une certaine autosuffisance en ces produits et répondait à une règle première: produire pour la consommation locale. L'oasis de Gabes s'est également distinguée par la culture du tabac mais aussi par celle de la luzerne, connue par sa productivité très élevée, dans ce climat oasien. Cependant, le manque de données (rareté voire même absence des études et des enquêtes) ne permet pas pour l'instant d'évaluer l'importance réelle de la diversité de ce patrimoine. Les plantes naturelles: Cantonnée aux zones arides, l'espace

oasien a constitué depuis toujours un refuge des nombreuses espèces végétale, annuelles ou pérennes, qui reculaient devant l'aridification du climat. Cependant, le manque flagrant de données ne permet pas d'avoir une idée précise sur l'importance de la diversité des plantes naturelles. La faune: Dès l'antiquité, l'oasis a joué le rôle de refuge et de lieu de survie ou de passage pour une multitude d'espèces et de populations animales qui n'auraient pas pu faire face aux rudes conditions environnementales de ces régions arides. L'eau, l'ombre et les multiples ressources nourricières offertes par l'oasis ainsi permis à certaines espèces animales de survivre et de se propager et à d'autres (oiseaux migrateurs) de se reposer, de se restaurer, de récupérer leur force avant de continuer leur route vers les lieux de migration. L'oasis constitue en fait les lieux de repos pour de nombreuses espèces d'oiseaux migrateurs. 1. La faune domestique: Dans l'oasis, l'agriculture était étroitement liée à l'élevage ce qui contribuait, en grande partie, au maintien de l'équilibre de l'écosystème oasien. Ainsi, l'homme a, dès l'Antiquité, sélectionné et domestiqué des espèces animales qui lui permettaient d'avoir une autonomie dans ces îlots de vie. Les espèces traditionnellement domestiquées sont les ovins, les caprins, les ânes, les mules, les chevaux, les lapins et les poules. 2. La faune sauvage: Avec son eau, son ombre et ses multiples ressources nourricières, l'oasis représente un lieu de vie et de passage (oiseaux migrateurs) privilégié pour une multitude d'espèces sauvages qui n'auraient pas pu perdurer dans cette région aux conditions rudes. a- La faune aquatique: La faune aquatique dulcicole de l'oasis semble réduite et n'est représentée que par des Protozoaires, quelques Invertébrés et Vertébrés mais l'absence de données ne nous permet pas d'identifier véritablement les espèces et connaître leur nombre et leur répartition et sein de l'oasis. b- La faune terrestre: La faune terrestre de l'oasis est plus riche et est représentée par plusieurs groupes: Nématodes, Annélides, Mollusques, Aranéides, Scorpionides, Myriapodes, Insectes, Reptiles, Oiseaux, Mammifères. Cependant, l'absence de recherches spécifiques et d'études exhaustives ne permet pas pour le moment de connaître l'importance de la diversité de cette faune et le rôle biologique et écologique de ses représentants et son impact sur les autres composantes biologiques de l'écosystème. L'oasis: systèmes et paysages intimement liés à l'action de l'homme Les oasis en Tunisie constituent une forme très élaborée d'irrigation collective et dont la conception est très ancienne. En effet l'ensemble de ces systèmes d'irrigation est basé sur la mise en commun et le partage des eaux des différentes sources entre les parcelles par un réseau complexe de canaux d'irrigation. C'est ce système d'irrigation collectif et l'organisation des cultures en trois étages qui ont permis à ces paysages caractéristiques des oasis tunisiennes de perdurer à travers les siècles jusqu'à aujourd'hui . L'oasis de Gabès est en effet restée jusqu'au début des années soixante dix comme l'exemple type de l'oasis littorale avec son système de culture diversifié associant une variété de culture dans un système d'étages. Le contexte économique régional est depuis marqué par la croissance rapide des activités urbaines. L'agriculture a toujours été une activité fondamentale à Gabès. Elle était, pendant les périodes de calme et d'ouverture, une source de richesse et un facteur de développement du commerce et de l'artisanat, et pendant les périodes de guerres et d'insécurité, une activité refuge et un facteur de survie de la population. L'agriculture, en effet, était un sous-système complexe qui

ne pouvait être dissocié de la ville et de sa région. Elle était une activité traditionnelle très riche et très variée, intégrant à la fois l'élevage et les cultures, les cultures arbustives et les cultures au sol, les cultures vivrières et les cultures industrielles et, enfin, les cultures spéculatives et les cultures d'autoconsommation. Le lien entre l'agriculture oasienne et la ville était d'autant plus étroit qu'il a permis l'emploi d'une fraction importante de la population occupée. Et favorisé l'émergence et le développement de beaucoup d'autres activités (commerce de fruits et légumes frais, commerce de légumes déchés et des céréales, commerce de la luzerne et des fourrages secs, commerce du henné, commerces des semences et des engrais, artisanat de la sparterie et de la vannerie, forge et menuiserie traditionnelles, etc..). Plan de gestion de l'oasis de Gabès Pour la conservation de la richesse biologique, et l'optimisation des différents types usages de cette biodiversité (agriculture, irrigation, pêche, tourisme,...), un plan de gestion est actuellement en cours d'élaboration dans le cadre du Projet GEF/Banque Mondiale « Protection des ressources marines et côtières du Golfe de Gabès ». La conception d'un tel plan prend appui sur les préceptes fondamentaux de la gestion intégrée des zones côtières (GIZC) dont l'objectif global vise à établir les conditions d'équilibre durable entre l'utilisation rationnelle des espaces et des ressources naturelles, comprenant leur protection, et les impératifs du développement économique et social qui seront dans ce cas orientés vers la promotion des activités liées à l'agriculture, la pêche et des activités éco-touristiques. La mise en place d'un tel processus sur cet espace impliquera, dès le début de l'élaboration du plan de gestion, l'ensemble des parties prenantes qu'il s'agira de rassembler et d'engager dans une démarche collective et concertée au sein d'une structure souple et réactive. Ce plan de gestion définira un modèle de développement durable et les modalités de protection, d'utilisation et de gestion de ce site, y compris des ressources naturelles tenant compte des aspects socio-économiques de la région.

Justification of Outstanding Universal Value

L'oasis de Gabès est l'unique oasis littorale de la méditerranée et l'un des derniers exemples d'oasis de ce type dans le monde. Elle constitue aussi un refuge pour une faune riche en petits mammifères, reptiles, mollusques et insectes, et pour une faune associée, peu connue encore, composée pour l'essentiel d'oiseaux transsahariens, migrateurs et hivernants d'intérêt international.


En plus de la proximité de la mer, l'oasis de Gabès avec ses étages de cultures (strate supérieure constituée de palmier dattier, strate moyenne constituée de différents arbres fruitiers et strate basse composée de différentes plantes maraîchères, industrielles et fourragères) constitue un microclimat favorable au développement d'une flore très diversifiée, et un paysage exceptionnel.

C'est également un paysage exceptionnel, intimement lié à l'action de l'homme qui par l'utilisation judicieuse de l'espace (cultures en étages) mais aussi raisonnée de l'eau (système de partage des eaux) a permis depuis des siècles de favoriser l'émergence d'espaces relativement grands de végétation luxuriante dans des régions arides qui ont fixé les populations alentours. « *Gabès est une ville considérable, bien peuplée, entourée d'un véritable bois*

de vergers qui se succèdent sans interruption et qui produisent des fruits en abondance, de palmiers, d'oliviers, ... » Al Idrissi (vers 1100).

Southern and Smaller Oases, the Western Desert

Property names are listed in the language in which they have been submitted by the State Party.

	 Egypt (Arab States)
Date of Submission:	12/06/2003
Criteria:	(vii)(viii)(ix)(x)
Category:	Natural
Submitted by:	Egyptian National UNESCO Commission Egyptian National MAB Committee
Coordinates:	Western Desert: New Valley Governorate, Matrouh Governorate and Beheira Governorate 30°17' N / 30°02' E - 23°10' N / 31°25' E
Ref.:	1808

Description

Site # 1: Kharga Oasis

See photo in Photo Album

Kharga Oasis occupies a depression in the southern part of the Western Desert of Egypt, extending for some 180 x 15-30 km in a north-south direction, at about 200 km west of the Nile. The lowest point in the Oasis is more or less at sea level, while the highest is at 400 masl. The natural vegetation, as well as the naturalized species and the cultivated plants in Kharga and Dakhla Oases, seem to be more or less uniform, and to deal with each of them separately would involve an overlap which may approach a mere repetition. However, the peculiarities of each Oasis will be dealt with apart. Seven vegetation types are recognized in Kharga and Dakhla, described here mainly after Zahran and Willis (1992). The scientific names of plants throughout this listing are updated after Boulos (1995, 1999, 2000, and 2002).

Site# 2: Dakhla Oasis

See photo in Photo Album

Dakhla Oasis lies at about 120 km west of Kharga Oasis, extending for some 55 x 10-20 km in a northwest-southeast direction, at an altitude of 100-400 masl. 1 - (a) Aquatic Vascular Plants *Utricularia gibba* and *Potamogeton pectinatus* in freshwater (wells, reservoirs), *Ruppia maritima* and *Zannichellia palustris*, in brackish waters of shallow ponds, often associated with *P. pectinatus*, *Najas graminea* and *N. minor*, in shallow irrigation canals, *Lemna*

gibba and *L. aequinoctialis*, free floating in most water bodies. 1 – (b) Aquatic Green Algae *Nitella* spp. and *Chara* spp., submerged green algae, often forming thick masses at the bottom of the water body and are attached to the mud by rhizoids, mainly in drains and stagnant waters. 2 – Reed Swamp Vegetation This vegetation type is most pronounced around ditches, rice fields, wells, and in drains and pools. The most characteristic species of this type of vegetation are: *Typha domingensis* and *Phragmites australis*, usually associated with *Cyperus rotundus*, *C. laevigatus* and *Pycnus mundtii*. Other associates which may occur on the fringes include: *Panicum repens*, *Desmostachya bipinnata*, *Conyza bonariensis*, *Alhagi graecorum*, *Ambrosia maritima* and *Prosopis farcta*. 3 – Halophytic Vegetation Two halophytic vegetation types may be recognized in the salt marshes: a. Wet salt marshes: Here the dominant species are *Cyperus laevigatus*, *Juncus acutus*, *Suaeda aegyptiaca* and *S. monoica*. b. Dry salt marshes: The dominant species are *Cressa cretica*, *Aeluropus lagopoides*, *Imperata cylindrica* and *Tamarix nilotica*. 4 – Psammophytic Vegetation This vegetation type occupies flat expanses of wind-drifted sand (the sand plains) and sand dunes, at different stages of development. The vegetation of the plains is usually richer in plant cover. The dominant species is *Alhagi graecorum*, associated with *Stipagrostis scoparia*, *Calotropis procera*, *Aerva javanica*, *Tamarix nilotica*, *Hyoscyamus muticus*, *Suaeda vermiculata*, *Reaumuria hirtella*, and *Zygophyllum album*. On the older stabilized sand dunes, *Tamarix nilotica* and *Alhagi graecorum* grow in abundance and may cover the summits and slopes of the dunes. In Baris town, at the southernmost tip of the Depression, *Balanites aegyptiaca* (heglig, or the desert dates), and *Hyphaene thebaica* (dom palm) trees are seen in thickets among the dunes. 5 - Cultivated Land Several hundred deep artesian wells in Kharga and Dakhla provide the only source of water for irrigation. Some wells date back to the Pharaonic era, some to the Roman era, but most date from 1959 onwards, using modern technologies. Most wells are over-flowing, leading to the formation of salt marshes and abandoning the land to other areas. The date palm is the main cash crop of the two Oases, besides olive and other fruit trees. The date palm does not provide only dates, but also fibres, leaves, trunks, used locally or exported, for making basket, ropes, mats, sandals, furniture, building material, agricultural tools, and numerous other items. It is a culture based on and supported by the date palm. Some vegetables are also cultivated for local consumption. Rice (*Oryza sativa*) is cultivated on a small scale, besides some other cereals such as millet (*Pennisetum violaceum*) and sorghum or broom corn (*Sorghum bicolor*). Some other grasses are cultivated for fodder, such as Sudan grass (*Sorghum x drummondii*). No wheat and barley are cultivated due to soil salinity. 6 – Waste Land In the vicinity of cultivated ground, vast areas are usually abandoned and neglected. The major elements of this habitat type are: *Zygophyllum coccineum*, *Tamarix nilotica*, and *Alhagi graecorum*, which reflect the rather saline soil. Among the associated species are *Hyoscyamus muticus*, *Sporobolus spicatus*, *Fagonia arabica*, *Cyperus laevigatus*, *Aeluropus lagopoides*, and *Polypogon monspeliensis*. 7 – Xerophytic Vegetation This type occupies the desert ecosystem, mainly around the Oases, and is particularly part of the Western Desert flora, with an extensive list of vascular desert plants, which is outside the scope of this brief description. Endemic Species Compared to other areas in Egyptian deserts,

there may be few endemic species restricted to Kharga and Dakhla Oases. They are: *Ducrosia ismailis* Asch. and *Pimpinella schweinfurthii* Asch., both in the Family Umbelliferae, in Kharga. *Melilotus serratifolius* Täckholm & Boulos (Leguminosae), is endemic to Dakhla Oasis. Rare Species *Rhazya stricta* Decne. (Apocynaceae), is known in Egypt only from Kharga Oasis. Its occurrence in Kharga represents the westernmost locality in its geographical range of distribution, which extends eastwards to Arabia, Iraq, Iran, Afghanistan, Pakistan, and India, and southwards into Sudan. The above three endemic species, as well as the rare *Rhazya*, are known only from one or very few collections, and are therefore to be classified as threatened species. Rare Animals The endemic oligochaete *Nannodrilus staudei*, discovered in the Nile region and described by Michaelsen in 1887, was discovered in 1969 by S. Ghabbour from Ain Khosh, in the south of the Kharga Oasis.

Site # 3: Kurkur and Dungul Oases

See photo in Photo Album

Kurkur and Dungul Oases are small uninhabited oases within spectacular escarpments from the Nubian Tableland to the Lower Nubian Plain in the southern part of the Western Desert. They lie at the edge of the Sinn El-Kaddab Plateau. The distance between the two relict Oases is about 60 km. Kurkur Oasis is considerably larger than Dungul, which consists of two parts: Dungul Oasis proper and Dineigil Oasis. Dineigil is located at the very edge of the escarpment in a high position while Dungul is in a lower position in the Wadi Dungul. Both Oases receive their water as a result of the blockage of drainage lines of an artesian aquifer. The two Oases and the area between comprise a great variety of landscape features and habitat diversity. Of special importance is the fascinating white limestone erosion-bounded Dineigil and Dungul Oases. In spite of almost rainlessness, these two Oases are rich in biodiversity. Palm groves (three species) and extensive growth of *Acacia* groves form the main framework of the perennial plant cover. The highlight of the floristic characteristics is the occurrence of the long forgotten palm *Medemia argun*, which was abundant in Ancient Egyptian times but is now found only in Dungul and in another spot in northern Sudan. It can thus be considered in modern times to be endemic for the Nubian Desert, and also threatened with extinction, although some young individuals are still growing there. The fauna of this area needs further studies. There is some evidence that these Oases are the very last refuges of viable populations of the highly threatened dorcas gazelle *Gazella dorcas*, and maybe also the highly vulnerable and extremely rare Sand Cat *Felis margarita*, in the Western Desert of Egypt. The two Oases also contain many important Neolithic sites which are so far well preserved.

Site # 4: Moghra Oasis

See photo in Photo Album

Moghra Oasis is a small uninhabited oasis, situated on the north-eastern edge of the Qattara Depression, bordered by a brackish-water lake, constituting the lowermost part of the Oasis (-38 m), occupying an area of about 4 sq. km. Salt marshes border the lake in some of its parts. Sand formations are

dominant in the western and southern edges of the lake, either in the form of dunes close to the lake, or as deep sand sheets away from it. The plant cover is a combination of reed swamps, salt marshes, and sand formation vegetation. The saline flats are dominated by *Juncus rigidus* between the lake and the sand formations, associated with *Phragmites australis*, *Tamarix nilotica*, *Limbarda crithmoides*, *Nitraria retusa*, *Cressa cretica*, and *Arthrocnemum macrostachyum*. The sand formations are dominated by *Zygophyllum album*, *Nitraria retusa*, *Tamarix nilotica*, *Alhagi graecorum*, and *Sporobolus spicatus*. These are associated with *Artemisia monosperma* and some neglected date palms appearing in groves of variable sizes.

Site # 5:

Wadi El-Natroun Depression

See photo in Photo Album

Wadi El-Natroun Depression is a narrow depression located in El-Beheira Governorate, in the Western Desert, west of the Nile Delta, approximately 110 km northwest of Cairo and 90 km south of Alexandria, in a NW-SE direction. It is an oasis rather than a “wadi”. The name wadi was gained for its longitudinal shape. It is about 23 m below sea level. It is fed by water reaching it by seepage from the Nile Delta. The inflow covers large parts of the slopes on the NE side of the lakes, giving rise to distinctive marshes on water-logged soil, encrusted with salt due to the high evaporation rate. In contrast to this landscape, the opposite shore on the SW side is almost devoid of a transition zone where it meets the desert. Except for Lake Al-Gaar, the lakes are known for their hypersaline water, due to the presence of high salt concentrations. This salt-laden underground water contains different salts due to its infiltration through different salt-containing strata. Tectonic forces played an important role in the formation of the Wadi El-Natroun Depression. Several fissures and faults resulted from these forces as easy passages for underground water which carries soluble components of the rocks underneath, leaving residual deposits on the surface, mainly of sodium carbonate (natron, hence the name Natroun). This natron was at the basis of the soap industry in Europe till the middle of the 19th century, when the method used by the Frenchman LeBlanc, who discovered how to produce it synthetically, became widespread. About 20 lakes are found in the central part of the Depression. These lakes differ in size as well as in seasonal permanence. They are disconnected by a wind blown sand barrier, but are believed to have been one continuous lake in the past. The small lakes dry up completely in summer due to evaporation. In winter, they are overflowed with water when inflow exceeds evaporation. The larger lakes, on the other hand, contain permanent water all year round, reaching a maximum extent in winter, but are much diminished in summer. The known permanent lakes in the Wadi El-Natroun Depression are about 10 in number. The origin of the underground water in Wadi El-Natroun is seepage from the Nile stream, due to its proximity and low level. Before the construction of the Aswan High Dam, the water level in the lakes of Wadi El-Natroun closely followed the water level rhythm of the Nile flood, with a time lag of 2-3 months. After that, it now follows the rhythm of the regulated water level of the Nile, as

water is periodically released from Lake Nasser in the south of Egypt, for purposes of irrigation or for hydro-power. Some of the principal lakes are:

- Lake Fasida: An oval-shaped lake about 8 km from the southern end of the Depression, with an area of about 1.5 sq. km, 21 m below sea level in its northern end. It completely dries up in summer. The bottom of this Lake is reddish, and the amount of natron it contains is very low, but it is surrounded by crusts of that salt.
- Lake Umm Risha: Of an area of about 2.9 sq. km, and 21.9 m below sea level. About two-thirds of it is dry in summer and there are thick deposits on its bottom. The amount of natron is limited and its water is reddish.
- Lake Al-Gaar: Area 1.9 sq. km, in the extreme north of the Depression and it doesn't dry up.
- Lake El-Zugm: Area 1.9 sq. km, in the center of the Depression, dries up in summer and has deep natron deposits.

There are two main ecosystems in Wadi Natroun: (1) Salt Marsh Depressions and (2) the Gravel Desert. These comprise: (a) reed swamp vegetation and (b) salt marsh vegetation, which is in turn divided into dry salt marsh vegetation and wet salt marsh vegetation, and (c) halfa vegetation. This differentiation is due to soil salinity and level of ground water. Depending on the relief, the following habitat conditions are recognized:

- Localities with the lowest relief have a continuous underground water supply, and predominating swamp conditions. These localities represent the typical reed habitat.
- Where the water table is shallow, the soil is darkish brown and very rich in organic matter. High evaporation and lack of rainfall lead to increased salinity. Under such conditions the wet salt marsh habitat is formed. Where the sandy soil is relatively dry but still saline and organic matter content is low, the habitat of dry salt marsh is formed.
- Halfa (*Imperata cylindrica*) grassland, the types of vegetation in this habitat are sand terraces or sand dunes.
- The gravel desert habitat, surrounding the Wadi Natroun Depression, is a part of the gravelly Western Desert landscape dissected by drainage runnels varying in size. Plants in this sand-gravel desert depend mainly on the amount of the scanty rainfall. A noticeable feature of this habitat is the mosaic pattern of the vegetation, suggesting that the plants are affected by several interacting factors, other than rainfall alone. Only 46 plant species were recorded in the Depression. Of these, 42 are perennials and only 4 annuals. They represent about 2.3% of the total flora of Egypt. The most striking observation is that the highest richness is reached in the dry salt marshes and the gravel desert, both habitats being characterized by strong heterogeneity of microsites. There are direct and indirect causes for species impoverishment in the Depression, related mainly to the ways in which Man has used natural resources through time. Continued uncontrolled wood-cutting, overgrazing, establishment of fish farms, rainfed farming for annual crops, and land reclamation for irrigated agriculture, have dominated the Depression for many centuries, but have become very intense in the last decades. The net result has been the reduction of vegetation cover and the impoverishment of the flora.
- The papyrus of the Ancient Egyptians, *Cyperus papyrus*, was rediscovered in 1968 there, and the Wadi Natroun is still the only place in Egypt where papyrus exists in a natural state. Individuals of this small population were tried to revive the papyrus paper industry in Egypt about 40 years ago, but they proved inadequate, and other taller individuals were brought from Lake Chad and southern Sudan and replanted on the Nile banks in Cairo. These new plantations are the basis of the now flourishing papyrus paper trade in

Egypt. As to animals, 173 vertebrates (mammals, birds, reptiles, and amphibians) have been recorded. Birds alone are 117 species. Most of them are passerine or winter visiting water birds, since the Depression is a link in the chain of water spots along their migration routes. *Cyperus laevigatus* dominates the wet salt marshes on the eastern shores of the lakes, creating one of the most characteristic and attractive habitats for water birds. It is important for Common Cranes. The most common birds are Shelduck, Great Snipe, Curlew, Little Stint, and Kittlitz's Plover, which may reach 1200 individuals in winter time. Such significant bird populations in Wadi Natroun are of considerable economic importance as they represent an attraction for eco-tourism. Birds play also an important role in food chains in this area. The bird fauna in Wadi Natroun is under stress due to hunting parties sport and trapping for trade, although most of these birds are under legal protection. The Marbled Teal, was a breeding bird in Wadi Natroun until 1912. Last observations of this species show that it is unlikely that it will breed again here. There are two bird species here that are included in the 1996 IUCN Red List of Threatened Animals, the Marbled Teal and the Great Snipe. The Graceful Warbler, Wadi Natroun form, is endemic here. Wadi El-Natroun has been designated one of Egypt's 34 Important Bird Areas. Mammal species are 31, reptiles 24, and only one amphibian. Hunting parties are common in the inland desert, for hares and foxes. Five of these mammals are listed on the 1996 IUCN Red List of Threatened Animals, one of which being the endemic Flower's shrew, *Crocidura floweri*. Efforts should be directed to protect the habitats of reptiles, particularly the Grass Loving Lizard, *Philochorus intermedius*, endemic and recorded only from Wadi Natroun. Wadi Natroun is notorious for being the endemic spot in which the liver fluke, *Fasciola*, which attacks sheep and occasionally humans, exists. The Wadi Natroun is a focus of endemism of this fluke, from where it spreads to the Delta when flocks of sheep are brought sometimes here for grazing. Since the time of St. Antonios of Egypt, and for the last 17 centuries, the Wadi Natroun was a haven for monasticism. It was called in ancient Coptic texts the Wilderness of Shit (the soul). Several Monasteries were built and rebuilt over that time, but now only four exist. The monks spent their time in basket weaving, using the reeds, and salt extraction. Now they reclaim land surrounding the Monasteries and use high technology for farming, and for publication of theology books and manuscripts. The Monasteries are rich in works of religious art and in ancient manuscripts.

The "Kebira" Crater

Longest single contour, formed on the surface (1) 610 meters long, 20 meters high

See sat photo in Photo Album

- On March 3rd 2006, Dr. Farouk El-Baz, professor of the Remote Sensing Group at Boston University announced the discovery of the remnants of "the largest crater of the Great Sahara of North Africa, which may have been formed by a meteorite impact tens of millions of years ago."

- The discovery was made while studying satellite images of the Western Egyptian desert at the Center for Remote Sensing at Boston University.
- Dr. El-Baz named the crater "Kebira", which means large in Arabic.
- The proposed crater is double-ringed with an outer rim surrounding an inner ring. In the LandSat image shown here, the dotted orange ring shows the 31km diameter line of the outer rim. The shape of the image is similar to that of many double-ringed craters on the moon, with which Dr. El-Baz is familiar from his time working on the Apollo program.
- Professor El-Baz goes on to speculate that the crater could have been made by a meteorite that was approximately 1.2km wide and was quite probably the event responsible for the "Libyan Desert Glass" (LDG), an extremely pure form natural silica glass found in Western Egypt, in the Southern part of the Great Sand Sea. However, it was impact guru Gene Shoemaker who said that you can only talk about an impact crater after you've been to the actual site and investigated it first-hand. Your claim should not be based just on aerial or space images.

Not Easy To Get To

This particular site is not easy to get to. Firstly, it is in the deep Sahara desert where the nearest tarmac road is a thousand kilometres away. It requires an expedition equipped for desert travel for at least a week to get to this area and back again. Secondly, the proposed crater site straddles the Libya/Egypt border. A special permission is required to visit the border area from the Egyptian side. So, the chances that anyone would visit the site in the near future to test the idea that this was the site of an impact crater were slim....

- The sand in the area has a reddish hue and the ground is littered with rocks that look as if they have been burnt black in a fierce heat. On reflection, the red sand indicates a high iron content in the rock here and the stones may just have oxidised to a black oxide, such as happens to junk that gets left in the desert.
- Anyway, the impression was that at some stage in the past, this area had been a furnace which was truly a hell on earth, as it would have been if a meteorite had lanced from the sky and smashed into the plateau nearby, instantly pulverising and vaporising the rock.
- We threaded our way between hills with cinder black cones that rose-like volcanos out of the desert floor.

Libyan Desert Glass for Sale

- **Libyan Desert Glass** Origin: The Great Sand Sea, near the Gilf Kebir Plateau
Specimen: 33 grams Age: ???
- Libyan Desert Glass has been turning up in a 6500 square kilometer area of the Great Sand Sea since ancient times. It was apparently of great value; King Tut's burial breast plate featured a scarab carved from Libyan Desert Glass as its centerpiece!
- Libyan Desert Glass is silica-rich; it is typically 96.5 to 98 percent silicon dioxide. It is widely debated whether Libyan Desert Glass is a tektite, or conversely, just an impact glass (impactite). Regardless, the chemical composition does indicate that it is meteoric in origin.

Note the cristobalite inclusions. See this Scientific Frontiers article for further information on Libyan Desert Glass.

www.freeexistence.org/.../meteorites/index.html

- Libyan Desert Glass (LDG) is a beautiful and fascinating naturally occurring glass composed of nearly pure silica. It is believed to have been formed by a large meteoritic air burst melting the sand into a layer of glass approximately 28 million years ago. Consistent with this theory, traces of irridium and condritic meteorite components have been found within this naturally occurring Glass.

www.arizonaskiesmeteorites.com/.../

Flotsam On The Great Sand Sea

- One of the strangest mysteries nestled among the giant dunes of the Egyptian Sahara was not recognized by modern scientists until 1932. In December of that year, P. Clayton, a surveyor for the Egyptian Geological Survey, was driving among the dunes near the Saad Plateau when he heard his tires crunch on something that wasn't sand. It turned out to be large pieces of marvelously clear yellow-green glass -- not just any glass but ultra-pure glass, 98% silica.

As often the case, Clayton was not the first to come across the now-famous Libyan Desert Glass or LDG. Prehistoric humans had made knives and other sharp-edged tools from it; the ancient Egyptians had carved a scarab from LDG and deposited it in Tutankhamen's tomb. But Clayton and the ancients did not recognize the scientific implications of their discovery.

- LDG is the purest natural silica glass ever found. Over a thousand tons of it are strewn across hundreds of kilometers of bleak desert. Some of the chunks weigh 26 kilograms, but most LDG exists in smaller, angular pieces looking like shards left when a giant green bottle was smashed by colossal forces.

Pure as it is, LDG does contain tiny bubbles, white wisps, and inky black swirls. The whitish inclusions consist of refractory minerals, such as cristobalite. The ink-like swirls, though, are rich in irridium, which is

diagnostic of an extraterrestrial impact -- meteorite or comet. The iridium leads to the heart of the LDG problem: Where did this immense amount of widely dispersed glass shards come from? Was it really created during the searing, sand-melting impact of a cosmic projectile? This is how today's catastrophists would have it?

- At least three "minor" problems bedevil the accepted impact theory.
- The surface of the Great Sand Sea shows no sign of a giant crater. Neither do microwave probes deep into the sand by satellite radar.
- LDG seems too pure to be derived from a messy cosmic collision. Known impact craters, such as that at Wabar in Saudi Arabia, are littered with bits of iron and other meteorite debris. Not so at the LDG sites.
- LDG is concentrated in **two** areas. One is oval-shaped; the other is a circular ring 6 kilometers wide and 21 kilometers in diameter. The ring's wide center is devoid of LDG.

Could there have been a "soft" projectile impact; that is the detonation of a meteorite, perhaps 30 meters in diameter, 10 kilometers or so above the Great Sand Sea? The searing blast of hot air might have melted the sand beneath. Such a craterless impact is thought to have occurred in the 1908 Tunguska Event in Siberia. Another theory has a meteorite glancing off the desert surface leaving a glassy crust and a shallow crater that was soon filled in. But there are **two** known areas of LDG. Were there two cosmic projectiles in tandem?

- As of 1999, the origin of the beautiful green LDG remains an enigma. And of course deserts are dynamic places. How much additional LDG lurks beneath all that blowing sand?
- (Wright, Giles; "The Riddle of the Sands," *New Scientist*, p. 42, July 10, 1999)
- AND YET, THERE ARE MANY MORE IMPACT CRATERS IN THE SAHARA
- Ghoneim, E. (2009) Ibn-Batutah: A possible simple impact structure in southeastern Libya, a remote sensing study. *Geomorphology* 103: 341-350.

See sat photonat end of document

- Remote sensing investigations based on

Landsat ETM+, dual-band (L and C) and dual-polarization (HH and HV) radar (SIR-C), and SRTM data reveal a morphological resemblance of the Ibn-Batuta structure to other confirmed terrestrial simple impact structures.

The structure is in the form of a circular basin 2.5 km in diameter and ~25 m deep, surrounded by a low-relief rim that rises to within 5 m of the surrounding terrains over much of its extent. No endogenic geological processes such as magmatism, diapirism, karst dissolution, and glacial or fluvial erosion can decisively explain the formation of the Ibn-Batutah structure within a large area of flat-lying Mesozoic sandstones.

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- Thus, El-Baz and Ghoneim propose that the Ibn-Batutah structure represents a simple impact structure. Verification of this hypothesis will require collection and analyses of rock samples from in and around the structure, although the area is currently almost inaccessible for environmental and security reasons.


**Description of Properties/Sites on Tentative Lists
of States Parties Participating in the
Cairo Workshop, 14-16 Dec. 2009**

ITINERARIES AND ROUTES

Presented by Prof. S. Ghabbour

Sites, lieux et itinéraires augustiniens du Maghreb central

Property names are listed in the language in which they have been submitted by the State Party.

	 Algeria (Arab States)
Date of Submission:	30/12/2002
Criteria:	(ii)(iii)(iv)(vi)
Category:	Cultural
Submitted by:	Ministère de la Communication et de la Culture. Direction du patrimoine culturel.
State, Province or Region:	Biens situés dans un territoire compris entre la bande littorale - depuis la baie de Annaba (Hippone) jusqu'au cap Ténès (Cartenae) - et les hautes plaines comprenant Tebessa et Tobna
Ref.:	1773

Description

Voies romaines et cités archéologiques d'Hippone (Annaba) ; Calama (Guelma) ; Thibilis (Announa) ; Thubursicu Numidarum (Khamissa), Madaure (M'daourouch); Thagaste (Souk Ahras) ; Castellum Tidditanorum (Tiddis) ; Thagura (Taoura) ; Milev (Mila); Sitifis (Sétif); Caesarea (Cherchel); Cartenae (Ténès); Theveste (Tébéssa) et Tubunae (Tobna).

Parmi les pères de l'église, Augustin (Theveste 354 – Hippone 430) est sans conteste l'un des plus connus. Rhéteur philosophe, théologien, penseur hors du commun, mystique et fondateur d'une règle monastique originale a marqué d'une empreinte particulière son époque et, depuis lors, sa renommée n'a cessé de croître dans le monde.

Les activités épiscopales d'Augustin n'ont pas seulement pour site son siège d'Hippone. A partir d'Hippone, ses missions les plus diverses le conduisent en des lieux et selon des itinéraires qui recouvrent l'ensemble de l'est algérien et une partie du centre de l'Algérie d'aujourd'hui

Depuis son ordination et jusqu'à la fin de sa vie, Augustin n'en fut pas moins sur les routes de l'Afrique non seulement pour y prêcher en des circonstances diverses mais aussi pour participer aux différents conciles qui se déroulaient dans sa province ou hors de sa juridiction ecclésiastique. Ses déplacements en Numidie et en Maurétanie sont bien attestés et les lieux visités bien identifiés grâce à ses nombreuses correspondances et sermons .

Il se déplaça 4 fois à Mila , 1 fois à Calama, 4 fois à Cirta, 3 fois à Khamissa, 4 fois à Thagaste, 1 fois à Sétif, 1 fois à Caesarea, 1 fois à Ténès et 1 fois à Tobna

Ces sites d'existence , d'études et de déplacement surprennent par leur richesse et étonnent par leur variété. Elles jalonnent les routes stratégiques entre les plateaux peuplés de nomades et le littoral.

-Thagaste (souk Ahras) lieu de sa naissance en novembre 354 , cité punique et romaine ; fut la patrie de deux chrétiens berbères célèbres : sainte Monique et son fils Augustin . C'est là que saint Augustin organisa une communauté de type monastique et s'adonna à la prière , à la méditation et à l'écriture d'ouvrages importants comme le *De ordine*, le *De musica* le *Contra Academicos*, le *De libero arbitrio* et le *De genesi adversus Manichaeos*.

-Madauros (M'daourouch), vieille cité numide érigée en une importante colonie romaine et haut lieu de la pensée , patrie d'Apulée et du grammairien latin Maxime. Saint Augustin y étudia. Vestiges romains sur 30 ha.

-Thubursicu Numidarum (Khemissa) , érigé en municipe romain sous trajan , c'est un des plus beaux sites romains de l'Algérie. Vestiges antiques sur 100 ha.

-Thagura (Taoura) vestiges romains sur 20 ha , thermes , basilique chrétienne et forteresse byzantine.

-Calama (Guelma) ville romaine batie sur l'emplacement d'une cité berbère. Patrie du célèbre Possidius biographe d'Augustin. Vestiges romains importants dont un théâtre.

-Thibilis (Announa) :site romain de 10 ha . Arc de triomphe, forum , capitole et plusieurs basiliques chrétiennes. Site inscrit dans un cadre de verdure très agréable.

-Milev (Mila) , une des 4 cités de la confédération cirtéenne et important évêché du IV^e siècle . Patrie d'Optat de Milev

-Castellum Tidditanorum (Tiddis) :Le site à été occupé depuis le XI^e siècle jusqu'à l'époque arabe. Vestiges antiques sur 40 ha

-Hippone (Annaba) : Ancien comptoir phénicien au IX^e siècle avant J.C., elle devint une ville numide prospère alliée de Carthage et colonie romaine. Elle fut un grand port exportateur de blé et le siège episcopal d'Augustin. Vestiges d'époque chrétienne dont l'histoire est liée à la vie d'Augustin. C'est dans ce site qu'il rédigea les « Confessions , la Cité de Dieu et la majorité de ses ouvrages , sermons et lettres ».

The Central Slave and Ivory Trade Route

Property names are listed in the language in which they have been submitted by the State Party.

 Tanzania, United Republic of (Africa)

Date of Submission: 20/02/2006
Category: Cultural
Submitted by: Antiquities Department
Coordinates: From Bagamoyo S 6 26 - E 38 54 to Ujiji, Kigoma S4 54 - E 29 40
Ref.: 2095

Description

Until, not even 150 years ago, millions of Africans had to bear a cruel fate. They were captured by slave hunters, chained together and forced to walk some times hundred of kilometers to be sold for example to planters who used them as cheap labour in their fields. Central and East Africa was one of the main areas where the slave hunters and traders, most of them Arabs made their shade deals. They caught their victims e.g. in some areas which is today parts of Democratic Republic of Congo and in the Western and Central parts of what is today Tanzania. The Slaves were brought to the coast and from there to the spice island of Zanzibar and many were sold further to the Arab countries, Persia, and India, Mauritania and Reunion. Officially, the slave trade was forbidden in 1873 under British pressure, but it went on secretly for several years. One of the routes that were used by the traders' caravan started in Ujiji at the shore of Lake Tanganyika. It went over 1200 kilometers and ended in Bagamoyo just opposite of Zanzibar on main land Tanzania. Many experts view this as the main route of mainly three that were documented for East Africa. By now the list includes the Ujiji-Bagamoyo route as a whole. The idea is not only to protect the still visible reminds of the dark past like Arab Forts and other historic buildings or parts of the route that are existing, but also to intensify the research around the topic, to document the memories about the era and to preserve the culture and the traditions of the communities living along the route. In this regard, there are possibilities of Trans-national Nomination with neighbouring countries like Burundi, Democratic Republic of Congo, Uganda, Kenya and Mozambique. This possibility will be investigated during the nomination process. Six centres have been identified along the central slave route to include Bagamoyo, Mamboya, Mpwapwa, Kilimatinde, Kwihara and Ujiji Bagamoyo Due to its location along the Indian Ocean and being a major harbor and town along the coast of Tanzania that played a key role in the East Africa Slave trade; Bagamoyo is a "place of memory" for human suffering and humiliation caused by Slavery and the Slave trade and the imposition of European colonialism. The population of Bagamoyo groups is the result of the interaction and fusion of different ethnic groups from the interaction and fusion of different ethnic groups from the hinterland and immediate coastal built especially the Wazaramo, Wadoe,

Wakwere and Wazigua and the interiors especially Wanyamwezi and Wamanyema. Bagamoyo serves as the terminal which starts from Ujiji. From Bagamoyo, slaves were shipped to Zanzibar where the slave market used to be. Important slave trade evidence includes slave and slave descendants, buildings such as Caravan Serai, Von Wissman block, Old market, Customs house and the Old fort. Also the freedom village at the R.C. Mission premises and the RC Museum that has enough documentation.

Mamboya Located in Morogoro Region; Kilosa District is a very old settlement. Historical landmarks include mango stretch plantations, slave and slave traders descendants, graveyard for the Wanyamwezi, remains of Anglican Church and an area where the house belonging to one slave trade was built. Cards, coins and domestic utensils are available as well.

Mpwapwa Located in Mpwapwa District, Dodoma Region in central Tanzania. Important landmarks include part of the path at Vinga'we Village still visible and in use. Others include the Anglican Church built at a place where the first church was as evidence of missionaries who fought against slave trade. Descendants of slaves and slave traders are also part of the present community.


Kilimatinde Located in Manyoni District, Singida Region. Kilimatinde is another important place on the route where caravan rested at a well. The village with Arabic house, market and late the seat for the German administrative is an important place for information along the route. There existing small Arabic houses that are abandoned.

Kazeh (Tabora) Kazeh was established by traders involved in the East Africa slave and Ivory trade on the area given to the traders chief Fundikara of Unyanayembe in 1852. It rapidly development into a key market centre located as it was at an interaction between the trading routes to the coast and those further inland to the Congo and north to what is today Burundi. By 1871, it was estimated to have a population for 5000, by the 1890s the population had grown to about 20,000. The only building of significance that has survived is the Kwihara Livingstone Tembe. The Tembe was built by a wealth Arab Slave trader in 1857. The owner gave it to Dr. Livingstone. The building contribution continued to be throughout the colonial period, and was pronounced historical monuments one hundred years later, in 1957 when also major repairs were done on it. Other evidence is a mosque and residence near the Tembe, a Well, Mango trees, and coconut and date tree plantations.

Ujiji Ujiji was the last major trading center of the central of Caravan Trade Route located on the shores of Lake Tanganyika. It was a trading centre for slave and ivory coming from different parts of Lake Tanganyika, including Eastern region of Democratic Republic of Congo, Rwanda and Burundi. By 1876, Stanley estimated that Ujiji had a population of 3,000. It is located within Kigoma Township, 5 km west of Kigoma Railway station. Important land marks are a site of formal port (no longer existing) coconuts and Mango Tree Avenue, Usagara grounds where slaves used to be held and auctioned and a site where the house of the former slave trade by the name of Tippu Tip used. A path running between Ujiji seminary and Kaluta Primary school through Kagera village to Luiche and beyond is clearly seen and improved by big historic Mango trees on both sides.

North Sinai archaeological Sites Zone (Horus Road)

Property names are listed in the language in which they have been submitted by the State Party.

 Egypt (Arab States)

Date of Submission: 01/11/1994

Category: Cultural

Submitted by: Egyptian Antiquities Organization

Coordinates: North Sinai

Ref.: 189

Description

The Mediterranean Coastal strip of North Sinai stretching between the Suez Canal and Gaza is the most important land bridge linking Egypt and Canaan from predynastic times onward. The well-traveled highways of the North Sinai facilitated the military expeditions of the Egyptian Pharaohs on their way to Canaan and Asia as well as the involving armies of Persia, Greece and Rome.

HISTORIC ROADS OF NORTH AFRICA

by
Samir Ghabbour

And

Gihane Zaki

TRADE KINGDOMS AND TRADE ROUTES

Trade routes developed across Africa in several places. Early African people lived in small family groups. Parents, children and grandparents formed clans with other families. Larger clans became tribes.

Civilizations That Flourished

- The civilizations that flourished in ancient West Africa were based on trade, so successful West African leaders tended to be peace makers rather than warriors. Caravans from North Africa crossed the Sahara beginning in the seventh century of the Common Era. Gold from West Africa was exchanged for something the West Africans prized even more: salt. Salt was used as a flavoring, a food preservative, and for keeping healthy bodies.

To the Maadi Predynastic Culture

- Between about 3600 and 3000 BC, a number of innovations took place at Maadi that brought Egypt into the realm of the international world.
- Trade dominated this settlement more than any other contemporary sites, and it had few rivals in Egypt even during later periods.

Historic Route to the Copper Mines of the Sinai

Its location within the Wadi al-Tih, the main historic route to the copper mines of the Sinai, together with the presence of housing obviously of a foreign type and pottery, domesticated donkeys, elaborate storage facilities and a well developed copper industry, all evidence the importance of its role as a trade center.

There can be little question that Maadi benefited from a very favorable geographical position. Not only did it have access to the mainstream of the Nile, just south of where it branches into the Delta, but from there goods could reach the Mediterranean and of course there was also access to the desert frontiers to the east through the Wadi al-Tih.

The archaeological site of Maadi, for which a modern suburb of Cairo is named, is located on an east-west oriented desert ridge between two wadis at the southern city limits of Cairo. Regrettably, part of this Predynastic site has already been ruined by modern building activities, and the remaining area is under threat from the intrusion of this highly populated area of Egypt.

- With the coming of the unification of Egypt, Maadi disappears from our history of Egypt,
- but it certainly contributed to the future of the empire with its unique cultural and knowledge of trade with the outside world.

African Routes and History

- What routes through the Eastern Desert did Egyptian foreign trade follow?
- Frankfort rightly drew attention to the importance of the Wadi Hammamat in this regard. However we shouldn't forget Wadi Abbad. At Kanais and other sites leading out toward the coast are numerous rock drawings which are evidence for the extensive penetration of the region in the late Predynastic (Cervicek 1974:57ff; Resch 1963; Berger, this volume).
- We will never reach a full understanding of this rock art until excavation reveals habitation sites connected to it.
- Still a few things seem clear. The pictures are not evidence of Eastern Invaders, but rather are a continuation of a long pattern of connection between valley and desert.
- Hierakonpolis, with its important associations with the formation of the unified Egyptian state, no doubt, had its own link to the coast and access to the eastern trade that bypassed the Wadi Hammamat. In Ptolemaic times, the Wadi Abbad route again played a central role in foreign trade when war elephants captured on the Ethiopian coast were walked across it from the Red Sea to the Nile (Murray 1967).
- In Ptolemaic times, the Wadi Abbad route again played a central role in foreign trade when war elephants captured on the Ethiopian coast were walked across it from the Red Sea to the Nile (Murray 1967).
- It is these elephants that were used by Hannibal in his "blitzkrieg" against Rome.
- Conversion to Islam opened up new trading possibilities across North Africa and in Arabia. Many Muslims journey to Mecca at least once. This encouraged them to meet new people and discover new cultures.

New Religions Moved Along These Roads

- Conversion to Islam opened up new trading possibilities across North Africa and in Arabia. Many Muslims journey to Mecca at least once. This encouraged them to meet new people and discover new cultures.

- The Darb el Arabain, from El-Fasher, Capital of Darfur, to the Nile at Assiut
- for Camel Trade

Horus Road, North Sinai,

- for Trade
- And
- Military
- Campaigns

An Ancient Egyptian city named Tharu, dating back to the New Kingdom era (1570-1070 BC)

- A mission by Egypt's Supreme Council of Antiquities (SCA) has excavated the city as part of a project to unearth fortresses on the ancient Horus Road since 1986, according to information released by the Cairo Ministry of Culture. The Horus road was the vital commercial and military link between Egypt and Asia, via Palestine.

A fortress that was used as army headquarters for Pharaoh Ramsis II and his successors

- The ruins are believed to include a fortress that was used as army headquarters for Pharaoh Ramsis II and his successors.
- A fortress of mud-brick dating back to Ramsis II was also discovered. Initial evidence suggests the fortress was the headquarters of the Egyptian army in the area since the New Kingdom era until the Ptolemy rule.
- The archaeologists believe that the ruins are of the fortress city of Tharu, to which there are references in historic texts. The fortress site included ruins of ancient Pharaonic warehouses where the army stored its supplies.

El-Salam Canal Along

The Horus Road. in North Sinai

Gebel Qatrani Road, Faiyum,

The Oldest Paved Road in the World

Section of the 11 kms long ancient quarry road made for transporting basalt blocks from the Widan el-Faras quarry, paved with "logs" of petrified wood.

Gebel Qatrani Road, Faiyum

The Oldest Paved Road in the World

An 11 kms long ancient quarry road made for transporting basalt blocks from the Widan el-Faras quarry, paved with "logs" of petrified wood.

MORE SITES PROPOSED BY DELEGATES

African workshop For the Harmonization of African World Heritage Tentative Lists

Cairo, Egypt, 16-18 March 2010

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Desert - Mountains

Kufra District:

- 1) Jabal Awaynat - Rock Paintings – engravings
- 2) Jabal Arcnu - Rock engravings

Ubari District:

- 3) Matkhandush - Rock Parings and engravings

Kufra District:

- 4) Tolab – Hawary. Old construction using salt masonry
- 5) Rebyana construction using mud – brick missionary – and Minify in wood
- 6) Bezzema

Ben bleeds District:

- 7) Ghirza - Libyan City in Raman era sculptured gates and engrave and Tombs.

Oasis Wahat District:

- 8) Awjila. Libyan traditional city with – old wooden roofs – tomb of ABDULLA BENAbBY El SARH

El Marj District:

- 15) Tuehera ancient Greek city.
- 16) Ptolemais ancient Greek city.

Fripeli District:

- 17) Gasser el haj. Old monument with many stairs
- 18) gasser Kabaw with many stairs

Sibha:

- 19) El- Fuqha – tradition Roman Period.
- 20) Old JARMA

Libya**Tentative List of Natural sites**

See photos in Photo Album

Libya is characterized by a large area of desert. However, these vast areas are rich of their cultural and natural sites since the dawn of history or the last Pluvial Period. There are strong indications that the area was inhabited by man and different species of animals roamed there. Besides; Libya was exposed to various geological activities which produced amazing geological and geomorphologic phenomena.

Till know (2010) Libya did not submit any tentative list of natural sites for the World Heritage Council or any other similar organization.

Libya has presented in the Workshop the following tentative list for natural sites. Four of these are in the desert while one only is close to the coast. . Two of the sites can be categorized as both cultural and natural, namely (Ras Elhilal – Lathrone) and Auenat . These sites have been carefully selected among many other important sites which could be presented in the near future.

Detailed information was not supplied where these sites were prepared and examined in short time. However slides with important photos as well as coordination were shown on data show during the workshop.

Here is a list of the selected sites with brief information for each:

2- 1-Gabger Oun قجرعون

One of the most important touristic attraction in the country. Most of the visitors come from foreign countries, Hundreds of photos on the internet by professionals

Contains superlative natural phenomena and areas of exceptional natural beauty and aesthetic importance. So it meets Criterion VII

2- Waw Annamous واو الناموس

A volcanic field cone and caldera in the center of the Sahara .In the caldera rich foliage and three salt lakes of variable colors . Studies has indicated reasonable biodiversity . An apron of dark basaltic tephra extends 10-20 km around the caldera. It is an increasingly popular tourist attraction

Coordinates : N 25.00.16.86

E 17.44.04.04

Contains superlative natural phenomena and areas of exceptional natural beauty and aesthetic importance... Criterion VII

An outstanding examples representing major stages of Earth's history, including the record of life, significant on-going geological processes in the development of landforms and significant geomorphic and physiographic features.... Criterion VIII

3- Aljabel Alahkdar Ras Elhilal – Lathrone) راس الهلال لثرون

One of the most important area of Al-Jabel Al- Akhdar (Green Mountain)

It has been considered as a natural and cultural geographical area by many .

Deep vallies with diversified Flora and Fauna .

Cave believed to be inhabited log ago

Certain plants are endemic (only in this area) and considered endangered (photo to left).

To bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared...Criterion III

An outstanding example of a traditional human settlement, and land use, which is representative of human interaction with the environment especially when it has become vulnerable under the impact of irreversible change....Criterion V

Outstanding examples representing major stages of Earth history , including the record of life, significant on-going geological processes in the development of landform, and significant geomorphic and physiographic features Criterion VIII

An outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial ecosystems and communities of plants and animals....Criterion IX .

Contains the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.....Criterion X

4- Jagaboub الجغبوب

Malfa Lake

Petrified Forest

Contain superlative natural phenomena and areas of exceptional natural beauty and aesthetic importance... Criterion VII

An outstanding examples representing major stages of Earth history, including the record of life, significant on-going processes in the development of landforms or significant geomorphic or physiographic features. VIII.

5- Auenat العيونات

South eastern part of Libya

Cultural and Natural sites (mixed) meets Criteria : III, V, VII. VIII. IX. X

Dr, Omar Assaadi.

Libyan Delegation

Cairo 16/3/2010



AFRICAN WORKSHOP
On the
Harmonization of World Heritage Tentative Lists
in North Africa

Cairo, 16-18 March 2010

CONCLUSIONS AND RECOMMENDATIONS

TOWARDS AN

AFRICAN WORLD HERITAGE ACTION PLAN

The African Workshop on Harmonization of Tentative Lists in North Africa, held in Cairo, Egypt, 16-18 March 2010, was organized jointly by the Egyptian National Commission for UNESCO and the African World Heritage Fund (AWHF), with financial support from AWHF and from the Egyptian Government.

It was attended by national delegates of natural and cultural heritage designated by the respective National UNESCO Commissions as well as experts in these matters (List of participants).

After detailed presentations by the national and international experts and lively discussions, the meeting came to the following conclusions and recommendations:

- **For the AWHF**

1. Acknowledge that the objectives of the WH Convention are not all realized in Africa, and that there is still much effort to be done by all partners,

2. Consider the following recommendations as a World Heritage Action Plan for Africa
3. Implement this **African World Heritage Action Plan** as adopted by this Workshop
4. Establish an African World Heritage Network and its Council as a tool for the sustainable implementation of this Action Plan
5. Establish a plan for teaching an internationally recognized Diploma/Master Degrees for the conservation and management of WH sites and other forms of cultural sites and nature reserves, in Arabic, English, and French, by free distance learning methods, in collaboration with organizations willing to cooperate
6. Organize awareness material on African World Heritage in Arabic, English, French, Spanish, Portuguese, Hausa, Swahili, and Amharic languages
7. Establishing a Committee, as part of the African World Heritage Council, for the management of World Heritage programmes of teaching, studies, research, and awareness material
8. Request a financial support from donor organizations to realize the sustainability of these studies, by free distance learning, for the benefit of African WH site managers, managers of other types of conservation sites, and would-be employees at such sites
9. Establish Memoranda of Understanding for cooperation with UNESCO Category 2 World Heritage Centers and relevant UNESCO Chairs in the African region, as well as in other regions, to facilitate the implementation of the African Action Plan on World Heritage
10. Integration and harmonization of the recommendations of the various Regional African Workshops, into one comprehensive African Action Plan
11. Harmonization at the African level is needed in the process of preparing the Second Cycle of Periodic Reporting Reviews, for the African region
12. Support the Algeria Workshop for Preparation of Sites on the World Heritage List for Arab African Countries, in May 2010, and ask these countries to ensure its success, by sending candidatures for trainees and offering trainers if needed. This Workshop should be the prototype of a full fledged Diploma or Master university course as explained below.
13. While recognizing and appreciating the innovative approaches for World Heritage nominations, including serial and transboundary sites, it is believed that twinning, serialization and networking are better, quicker, and more suitable options

for inter-state and inter-site cooperation in the management of World Heritage sites in Africa, than the idealistic benefits of transboundary sites.

14. Establish an African Regional World Heritage List, as an intermediate stage between National and International World Heritage Lists.

- **For African countries**

1. Invite African countries to establish their Tentative Lists as one harmonized whole, for the African Continent, taking into consideration its great variety of natural habitats and its unique cultural diversity, so as to avoid redundancy and competition. They therefore encourage the national authorities of the African Continent to take into account the recommendations of this meeting and to revise their national Tentative Lists under the umbrella of the AWHF, considering the outstanding universal value of this heritage.
2. Propose a number of new sites seen to have Outstanding Universal Value, to be added to the Tentative Lists of the respective States Parties (New Proposed Sites for the Tentative Lists).
3. The participants noted potential heritage sites of similar types exist in many African countries (e.g., fossil sites, archaeo-astronomical sites, Prehistoric sites, natural and cultural landscapes, ancient roads, impact crater sites, etc.), and encourage these countries to collaborate towards the study, valuation, and harmonization of their management plans. There is need and an obligation to prepare comprehensive management plans, in particular for living cities and cultural landscapes
4. There is an obvious necessity for completing a comprehensive comparative study before any nomination A brief comparative analysis (comparison with other similar properties in the world, whether on the World Heritage List or not) already has to be presented with the Tentative List. Such studies should be done under the umbrella of AWHF to avoid useless repetition, dissimilar conclusions, and waste of time and money
5. Many African sites that are already represented on the World Heritage List; or on the Tentative Lists, or to be proposed later on, need a study of the interaction between people and nature as related to beliefs, traditions and other intangible values of African peoples
6. Involvement of all stakeholders in the nomination process is important so that this would include also public information and participation

7. Holding an African preparatory meeting at the level of Permanent Delegations to UNESCO, at which experts may be invited, before each session of the WH Committee, for harmonization of positions at the session
8. Hold regular cooperation and consultation meetings among African countries for all stages of work on African World Heritage sites.
9. Seek assistance for effective participation of a maximum number of African countries in the annual World Heritage Committee sessions, whether as full members or as observers
10. Establish National World Heritage Committees within African UNESCO Commissions, where these do not exist

- **For the World Heritage Center and the World Heritage Committee**

1. Reform of the Operational Guidelines is needed to address the gaps in the 2005 version and its modifications, such as, the role of the Advisory Bodies, the upper limit of international assistance, the working of the IAR Panel, the possibility of obtaining small IAR sums for small projects, as well as the enhancing the role of the World Heritage Bureau so as to save more time for the World Heritage Committee's deliberations.
2. Discussion of the role of the Advisory Bodies and add other professional scientific unions to the roster of the World Heritage Advisory Bodies

- **For the WH Advisory Bodies (IUCN, ICOMOS and ICCROM)**

1. Define the role of the three Advisory Bodies as responsible partners in all stages of the activities destined for the implementation of the World Heritage Convention in Africa, in collaboration with the AWHF, in terms of the present African World Heritage Action Plan.
2. Request the three Advisory Bodies to involve a larger number of African experts in their studies and in their the formulation of their recommendations to the World Heritage Committee, and to consult their African National Committees in these activities
3. Also request these three Advisory Bodies to involve in their activities other relevant international scientific bodies (e.g., Ramsar, ICSU, the IAC in the Netherlands, the International Geology Union, IIASA), and also other UNESCO Programmes (MAB, hydrology, geology, oceanography), when evaluating African cultural and natural properties of

regional/global or international importance, as well as in the completion of studies on these sites.

4. Invite the Advisory Bodies to carry on thematic studies, in collaboration with other international scientific bodies mentioned above, to help in the nomination of new and under-represented categories of sites, including: oases, wadis, and mountains, plant and animal fossil sites, Prehistoric sites, rock art sites, bird migration routes sites, coastal zones (corals and mangroves), nature reserves, historical roads, astronomical heritage sites, old quarry sites, landforms and processes, including the geomorphologic series after the Pluvial Periods, etc.
 5. Emphasize that while North Africa is conventionally devoid of biodiversity hotspots based on sheer number of species, the region is rich in species highly adapted to harsh desert conditions. This makes these species a valuable store for truly unique genetic material that is of utmost importance for solving the food shortages of humankind. In this way, the nomination of such biodiversity qualitative hotspots (such as oases, wadis, and mountains) is not only for mere conservation, but also for the realization of sustainable development objectives.
 6. Considering the rapid economic and social changes and challenges facing Africa, the Workshop addressed authenticity and integrity as critical issues in heritage conservation;
 7. Advisory Bodies and their representatives at IAR Panels, are invited to assess the Outstanding Universal Value of an IAR or a Nomination File in their own intrinsic merit, on purely sound scientific evidence, leaving the administrative issues to the discretion of the concerned State Party.
- **For African Universities**
 1. Establish e-Learning and e-training programmes about the conservation and management of WH sites and other forms of cultural properties and nature reserves
 2. Encourage the administration of courses related to World Heritage and its management, in African universities, that are not necessarily to be included in or related to a particular programme on World Heritage.

In conclusion, the participants present the above recommendations as an **African World Heritage Action Plan**, to the African World Heritage Fund, to be submitted to the 34th session of the World Heritage Committee, Brasilia, Brazil, 25 July – 3 August 2010.

It is also to be submitted to all other partners, emphasizing the joint regional approach of the African countries, through the African World Heritage Action Plan outlined above, in the implementation of the Global Strategy for a Balanced and Representative World Heritage List, in which African countries should be well represented

The participants also encourage the local, regional and national authorities to take these recommendations into account and cooperate with the AWHF, the World Heritage Center at UNESCO, UNESCO Regional and country Offices, the Advisory Bodies (including National ICOMOS and IUCN Committees, besides their headquarters), national and international scientific universities and institutions, and national and international NGOs.

The participants also regret the tragic events that recently took place at two important African World Heritage sites, namely, the deadly stampede at Djingareyber Mosque in Timbuktu (Mali) on 25 February 2010 and the fire that ravaged the Kasubi Royal Tombs in Kampala (Uganda) on 16 March 2010 and offer their condolences to the families of the victims.

Finally, the Workshop participants thank and express their deep gratitude to the Egyptian Government, the Spanish Government, and the AWHF, for facilitating the activities of this Workshop so that it could achieve its desirable results.

SUMMARY

TOWARDS AN
AFRICAN WORLD HERITAGE ACTION PLAN

These recommendations of the African Workshop on Harmonization of Tentative Lists in North Africa, held in Cairo, Egypt, 16-18 March 2010, are herewith proposed as an African World Heritage Action Plan. It includes actions that could be implemented by authorities in a certain timeframe, and other actions that can be carried out as soon as possible by the African World Fund. These recommendations are summarized and tabulated* as follows:

	<u>Action</u>	<u>Responsibility</u>	<u>Timeframe</u>
<u>1</u>	Establish National World Heritage Committees within African UNESCO Commissions,	African UNESCO NatComs	2010
<u>2</u>	Establish an African World Heritage Network Council with different committees, as appropriate	African World Heritage Fund (AWHF)	2010
<u>3</u>	Establish Diploma/Master Degrees for the conservation and management of WH sites	African Universities/WHC	2011-2012
<u>4</u>	Organize awareness material and activities on African World Heritage in different languages	African World Heritage Committee /Heritage Focal points/ WHC	2010-2012
<u>5</u>	Request a financial support from donor organizations for conducting research and studies on African WH sites	African World Heritage committee /Heritage Focal points	2011-2012
<u>6</u>	Regional Periodic Reporting Reviews for the African region, done by African experts	African World Heritage Fund /Heritage Focal points/WHC	2011-2012
<u>7</u>	Revise an African Tentative World Heritage List	African World Heritage Fund /African Focal points	2010
<u>8</u>	Encourage a programme for cooperation, twinning, and serialization, of African WH sites, as easier, more efficient, and less costly than the idealistic benefits of transboundary sites	African countries /African World Heritage Fund/ African World Heritage Focal points	2010-2012
<u>9</u>	Encourage the study, valuation, and harmonization of the management plans of fossil sites, archaeo-astronomical sites, Prehistoric sites, mixed natural and	African countries	2011-2013

	cultural landscapes, ancient roads, impact crater sites, etc.		
<u>10</u>	Encourage the study of the interaction between people and nature as related to beliefs, traditions and other intangible values of African peoples	African countries/ African Universities	2012-2015
<u>11</u>	Involvement of all stakeholders in the nomination process	African National Heritage committees /Heritage Focal points	As soon as possible
<u>12</u>	Hold regular cooperation and consultation meetings among African countries for all stages of work on African World Heritage sites	WHC/ AHF	As soon as possible
<u>13</u>	Assistance for effective participation of a maximum number of African countries in the annual World Heritage Committee sessions	WHC /African countries/ AWHF	As soon as possible
<u>14</u>	Reform and modifications of the Operational Guidelines to address the gaps in the 2005 version.	WH Committee / WHCenter	2010-2012
<u>15</u>	Define the role of the three Advisory Bodies as responsible partners for objective scientific advice in all stages of the activities destined for the implementation of the World Heritage Convention in Africa	WHC / Advisory Bodies (IUCN, ICOMOS and ICCROM)	2011-2013
<u>16</u>	Involve a larger number of African experts in the studies of the Advisory Bodies	WH Committee / Advisory Bodies	Whenever possible
<u>17</u>	Establish e-Learning and e-training programmes about the conservation and management of WH sites and other forms of cultural properties and nature reserves	African Universities	2011-2012
<u>18</u>	Encourage African countries and request the African World Heritage Fund to take the recommendations of the African Workshop on Harmonization of Tentative Lists in North Africa, held in Cairo, Egypt, 16-18 March 2010 into account, submit it to the Regional African WH Workshops, and adopt it as an <i>African World Heritage Action Plan</i>	African World Heritage Fund / Regional African WH Workshops / National World Heritage Committees/ World Heritage Focal points	2010

* Kindly provided by Dr. Salwa Abdel-Hammed (Sudan), with slight modifications.

Some of the Sites Discussed at the Workshop

Egypt

Three Astronomical Heritage Sites:

- Nabta Playa (natural)
- The Great Sand Sea, zone of impactites (natural)
- Helwan Observatory (cultural)

Ethiopia

- Konso Gardua Palaeo-anthropological site (mixed)
- Konso Cultural Landscape (cultural)
- Walled City of Harar (cultural)
- Bale Mountains National Park (natural)

Libya

- Kufra District (Gabal Awenat and Gabal Arkennu)
- Kufra District (1 - Tolab – Hawary, Old construction using salt masonry, 2 – Rebyana, Construction in mud-brick masonry, and Minify in wood, Bezzema)
- Ubari District (Matkhandush-Rock Paintings)
- Ben Bleeds District (Libyan City in Roman era, sculptured gates and engraved tombs)
- Oasis Wahat District (Awjila, Libyan traditional city with old wooden roofs, tomb of Abdallh Aby El Sarh)
- El-Marj District (Tuehera ancient Greek city, Ptolemais ancient Greek city)
- Fripeli District (Gasser El Haj – old monument with many stairs, Gasser Kabaw, stairs)
- Sibha (El-Fqha, traditional Roman period – Old Jarma)
- Gaberoun
- Waw El-Namous
- Al-Gabal Al-Akhdar
- Jagaboub

Morocco

(Tentative List classified according to priority)

A) Cultural

- Historic Group of Rabat (Old city, Chellah, El Oudayas Kasbah, the Almohade, the 20th century architecture)
- Lixus Archaeological site
- Collective Stores (Igoudar)
- Engraving (stones), Imaouen (Tata Province)

B) Natural

- National Park of Dakhla
- Khnefis Lagoon
- El Merja Zarga

C) Mixed

- Oases and Ksour of Feguig
- Draa Valley (Zagora)
- Aït Bouzemaz (Tata)
- Tamanart Valley (Tata)
- National Park Tlasmatane and Chefchaouen Historic City
- National Park of Toubkal, engravings of Oukaïmeden, and Youfour (El Haouz)
- Tafoughart Cave and Zegzel Valley (Berkane)

Sudan

A) Cultural:

- Suaken
- Kerma
- Old Dongola

B) Natural:

- Sanganeb Marine National Park
- Dongonab Marine National Park
- Dinder National Park
- Imastong Mountain (Forest Reserve)
- Jebel Marra
- Wadi Howar National Park
- Boma National Park

Tunisia

- Chott El Jerid
- Oasis de Gabes

- Parc National d'El Faija
- Parc National de Bouhedma

List of Contributions and Their Authors/Experts*

#	Subject	Author(s)	Affiliation
1	Water Bodies	Dr. M. Bahaa El Din	Inst. Of Hydrolochs Research, Egypt
2	Animal Fossils	Dr. Mohamed Abed Dr. Ferial El-Bedewy	Univ. of Mansoura Univ. of Mansoura
3	Plant Fossils	Dr. Wagieh El-Saadawy Dr. Marwa Wafeeq Dr. Marwa Kamaledin	Univ. of Ain Shams Univ. of Ain Shams Univ. of Ain Shams
4	Prehistoric sites (Nabta playa)	Dr. Samir Ghabbour	Cairo University
5	Bird Migration Routes	Dr. Hala Barakat	CultNat, Bibliotheca, Alexandrina
6	Biodiversity	Dr. Samir Ghabbour Dr. Boshra Salem Dr. Manal Fawzy	Cairo Univ. Univ. of Alexandria Univ. of Alexandria
7	Nature Reserves	Dr. Monier Abdel Ghani	Cairo Univ.
8	Natural Landscapes	Dr. Samir Ghabbour Dr. Eman Ghoneim	Cairo Univ. Univ. of Tanta
9	Historic Roads	Dr. Samir Ghabbour Dr. Gihane Zaki	Cairo Univ. Supreme Council of Antiquities
10	Old Quarry Sites	Dr. Per Storemyr Dr. James A. Harrell Dr. Adel Kilani	Switzerland USA Supreme Council of Antiquities
11	Introduction	Dr. Samir Ghabbour	Cairo Univ.
12	Transboundary WH sites	Dr. Samir Ghabbour	Cairo Univ.
13	Action Plan	Dr. Samir Ghabbour	Cairo Univ.

* These contributions will be edited and published in the Proceedings of the Workshop, by the Egyptian National UNESCO Commission, with the collaboration of the African World Heritage Fund.

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Programme of the**Workshop****AFRICAN WORKSHOP FOR THE HARMONIZATION****OF WORLD HERITAGE TENTATIVE LISTS****IN NORTH AND EAST AFRICA****Cairo, Egypt, 16-18 March 2010****PROGRAMME****Day 1: Tue 16 March.**

10.00 – 11.00 Official Opening Session

11.00 - 11.30 Coffee Break

11.30 – 12.00 Overview by General Rapporteur (including: objectives, issues, exchange of experience, an African Action Plan, etc.)

12.00 – 14.00 Presentations of National Country Reports (Cultural Sites)

14.00 – 15.30 Lunch Break

15.30 – 17.30 Presentations of National Country Reports (Natural Sites)

Day 2: Wed 17 March.

10.00 – 13.30* Presentations by Experts (* Coffee and refreshments will be available on a side table)

13.30 – 15.00 Lunch Break

15.00 – 17.00 Discussion of Country Reports and the Presentations by Experts

Day 3: Thu 18 March

10.00 – 11.30* General Discussion of Lists, Recommendations, and Action Plan, Constitution of Drafting Group

11.30-13.30 Powerpoint Demonstrations

13.30 – 15.00 Lunch Break

15.00 – 16.00 Report of the Drafting Group, by General Rapporteur, Discussion, Eventual Approval of Report, and Closing Ceremony

Country Reports of the Two Workshops

Second African Workshop For the Harmonization of African
World Heritage Tentative Lists

Cairo 29 -30 may 2010

République Algérienne Démocratique et Populaire

Ministère de la Culture

Présentation de la liste indicative

d'Algérie

Mr Salah AMOKRANE, Directeur du parc culturel du Tassili

Mr Zouhir BALLALOU, Directeur de la culture de la Wilaya de
Ghardaia

Organe de gestion

☐ Projet socioéconomique :

☐ Electrification d'un village en énergie (solaire réalisé)

☐ Équipement de puits de parcours en pompe solaire (réalisé)

☐ Plan de développement intégré pour trois grands sites: Anhaf,
Tihoudaine, Medak (en cours de réalisation)

1) Les mausolées royaux de Numidie de la Mauritanie et les
monuments funéraires pré islamiques (préparation du dossier de
classement pour l'année 2011)

2) Parc des Aurès et les établissements oasiens des gorges de
Ghoufi et d'El kantara (préparation du dossier de classement pour
l'année 2012)

Sites portés sur la liste indicative (depuis 1992) :

3) Tlemcen et Nedroma (préparation du dossier de classement pour
l'année 2013)

4) Le parc culturel Touat Gourara Tidikelt -les oasis à fogaras et les
ksour du grand erg occidental (préparation du dossier de
classement pour l'année 2014)

5) Sites, lieux et itinéraires augustiniens du Maghreb central
(préparation du dossier de classement pour l'année 2015)

6) L'Oued Souf (préparation du dossier de classement pour l'année
2016)

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République Algérienne Démocratique et Populaire
Ministère de la Culture
Nouvelles propositions

Le parc national d'El Kala (site naturel)

Fiche descriptive

Décret de création : n°462/83 du 23 juillet 1983.

Organe de gestion : Établissement public à caractère administratif (EPA).

Superficie : 76438 ha.

Point culminant : 1202 m (Djebel El Ghorra).

Étage bioclimatique : subhumide chaud.

Flore: 964 espèces dont 840 espèces de plantes, dont 27 % sont des espèces rares et très rares et dont 26 sont protégées par décret, 114 espèces de lichens dont 53 protégées et 165 espèces de champignons.

Faune : 29 espèces de mammifères, 195 espèces d'oiseaux dont 69 sont protégées. 17 espèces de reptiles dont 3 protégées ; 7 espèces d'amphibiens ; 74 espèces de poissons réparties et 223 espèces d'invertébrés.

Particularités:

Le plus vaste parc national du Nord algérien;

Dernier refuge du cerf de Berberie (*Cervus elaphus barbarus*) ;

Avifaune très remarquable (plus de 60000 canards et foulques par an)

Région des lacs de notoriété internationale (Tonga, Oubeira et El-Mellah,) inscrits sur la liste Ramsar relative aux zones humides ;

mosaïque d'écosystèmes (marins, dunaires, lacustres et forestiers ; site classé réserve de la biosphère par l'Unesco;

Frange marine riche en corail et en poissons et posidonie.

Diversité de la flore du parc national d'El Kala

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Le parc national de Djurdjura (site naturel)

Décret de création : n°460/83 du 23 juillet 1983.

Organe de gestion : Établissement public à caractère administratif (EPA).

Superficie : 18550 ha dont 10340 ha au Nord et 8210 ha au Sud.

Point culminant : Tamgout de Lalla-Khedidja (2308 m).

Étage bioclimatique : subhumide, humide, perhumide à hiver froid.

Flore : environ 1100 espèces dont :

35 espèces endémiques au Djurdjura,

70 espèces sont très rares, 33 espèces sont protégées,

Faune : 23 mammifères dont 10 protégées et 122 oiseaux.

Particularités :

Parc de montagne avec des escarpements rocheux d'une rare beauté.

L'un des massifs les plus riches en rapaces d'Algérie du nord.

Présence de cèdre de l'Atlas avec de belles futaies d'un âge très avancé, d'une forme captivante et d'une végétation accompagnatrice riche et diversifiée (if, érables, houx,...).

Présence de peuplement endémique de pin noir.

Présence d'une faune remarquable telle que la salamandre et le singe magot.

Site classé réserve de la biosphère par le MAB le 15/12/1997.

Fiche descriptive

Diversité de la faune du parc national du Djurdjura

Décret de création : n°460/83 du 23 juillet 1983.

Organe de gestion : Établissement public à caractère administratif (EPA).

Superficie : 18550 ha dont 10340 ha au Nord et 8210 ha au Sud.

Point culminant : Tamgout de Lalla-Khedidja (2308 m).

Étage bioclimatique : subhumide, humide, perhumide à hiver froid.

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35 espèces endémiques au Djurdjura,

70 espèces sont très rares, 33 espèces sont protégées,

Faune : 23 mammifères dont 10 protégées et 122 oiseaux.

Particularités : Parc de montagne avec des escarpements rocheux d'une rare beauté.

L'un des massifs les plus riches en rapaces d'Algérie du nord.

Présence de cèdre de l'Atlas avec de belles futaies d'un âge très avancé, d'une forme captivante et d'une végétation accompagnatrice riche et diversifiée (if, érables, houx,...).

Présence de peuplement endémique de pin noir.

Présence d'une faune remarquable telle que la salamandre et le singe magot.

Site classé réserve de la biosphère par le MAB le 15/12/1997.

Fiche descriptive

Diversité de la faune du parc national du Djurdjura

Diversité de la flore du parc national du Djurdjura

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Le parc culturel de l'Ahaggar

(site mixte)

Décret de création : 231/87 du 03 novembre 1987

Organe de gestion : Office du parc culturel de l'Ahaggar

Superficie : 450 000 Km² .

Point culminant : Tahat (3003 m).

Étage bioclimatique : Désertique

Flore : environ 360 espèces dont :

73 espèces endémiques de l'Ahaggar ,

36 sont considérés gravement menacés ,

Faune : inclut 38 espèces de mammifères , la plupart typiques des climats arides

Particularités :

Le parc culturel de l'Ahaggar fait partie de l'espace géographique du Sahara dont la limite nord coïncide avec le piedmont sud de l'Atlas saharien et la limite sud va au-delà des frontières nationales à une ligne allant de l'embouchure du Sénégal au lac Tchad. A l'instar du reste du Sahara, la région a connu au cours des temps d'important changements climatiques. Il y a environ 10.000 ans, de nombreux lacs de très grandes étendues étaient connus dans la région. Une faune éthiopienne avec notamment des girafes, des rhinocéros, des autruches, des crocodiles, etc., était en place comme en témoignent les nombreuses gravures et peintures rupestres.

Fiche descriptive

No. de taxons PC de l'Ahaggar	Origine biogéographique
25	Souche méditerranéenne
18	Souche Saharo Soudanienne
20	Souche Tropicale

Diversité de la flore de l'Ahaggar

Faune

Le nombre total d'espèces au niveau nationale compte 350 oiseaux, 67 reptiles et 107 mammifères. La richesse spécifique au niveau de l'Ahaggar reste assez élevée avec 162 oiseaux, 29 reptiles et 38 mammifères. Cependant, la faune de la région a connu une évolution régressive pour certaines espèces comme l'Addax, l'Oryx, la Gazelle rouge et l'Autruche. Malgré leur disparition n'est pas encore confirmée avec certitude, la sécheresse et surtout la pression du braconnage empêchent ces espèces de recoloniser les habitats qu'ils occupaient et leurs aires de répartition historique.

L'actuel statut de protection des espèces en Algérie est établi en terme des trois éléments: (i) le Décret n°83-509 du 20 Août 1983 relatif aux espèces animales non domestiques protégées; (ii) l'Ordonnance n°06-05 du 15 Juillet 2006 relative à la protection et à la préservation de certaines espèces animales menacées de disparition; (iii) la liste rouge de l'UICN; (iv) la convention Africaine pour la conservation de la nature et des ressources naturelles; (v) la convention sur le commerce international des espèces de faune et de flore sauvages menacées d'extinction CITES; (vi) la convention de Bonn sur la conservation des espèces migratrices appartenant à la faune sauvage (CMS).

Le parc culturel de l'Ahaggar, un important habitat du guépard saharien

Observé dans la Tefedest avril 2004

Observé dans la Torha juillet 2006

Observé dans l'Egéré avril 2008

Mouflon à manchettes

observé février 2009

Gazelle Dorcas observée

février 2009

Diversité des représentations rupestres

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Le parc culturel Atlas saharien**L'ensemble des monts des Ksour et Amor****(site mixte)**

Localisation de l'ensemble paléontologique et archéologique dans le territoire du parc culturel de l'Atlas Saharien

Fiche descriptive

Décret de création :N.08-159 du 28/05/2008

Organe de gestion :office du parc culturel de l'Atlas Saharien

Superficie :63 000 km2.

Étage bioclimatique :Saharien à hiver froid.

Art rupestre :la région est connue pour être la première a dévoilée les manifestations rupestres des 1847 dans la localité de Tiout. l'Inventaire effectué depuis, a permis de mettre en évidence plus quatre cent stations comptant plus de de 2000 gravures échelonnées sur plus de six milles ans. Les études entamées dès le 19eme siècle ont démontré une diversité des techniques et des styles de réalisation de l'art , mais surtout la diversité des thématiques développées par les hommes préhistoriques qui ont soigneusement et fidèlement reproduit, soit la diversité de la faune ou la diversité culturelle ; rites et croyances et divers aspects sociologiques

Site paléontologique:la découvertes d'empreintes de pas de dinosauriens dans la région d'El Bayadh remonte au mois de mai 2004. Les travaux de prospection et de fouilles paléontologiques engagés par la suite sur ce site ont permis d'étendre la surface à empreintes, initialement de quelques dizaines de m2, à plus de 1000 m2. Ainsi, le nombre d'empreintes est passé d'une vingtaine d'empreintes à plus de 300 (12 pistes différentes), ce qui confère à cette localité d'être la plus importance en Afrique.

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Sites paléontologiques traces d'empreintes de pas de dinosaures dans le parc culturel de l'Atlas Saharien

	Bubale	Eléphant	Rhinocéros	Hippopotame	Girafe	Antilope Chevaline	Antilope Oryx	Antilope Addax
Sud-oranais	+	+	+	-	1	+	+	?
Oued Djerat	+	+	+	+	+	+	+	+
Fezzan	+	+	+	+	+	?	+	-
	Gazelle	Mouflon	Cerf	Phacochère	Oryctérope	Singes	Lion	Guépard
Sud-oranais	+	Tardif	-	-	-	-	+	+
Oued Djerat	+	+	-	+	+	+	+	+
Fezzan	+	Tardif	-	-	-	-	+	+
	Hyène	Cynhyène	Chacal	Lièvre	Autruche	Flamant Rose	Pélican	Hibou
Sud-oranais	-	-	-	+	+	-	-	-
Oued Djerat	+	+	+	+	+	+	+	+
Fezzan	-	-	+	+	+	-	-	-
	Crocodile	Python	Vipère	Couleuvre	Lamentin	Poissons	Chèvre	Mouton
Sud-oranais	-	-	-	-	-	-	-	-
Oued Djerat	+	+	+	+	?	+	+	+
Fezzan	+	-	-	-	-	-	+	+
	Chien	Boeuf						
Sud-oranais	+	+						
Oued Djerat	+	+						
Fezzan	+	+						

WH Tentative Lists of African Countries

(The reader should continuously look into the WH Center website for new information)

Updated 23 Sep 2008

Tentative Lists of all States Parties submitted in conformity with the *Operational Guidelines*. Out of 185 States Parties to the *Convention*, 163 have submitted a Tentative List. Property names are listed in the language in which they have been submitted by the State Party.

State	Party:	Algeria
Last	Revision:	30/12/2002
Records: 6 Properties		

Les Mausolées Royaux de Numidie, de la Maurétanie et les monuments funéraires pré-islamiques (30/12/2002)
 Les oasis à foggaras et les ksour du Grand Erg Occidental (30/12/2002)
 Nedroma et les Trara (30/12/2002)
 Oued souf (30/12/2002)
 Parc des Aurès avec les établissements oasiens des gorges du Rhoufi et d'El Kantara (30/12/2002)
 Sites, lieux et itinéraires augustiniens du Maghreb central (30/12/2002)

State	Party:	Angola
Last	Revision:	22/11/1996
Records: 11 Properties		

- Church of Nossa Senhora da Conceição da Muxima (22/11/1996)
- Church of Nossa Senhora da Victoria (22/11/1996)
- Church of Nossa Senhora do Rosario (22/11/1996)
- Fortress of Kambambe (22/11/1996)
- Fortress of Massanganu (22/11/1996)
- Fortress of Muxima (22/11/1996)
- Fortress of S. Francisco do Penedo (22/11/1996)
- Fortress of S. Miguel (22/11/1996)
- Fortress of S. Pedro da Barra (22/11/1996)
- Little Fort of Kikombo (22/11/1996)
- Ruin of M'banza Kongo (22/11/1996)

State	Party:	Benin
Last	Revision:	19/06/1998
Records: 5 Properties		

La Réserve W du Niger et l'habitat vernaculaire du nord Bénin (31/10/1996)
 La ville d'Ouidah : quartiers anciens et Route de l'Esclave (31/10/1996)
 La ville de Porto-Novo : quartiers anciens et Palais Royal (#) (31/10/1996)
 Site Lacustre de Ganvié (31/10/1996)
 Village souterrain d'Agonginto-Zoungoudo (19/06/1998)

State	Party:	Botswana
Last	Revision:	21/07/1999
Records: 4 Properties		

Gcwihaba (21/07/1999)
 Makgadikgadi Cultural Landscape (#) (21/07/1999)
 Toutswemogala Hill Iron Age Settlement (21/07/1999)
 Tswapong Hills (#) (21/07/1999)

State	Party:	Burkina Faso
Last	Revision:	30/01/2004
Records: 5 Properties		

Les gravures rupestres de Pobe-Mengao (#) (09/04/1996)
 Les nécropoles de Bourzanga (09/04/1996)
 Les ruines de Loropeni (#) (09/04/1996)
 Les sites d'extraction de fer de Kindiba (#) (09/04/1996)
 Parc National du W du Niger et aires protégées adjacentes (30/01/2004)

State	Party:	Burundi
Last	Revision:	09/05/2007
Records: 10 Properties		

Gasumo, la source la plus méridionale du Nil (09/05/2007)
 La réserve naturelle de la Rusizi (09/05/2007)
 La résidence royale du Burundi : Le cas de Gishora (09/05/2007)
 Le lac Tanganyika (09/05/2007)
 Le parc national de la Kibira (09/05/2007)
 Le parc national de la Ruvubu (09/05/2007)
 Le rugo traditionnel du Mugamba (09/05/2007)
 Les chutes de la Karera et la faille de Nyakazu (09/05/2007)
 Les paysages naturels sacrés de Muramvya, de Mpotsa et de Nkiko-Mugamba (09/05/2007)
 Rwihinda, lac aux oiseaux (09/05/2007)

State	Party:	Cameroon
Last	Revision:	18/04/2006
Records: 13 Properties		

Complexe des parcs nationaux de Boumba Bek et de Nki
(18/04/2006)
La chefferie de Bafut (18/04/2006)
Le Lamidat de Rey-Bouba (18/04/2006)
Les chutes de la Lobé (18/04/2006)
Les Diy-Gid-Biy du Mont Mandara (18/04/2006)
Les Gravures Rupestres de Bidzar (18/04/2006)
Mégalithiques de Saa (18/04/2006)
Parc national de Campo Ma'an (18/04/2006)
Parc national de Korup (18/04/2006)
Parc national de Lobeke (18/04/2006)
Parc national de Waza (18/04/2006)
Partie camerounaise du Lac Tchad (18/04/2006)
Site archéologique de Shum Laka (18/04/2006)

State	Party:	Cape	Verde
Last	Revision:		07/05/2004
Records: 6 Properties			

Camp de concentration de Tarrafal (07/05/2004)
Cidade Velha, ancienne Ribeira Grande (07/05/2004)
Cova e Montantes de Ribeiras da Torre et do Paul (07/05/2004)
La Saline de Pedra Lume (07/05/2004)
Le Plateau de la ville de Praia (07/05/2004)
Ville de Sao Filipe (07/05/2004)

State	Party:	Central	African	Republic
Last	Revision:			11/04/2006
Records: 10 Properties				

La colline et la plaine, la rivière Oubangui et le patrimoine colonial bâti de la ville de Bangui (11/04/2006)
La forêt et les campements résidentiels de référence pygmée AKA de la République Centrafricaine (11/04/2006)
La Réserve intégrale de la Mbaéré-Bondingué (11/04/2006)
La Réserve spéciale de Dzanga-Sangha (11/04/2006)
Le Tata (palais fortifié) du Sultan Sénoussi, les grottes de Kaga-Kpoungouvou, la ville de Ndélé (11/04/2006)
Les chutes de la Mbi (11/04/2006)
Les gravures rupestres de Lengo (11/04/2006)
Les mégalithes de Bouar (11/04/2006)
Les sites paléo-métallurgiques de Bangui (11/04/2006)
Les vestiges du train de Zinga (11/04/2006)

State **Party:** Chad **Last** **Revision:** 21/07/2005
Records: 9 Properties

Gravures et peintures rupestres de l'Ennedi et du Tibesti (21/07/2005)
 La région d'Archei : le paysage naturel, culturel et son art rupestre (21/07/2005)
 Lac Tchad (21/07/2005)
 Le site métallurgique de Begon II (21/07/2005)
 Les curieuses mines de fer de Télé-Nugar (21/07/2005)
 Les lacs d'Ounianga (21/07/2005)
 Les ruines d'Ouara (21/07/2005)
 Parc national de Zakouma (21/07/2005)
 Site à Hominidés anciens du Djourab (21/07/2005)

State **Party:** Comoros
Last **Revision:** 31/01/2007
Records: 4 Properties

Ecosystèmes Marins de l'Archipel des Comores (31/01/2007)
 Ecosystèmes terrestres et paysage culturel de l'Archipel des Comores (31/01/2007)
 Paysage Culturel des Plantations à Parfums des Iles de la Lune (31/01/2007)
 Sultanats Historiques des Comores (31/01/2007)

State **Party:** Congo
Last **Revision:** 12/06/2008
Records: 5 Properties

Ancien port d'embarquement des esclaves de Loango (12/06/2008)
 Domaine royal de Mbé (12/06/2008)
 Le Parc National de Conkouati-Douli (12/06/2008)
 Parc national d'Odzala-Kokoua (12/06/2008)
 Parc national de Nouabalé Ndoki (12/06/2008)

State **Party:** Côte d'Ivoire
Last **Revision:** 29/11/2006
Records: 4 Properties

Mosquées de style soudanais du Nord ivoirien (site en série) (29/11/2006)
 Parc archéologique d'Ahouakro (29/11/2006)
 Parc national des Iles Ehotilé (17/03/2006)
 Ville historique de Grand Bassam (29/11/2006)

State **Party:** Democratic Republic of the Congo
Last **Revision:** 11/11/1997
Records: 3 Properties

Dépression de l'Upemba (11/11/1997)

Grottes de Dimba et Ngovo (11/11/1997)

Grottes de Matupi (11/11/1997)

Djibouti

This State Party has not yet submitted a Tentative List.

Records: 0 Properties

State

Party:

Egypt

Last

Revision:

28/07/2003

Records: 30 Properties

Abydos, city of pilgrimage of the Pharaohs (28/07/2003)

Alexandria, ancient remains and the new library (28/07/2003)

Bird Migration Routes (12/06/2003)

Dahab (01/11/1994)

Dahshour archaeological area (01/11/1994)

Desert Wadis (12/06/2003)

El Fayoum: Kom Aushim (Karanis), Dimai (Soknopaiounesos), Qasr Qarun (Dionysias), Batn I hrit (Theadelphia), Byahma-Medinet el Fayoum..... (01/11/1994)

El-Gendi Fortress (01/11/1994)

Gebel Qatrani Area, Lake Qaroun Nature Reserve (10/02/2003)

Great Desert Landscapes (12/06/2003)

Historic quarters and monuments of Rosetta/Rachid (28/07/2003)

Minia (#) (01/11/1994)

Mountain Chains (12/06/2003)

Necropolises of Middle Egypt, from the Middle Empire to the Roman period (28/07/2003)

Newibah castle (01/11/1994)

North Sinai archaeological Sites Zone (01/11/1994)

Oasis of Fayoum, hydraulic remains and ancient cultural landscapes (28/07/2003)

Pharaon Island (01/11/1994)

Pharaonic temples in Upper Egypt from the Ptolemaic and Roman periods (28/07/2003)

Raoudha nilometre in Cairo (28/07/2003)

Ras Mohammed (22/01/2002)

Rutho Monastery (01/11/1994)

Siwa archaeological area (01/11/1994)

Southern and Smaller Oases, the Western Desert (12/06/2003)

Temple of Hathor built by Ramses III (01/11/1994)

Temple of Serabit El-Khadem (01/11/1994)

The An-Nakhl fortress, a stage on the pilgrimage route to Mecca (28/07/2003)

The monasteries of the Arab Desert and Wadi Natrun (28/07/2003)

Two citadels in Sinai from the Saladin period (Al-Gundi and Pharaoh's island) (28/07/2003)

Wadi Feiran (01/11/1994)

State **Party:** Eritrea **Last** **Revision:** 25/03/2005
Records: 1 Property

The Historic Perimeter of Asmara and its Modernist Architecture (25/03/2005)

State **Party:** Ethiopia
Last **Revision:** 13/03/2008
Records: 2 Properties

Bale Mountains National Park (13/03/2008)
 Konso-Gardula (paleo-anthropological site) (30/09/1997)

State **Party:** Gabon
Last **Revision:** 20/10/2005
Records: 6 Properties

Ecosystème et paysage culturel pygmée du massif de Minkébé (18/04/2003)
 Grottes de Lastourville (20/10/2005)
 Parc national d'Ivindo (20/10/2005)
 Parc national de Moukalaba Doudou (20/10/2005)
 Parc national des Monts Birougou (20/10/2005)
 Parc national des Plateaux Batéké (20/10/2005)

State **Party:** Gambia
Last **Revision:** 01/09/1995
Records: 2 Properties

Fort Bullen (01/09/1995)
 Prehistoric Stone Circle Sites (01/09/1995)

State **Party:** Ghana
Last **Revision:** 17/01/2000
Records: 6 Properties

Kakum National Park (Assin Attandanso Reserve) (#) (17/01/2000)
 Mole National Park (17/01/2000)
 Navrongo Catholic Cathedral (#) (17/01/2000)
 Nzulezu Stilt Settlement (17/01/2000)
 Tenzug - Tallensi settlements (17/01/2000)
 Trade Pilgrimage Routes of North-Western Ghana (17/01/2000)

State **Party:** Guinea
Last **Revision:** 29/03/2001
Records: 3 Properties

Architecture vernaculaire et paysage culturel mandingue du Gberedou/Hamana
 (29/03/2001)
 Paysage culturel des monts Nimba (29/03/2001)
 Route de l'esclave en Afrique segment de Timbo au Rio Pongo (29/03/2001)

State **Party:** Guinea-Bissau **Last** **Revision:** 13/10/2006
Records: 1 Property

Réserve de Biosphère de l'Archipel des Bijagos (13/10/2006)

State **Party:** Kenya
Last **Revision:** 09/11/2001
Records: 6 Properties

Fort Jesus (25/06/1997)
Great Rift Valley Ecosystem (09/11/2001)
Lake Bogoria National Reserve (16/08/1999)
Lake Naivasha (16/08/1999)
Lake Nakuru National Park (16/08/1999)
Mombasa Old Town (26/06/1997)

Lesotho

This State Party has not yet submitted a Tentative List.
Records: 0 Properties

Liberia

This State Party has not yet submitted a Tentative List.
Records: 0 Properties

Libyan Arab Jamahiriya

This State Party has not yet submitted a Tentative List.
Records: 0 Properties

State **Party:** Madagascar
Last **Revision:** 14/03/2008
Records: 7 Properties

Antongona (14/11/1997)
Falaise et grottes de l'Isandra (14/11/1997)
Les forêts sèches de l'Andrefana (14/03/2008)
Paysage culturel rizicole et hydraulique de Betafo (14/11/1997)
Réserve Spéciale d'Anjanaharibe-Sud (extension des forêts humides de l'Atsinanana) (14/03/2008)
Site et Rova de Tsingoaivo (14/11/1997)
Sud-Ouest Malgache, Pays Mahafaly (14/11/1997)

State **Party:** Malawi
Last **Revision:** 17/05/2000
Records: 3 Properties

Mulanje Mountain Biosphere Reserve (17/05/2000)
 Nyika National Park (17/05/2000)
 The Chongoni Rock Art Monument Area (15/09/1997)

State	Party:	Mali
Last	Revision:	08/09/1999
Records: 3 Properties		

Es-Souk (08/09/1999)
 Kamablou (08/09/1999)
 La Boucle du Baoulé (08/09/1999)

State	Party:	Mauritania
Last	Revision:	14/06/2001
Records: 3 Properties		

Paysage culturel d'Azougui (14/06/2001)
 Site archéologique de Kumbi Saleh (14/06/2001)
 Site archéologique de Tegdaoust (14/06/2001)

State	Party:	Mauritius
Last	Revision:	17/05/2006
Records: 2 Properties		

Black River Georges National Park (17/05/2006)
 Le Morne Brabant Mountain (28/07/2003)

State	Party:	Morocco
Last	Revision:	20/07/2006
Records: 14 Properties		

Aire du Dragonnier Ajgal (12/10/1998)
 El Gour (01/07/1995)
 Grotte de Taforalt (01/07/1995)
 Lagune de Khnifiss (12/10/1998)
 Mosquée de Tinnel (01/07/1995)
 Moulay Idriss Zerhoun (01/07/1995)
 Parc national de Dakhla (12/10/1998)
 Parc naturel de Talassemtane (12/10/1998)
 Qasba des Oudayas (20/07/2006)
 Site de Chellah (01/07/1995)
 Taza et la Grande Mosquée (01/07/1995)
 Tour Hassan (01/07/1995)
 Ville antique de Sala (01/07/1995)
 Ville de Lixus (01/07/1995)

State	Party:	Mozambique
Last	Revision:	20/08/2008
Records: 6 Properties		

Manyikeni and Chibuene (15/09/1997)
 Ponta de Ouro Protected Marine Area (20/08/2008)
 Quirimba archipelago and Ibo island (15/09/1997)
 The Quirimbas Archipelago (20/08/2008)
 Vumba Mountain Range (20/08/2008)
 Vumba Rock Paintings (15/09/1997)

State	Party:	Namibia
Last	Revision:	03/10/2002
Records: 4 Properties		

Brandberg National Monument Area (03/10/2002)
 Fishriver Canyon (03/10/2002)
 Southern Namib Erg (03/10/2002)
 Welwitschia Plains (03/10/2002)

State	Party:	Niger
Last	Revision:	26/06/2006
Records: 19 Properties		

Gisements des dinosauriens (26/05/2006)
 Itinéraires Culturels du Désert du Sahara : Route du sel (26/05/2006)
 L'ensemble des forêts protégées de la région d'Agadez (26/05/2006)
 La forêt classée, le lac de Madarounfa et les tombeaux des 99 saints (26/05/2006)
 La Réserve Naturelle Nationale de l'Aïr et du Ténéré (26/05/2006)
 La vieille ville de Zinder, quartier de Birni et le Sultanat (26/05/2006)
 La ville d'Agadez : la grande mosquée, les anciens quartiers (26/05/2006)
 Le fleuve Niger, les îles et la vallée (26/05/2006)
 Le site de Lougou (26/05/2006)
 Les mosquées en terre de la région de Tahoua (26/05/2006)
 Mare d'Ounsolo ou N'Solo (26/05/2006)
 Massif de Ternit (26/05/2006)
 Palais du Zarmakoye de Dosso (26/05/2006)
 Parc national du « W », sites archéologiques (26/06/2006)
 Partie nigérienne du lac Tchad (26/05/2006)
 Plateau et Fortin du Djado (26/05/2006)
 Réserve de faune de Galbedji (26/05/2006)
 Site archéologique de Bura (26/05/2006)
 Zone Giraphe (26/05/2006)

State	Party:	Nigeria
Last	Revision:	08/10/2007
Records: 12 Properties		

Alok Ikom Stone Monoliths (08/10/2007)
 Ancient Kano City Walls and Associated Sites (08/10/2007)
 Arochkwu Long Juju Slave Route (Cave Temple Complex) (08/10/2007)
 Benin Iya / Sungbo's Eredo (01/11/1995)
 Gashaki-Gumti National Park (01/11/1995)

Kwiambana and/or Ningi (01/11/1995)
 Niger Delta Mangroves (01/11/1995)
 Oban Hills / Korup (01/11/1995)
 Ogbunike Caves (08/10/2007)
 Oke Idanre (Idanre Hill) (08/10/2007)
 Old Oyo (01/11/1995)
 Surame Cultural Landscape (08/10/2007)

Rwanda

This State Party has not yet submitted a Tentative List.
Records: 0 Properties

Sao Tome & Principe

This State Party has not yet submitted a Tentative List.
Records: 0 Properties

State	Party:	Senegal
Last	Revision:	18/11/2005
Records: 10 Properties		

Architecture rurale de Basse-Casamance : Les cases à impluvium du royaume
 Bandial (18/11/2005)
 L'Aéropostale (18/11/2005)
 L'île de Carabane (18/11/2005)
 Le Delta du Fleuve Saloum (18/11/2005)
 Le Lac Rose (18/11/2005)
 Le Pays Bassari : traditions culturelles bassari, bedik, koniagui, bapen
 (18/11/2005)
 Le Vieux Rufisque (18/11/2005)
 Les Escales du Fleuve Sénégal (18/11/2005)
 Les tumulus de Cekeen (18/11/2005)
 Parc National des îles de la Madeleine (18/11/2005)

Seychelles

This State Party has not yet submitted a Tentative List.
Records: 0 Properties

Sierra Leone

This State Party has not yet submitted a Tentative List.
Records: 0 Properties

State Party: South Africa **Last Revision:** 15/04/2008
Records: 10 Properties

Alexandria Coastal Dunefield (15/05/2004)
 Barberton / Makhonjwa Mountain Land (BML) (15/04/2008)
 Kimberley Mines and Associated Early Industries (15/05/2004)
 Modderpoort Sacred Sites (#) (30/06/1998)
 Pilgrim's Rest Reduction Works Industrial Heritage Site (15/05/2004)
 Pleistocene occupation sites of Klasies River, Border Cave, Wonderwerk Cave
 and comparable sites relating to the emergence of modern humans
 (30/06/1998)
 The !Xam Khomani Heartland (15/05/2004)
 The Cape Winelands Cultural Landscape (24/06/2004)
 The Prince Edward Islands (24/06/2004)
 Tswaing Meteorite Crater (15/05/2004)

State Party: Sudan
Last Revision: 28/09/2004
Records: 7 Properties

Dinder National Park (28/09/2004)
 Kerma (01/09/1994)
 Old Dongola (01/09/1994)
 Sanganeb National Park (28/09/2004)
 Suakin (01/09/1994)
 The Island of Meroe (31/08/2004)
 Wadi Howar National Park (28/09/2004)

Swaziland

This State Party has not yet submitted a Tentative List.
Records: 0 Properties

State Party: Tanzania, United Republic of **Last Revision:** 20/02/2006
Records: 6 Properties

Eastern Arc Mountains Forests of Tanzania (10/01/2006)
 Gombe National Park (27/05/1997)
 Jozani - Chwaka Bay Conservation Area (#) (27/05/1997)
 Kondoa Irangi Rock Paintings (31/10/2000)
 Oldonyo Murwak (27/05/1997)
 The Central Slave and Ivory Trade Route (20/02/2006)

State Party: Togo
Last Revision: 08/01/2002
Records: 7 Properties

Agglomération Aného-Glidji (12/12/2000)

La réserve de faune d'Alédjo (08/01/2002)
 Les Greniers des Grottes de Nok et de Mamproug (12/12/2000)
 Les palais des gouverneurs (08/01/2002)
 Parc national de Fazao Mafakassa (08/01/2002)
 Parc national de la Kéran et la réserve de faune Oti-Mandouri (08/01/2002)
 Woold Homé (08/01/2002)

State	Party:	Tunisia
Last	Revision:	28/05/2008
Records: 4 Properties		

Chott El Jerid (28/05/2008)
 Oasis de Gabès (28/05/2008)
 Parc National d'El Feija (28/05/2008)
 Parc National de Bouhedma (28/05/2008)

State	Party:	Uganda
Last	Revision:	30/01/2007
Records: 5 Properties		

Bigo bya Mugenyi (Archaeological Earthworks) (10/09/1997)
 Kibiro (Salt producing village) (10/09/1997)
 Mgahinga Gorilla National Park (MGNP) (30/01/2007)
 Ntusi (man-made mounds and Basin) (10/09/1997)
 Nyero Rockpaintings (Ancient paintings in rockshelters) (10/09/1997)

State	Party:	Zambia
Last	Revision:	11/06/1997
Records: 3 Properties		

Dag Hammarskjöld Memorial (Crash site) (11/06/1997)
 Kalambo falls archaeological site (prehistoric settlement site) (11/06/1997)
 Mwela and adjacent areas rock art site (rock paintings) (11/06/1997)

State	Party:	Zimbabwe
Last	Revision:	26/06/1997
Records: 1 Property		

- Ziwa National Monument (26/06/1997)

MEDIA RELEASE

African workshop For the Harmonization of African World Heritage Tentative Lists

Cairo, Egypt, 16-18 March 2010

World heritage sites are sites of cultural or natural heritage with outstanding universal value recommended by the World Heritage Committee of UNESCO, upon the request of Member States – in a list known as the World Heritage List.

Interest in world heritage appeared when building the Aswan High-Dam in the late 1950's, when it was clear that it would create a permanent body of water that would cause inundation of sites of great importance, especially the Abu Simbel temple. To avoid that, the late President Gamal Abdel-Nasser issued an international call in which he asked for a global cooperation to rescue that valuable heritage and charged UNESCO with task of preparing this mission scientifically and financially. UNESCO accepted the challenge and led an international campaign to protect and rescue Nubian monuments, and especially Abu Simbel Temple. As a result, those monuments were saved. Rescue works have brought out to light that many sites have a great importance and value as world heritage and that protecting them is a mission to be carried out not only by their countries, but also by the international community as a whole. And so UNESCO sponsored an international agreement concerning the conservation of the world's most valuable cultural and natural heritage, namely, the International Convention for the Protection of World Cultural and Natural Heritage, approved by the UNESCO General Conference in its seventeenth session in Paris on the 16th of November 1972.

This Convention is the international legal tool concerning natural and cultural heritage, setting criteria for recommending sites qualified to be of outstanding universal value. It also determines methods of conservation and management of that heritage.

The Convention is implemented by the World Heritage Center and the World Heritage Committee at UNESCO. The Committee consists of 21 Member States Parties which change by rotation. Membership in the Convention has by now reached 185 countries. The Committee holds annual meetings to study the recommended sites presented by the Member States Parties, to inscribe them on the World Heritage List and take required decisions concerning the status of those listed sites or those threatened by various types of danger.

The process of a country recommending its site includes many steps. First of all, signing the Convention to get a membership therein. After that, the country prepares a Tentative List (TL) of the sites that it considers of outstanding universal value. Then, it chooses from time to time – from the TL – one or more site(s) to be added to the World Heritage List, indicating its reasons for that. Also it indicates that the site is under legal protection by national laws to guarantee its authenticity and its integrity, its safety, and that it has an effective management plan and suitable administration. In addition, it presents a comparative analysis of that site with other ones of the same type in the same country or in other countries. Approval for inscription of the site in question is conditioned by applying – at least – one of the ten criteria mentioned the Convention. Those criteria emphasize the site's outstanding universal value. The number of sites in the World Heritage List is increasing every year. Now, it has become 890 sites.

Listing a site does not mean that UNEISCO is managing its matters itself; it remains kept under the control of its owning country and under its protection and management. The idea is that the site can benefit from the attention of the international community which cooperates with its country in protecting it in case of danger or damage, by presenting technical help or financial support or both of them, upon need. Countries try to list their sites in the List as this means a global recognition of the value of this country's cultural and natural heritage, and attracts touristic importance.

In 2005, African countries felt that their contribution in and benefit from the agreement is less than they expect. As a result, the Republic of South Africa has called for a meeting for the experts of the African countries in which they decreed forming a fund for African heritage, which would contribute in enhancing the African heritage and increasing the participation of African countries, to benefit thereof. Indeed, the fund was established in 2006. Egypt and some other European countries and foundations contributed in its budget. Egypt was elected as a member of its Board of Directors to represent North Africa. The B.O.D. has held a meeting in Cairo in 2008.

The fund has started its activity by holding experts meetings for different areas of Africa to study the problems of its WH sites, so that African countries would not compete with each other in recommending similar sites. This situation is removed by the experts coming together to study the submitted Tentative Lists, to achieve harmony amongst them, to prioritize them, and to set common plans to manage them. During the last two years, the fund has contributed in holding regional workshops for different African countries, that ended with recommendations to be viewed by decision makers in those countries.

Through the Fund's programme, Egypt has called for a workshop including countries for countries of North Africa for the same purpose. A few countries from East Africa were also invited to harmonize with their TLs. The meeting is to be held in Cairo from 16 to 18 March 2010.

The Workshop aims to:

- 1- Encourage cooperation among African countries and improving the opportunities of success of recommendation of their Nomination Files for inscribing African sites on the WH List.
- 2- Prioritize these sites on sound scientific bases, to avoid repetition, so as to improve their chances of success when officially submitted.

Expected results form the mentioned workshop:

- Getting African Tentative Lists to which one at least of the ten criteria of the Convention can be applied.
- Publication of a book explaining these sites.
- Planning for cooperative work among African countries to save their heritage resources.
- Establishing a network of the directors and experts of African World Heritage.

Participating Countries:

- Libya, Tunisia, Algeria, Morocco, Mauritania, Sudan Ethiopia, Tanzania, Kenya, South Africa.

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**Harmonization of African Tentative Lists
of States Parties Participating in the
Cairo Workshop, 16-18 March 2010**

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INSCRIBED PROPERTIES/SITES

Algeria

Al Qal'a of Beni Hammad
Djémila
M'Zab Valley
Tassili n'Ajjer
Timgad
Tipasa
Kasbah of Algiers

Egypt

Abu Mena
Ancient Thebes with its Necropolis
Historic Cairo
Memphis and its Necropolis – the Pyramid Fields from Giza to Dahshur
Nubian Monuments from Abu Simbel to Philae
Saint Catherine Area
Wadi Al-Hitan (Whale Valley)

Ethiopia

Simien National Park
Rock-Hewn Churches, Lalibela
Fasil Ghebbi, Gondar Region
Aksum
Lower Valley of the Awash
Lower Valley of the Omo
Tiya
Harar Jugol, the Fortified Historic Town

Kenya

Lake Turkana National Parks
Mount Kenya National Park/Natural Forest
Lamu Old Town
Sacred Mijikenda Kaya Forests

Libyan Arab Jamahiriya

Archaeological Site of Cyrene
Archaeological Site of Leptis Magna
Archaeological Site of Sabratha
Rock-Art Sites of Tadrart Acacus

Old Town of Ghadamès

Mauritania

Banc d'Arguin National Park

Ancient Ksour of Ouadane, Chinguetti, Tichitt and Oualata

Morocco

Medina of Fez

Medina of Marrakesh

Ksar of Ait-Ben-Haddou

Historic City of Meknes

Archaeological Site of Volubilis

Medina of Tétouan (formerly known as Titawin)

Medina of Essaouira (formerly Mogador)

Portuguese City of Mazagan (El Jadida)

South Africa

Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai, and Environs

iSimangaliso Wetland Park

Robben Island

uKhahlamba / Drakensberg Park

Mapungubwe Cultural Landscape

Cape Floral Region Protected Areas

Vredefort Dome

Richtersveld Cultural and Botanical Landscape

Sudan

Gebel Barkal and the Sites of the Napatan Region

Tanzania, United Republic of

Ngorongoro Conservation Area

Ruins of Kilwa Kisiwani and Ruins of Songo Mnara

Serengeti National Park

Selous Game Reserve

Kilimanjaro National Park

Stone Town of Zanzibar

Kondoa Rock-Art Sites

Tunisia

Amphitheatre of El Jem

Medina of Tunis

Site of Carthage

Ichkeul National Park

Punic Town of Kerkuane and its Necropolis

Kairouan

Medina of Sousse

Dougga / Thugga

Uganda

Bwindi Impenetrable National Park

Rwenzori Mountains National Park
Tombs of Buganda Kings at Kasubi

Zimbabwe

Mana Pools National Park, Sapi and Chewore Safari Areas
Great Zimbabwe National Monument
Khami Ruins National Monument
Mosi-oa-Tunya / Victoria Falls
Matobo Hills



The Second African World Heritage Workshop Harmonization of African World Heritage Tentative Lists

Cairo, 29-30 May 2010

Egyptian Participants

N	Name	Affiliation
1	Dr. Samir Ghabbour	IARS, Cairo University - EGNATCOM
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3	Dr. Mohamed M. Abed	Fac of Science, Mansours, Mansoura University
4	Dr. Ferial El Bedewy	Sac of Science, Damietta, Mansoura University
5	Dr. Manal Fawzy	Fac of Science, Alexandria University
6	Dr. Hala Nayel Barakat	CultNat
7	Dr. Khaled Saad	Supreme Council of Antiquities
8	Mr. Mohamed Ibrahim	State Ministry of Environment

Participants from African Countries

N	NAME	COUNTRY
1	Mr. Webber Ndoro	AWHF, SOUTH AFRICA
2	Mr. Zouhir Ballalou	ALGERIA
3	Mr. Amokrane Salah	ALGERIA
4	Mrs. Teshay Eshetie	ETHIOPIA
5	Mr. Hailu Zeleke	ETHIOPIA
6	Mr. James Gichia Njogu	KENYA
7	Mr. Hosea Wanderi	KENYA
8	Mr. El Taher Adam Elnour	SUDAN
9	Mr. Khamis Megwok	SUDAN

The Ancient Stone Quarry Landscapes of Egypt: Proposal for a New *Serial* World Heritage Site

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Abstract

Current work aimed at nominating the Old Kingdom quarry site of Widan el-Faras in the Northern Faiyum (Egypt) for inclusion on the World Heritage List raises fundamental questions. On the background of the fact that ancient quarry sites are extremely underrepresented on the World Heritage List and that many ancient Egyptian quarry sites are worthy of such a prominent status, it is argued that the Widan el-Faras proposal should be considered as the first step in a planned serial nomination of such sites. It is also argued that a serial site, for example labelled "The Ancient Stone Quarry Landscapes of Egypt", will hold more authority and thus be easier to promote than a single site.

Introduction

The "Global Strategy" of the UNESCO World Heritage Centre advocates a more balanced and representative World Heritage List in terms of both geographical distribution and types of sites and landscapes. Ancient stone quarries are one of the site types greatly underrepresented on the current list. Many World Heritage Sites include ancient quarries within their boundaries, but in one case only has a site been selected due to its particular significance

as an ancient quarry; the Spiennes flint quarry (or mine) in Belgium. In contrast, there is a dozen or so metal mining sites inscribed on the list. Furthermore, at the moment there seems to be only two quarry sites on the tentative list (the Yapease "money" quarry sites in the Pacific and the Carrara marble basin in Italy).⁸ Given that ancient quarry sites are extremely numerous across the world and that such production sites contributed vastly to sustaining ancient cultures and shaping their (and our) landscapes, there is undoubtedly a call to increase the number of such sites on the list, to be *inscribed due to their primary significance as quarries*.

Ancient Quarries and World Heritage Sites in Egypt

Few, if any, regions of the world exhibit such a wealth in ancient quarries for building, ornamental and utilitarian stone as Egypt. In a North-African context its stone quarry heritage is, of course, outstanding.⁹ Practically the whole Egyptian Nile Valley and several adjacent, remote desert areas comprise extensive series of continuous stone quarry landscapes, with the Pharaonic and Graeco-Roman sites as the largest and most visible. From this more than 3000 year long period there are considerably more than 200 large, individual quarries; they were in production over long time-spans and are often connected to neighbouring quarries as well as the sites where the stone was used.¹⁰

Three Egyptian quarry sites are inscribed on the World Heritage List as part of larger sites: The New Kingdom Unfinished Obelisk in Aswan ("Nubian Monuments from Abu Simbel to Philae"), the Old Kingdom limestone quarries by the Giza pyramids and other pyramid sites ("Memphis and its Necropolis – the Pyramid Fields from Giza to Dahshur") and the New Kingdom limestone quarry close to the Valley of the Kings on the west bank at Luxor ("Ancient Thebes with its Necropolis"). The Unfinished Obelisk is promoted as a quarry site and developed for visitors, but though millions visit the two other places their quarries are, understandably, entirely overshadowed by pyramids, tombs and temples.¹¹ In addition, two ancient quarries figure rather prominently on the *tentative* Egyptian World Heritage list; Widan el-Faras (Old Kingdom basalt quarry) as part of Gebel Qatrani mixed natural/cultural site in the Northern Faiyum and the turquoise quarry (or mining) site as part of (or rather associated with) the Serabit el-Khadim temple in Sinai. Among the other 29(!) cultural and natural sites on the

⁸ Information from the website of the UNESCO World Heritage Centre (<http://whc.unesco.org>).

⁹ See also note by James A. Harrell on known quarries in North Africa outside Egypt (appendix 2)

¹⁰ Harrell, J.A. & Storemyr, P. (2009): Ancient Egyptian Quarries – An Illustrated Overview. In: Abu-Jaber, N., Bloxam, E., Degryse, P. & Haldal, T. (eds.): *QuarryScapes. Ancient stone quarry landscapes in the Eastern Mediterranean, Geological Survey of Norway Special Publication 12*, 7-50. See also Storemyr, P., Bloxam, E. and Haldal, T. (eds.) (2007) Risk assessment and monitoring of ancient Egyptian quarry landscapes. *QuarryScapes report*, Geological Survey of Norway, Trondheim, 207 pp. Online at: www.quarryscapes.no. This overview includes references to a number of other overviews and accounts of single quarry sites.

¹¹ *ibid.*

tentative list significant ancient quarries exist within at least six of them, but this seems to be entirely coincidental and they are not (or hardly) mentioned in the proposals. These tentative sites are: "Dababiya" (a geological site), "Dahshour archaeological area", "Desert wadis", "Minia" (a generic term for various tomb-sites), "Necropolises of Middle Egypt from the Middle Empire to the Roman period" and "Mountain Chains" (various natural landscapes).¹²

Recently, there has been some change to the nomination of Gebel Qatrani as a mixed natural/cultural World Heritage Site. Since it is difficult to justify relationships between the area's most significant natural (fossils) and cultural (ancient quarry) values in World Heritage terms, it has been decided to pursue two strategies: 1) forward the fossil sites as an extension to the existing, nearby World Heritage Site of Wadi Al-Hitan ("Whale Valley") and; 2) forward the basalt quarries and its related infrastructure as a new cultural World Heritage Site.¹³ Though this implies that the landscape context of the sites to some extent is devalued, this strategy may very well be a viable one for obtaining World Heritage status for two characteristic traits of the area, both of which have World Heritage potential according to the "Operational Guidelines for the Implementation of the World Heritage Convention"¹⁴ (outstanding universal value, integrity etc.). For Widan el-Faras this potential is particularly (but not exclusively) related to its associated, unique 12 km long Old Kingdom quarry road – the oldest paved road in the world.

However, if this strategy leads to success (i.e. World Heritage status for both the fossils and the quarry), a burning question remains: What about all the other ancient quarries with obvious World Heritage potential in Egypt? If Widan el-Faras obtains World Heritage status, which it undeniably deserves, arguably it may become difficult to pursue realistic strategies for including other quarry sites on the list in the foreseeable future. Though Egypt has comparatively few World Heritage Sites, it cannot be expected that the country soon obtains this status for additional ancient quarries. Moreover, Widan el-Faras is not particularly representative of the totality of ancient Egyptian quarry sites; in essence the Egyptian "quarried landscape" is formed by the 140 limestone and sandstone quarries along the Nile and about 40 very diverse sites in the Eastern Desert. Thus, a nomination of Widan el-Faras as a single site to some extent disregards this particular and significant type of heritage as a whole. Thus, rather than pursuing this single site, it may be an option to forward a serial site with a representative collection of ancient quarries.

¹² Information mainly from the website of the UNESCO World Heritage Centre (<http://whc.unesco.org>).

¹³ Information from Prof. Samir Ghabbour, chairperson of the UNESCO MAB (Man and the Environment) Committee, Egypt. Background information in Storemyr et al. (2007) (op. cit.) and Bloxam, E. and Haldal, T. (2007) The industrial landscape of the northern Faiyum Desert as a World Heritage Site: modelling the 'outstanding universal value' of third millennium BC stone quarrying in Egypt. *World Archaeology*, **39**, 305-323.

¹⁴ Hereafter called the "Operational Guidelines". They can be downloaded from the website of the World Heritage Centre (<http://whc.unesco.org/archive/opguide08-en.pdf>).

"The Ancient Quarry Landscapes of Egypt" – a World Heritage Serial Property?

With some right one may describe several existing and tentative World Heritage Sites in Egypt as *serial properties* – or properties that have certain similarities, but are not co-located, or that are of outstanding universal value as a whole rather than as individual elements. "The Nubian Monuments from Abu Simbel to Philae" is one example; others are tentative sites such as "Necropolises of Middle Egypt" and "Mountain chains". Whereas "The Nubian Monuments..." was seemingly nominated and approved in one go (1979), the "Operational Guidelines" (in paragraphs 137-139) leaves it up to the State Party to decide on the timing of submission of individual properties within a serial nomination "provided that the first property nominated is of outstanding universal value in its own right". But it encourages the State Party "to inform the [World Heritage] Committee of their intention in order to ensure better planning". Thus, the *submission* of serial properties is in principle not particularly more complex than as regards single properties, though in terms of administration and management it certainly is more difficult.

Given that Widan el-Faras is of outstanding universal value, it can be argued that this site could form the first step in a serial nomination of ancient quarries. In addition to considering their significance as a whole, such a nomination strategy may also be more viable in terms of promotion of this underrepresented group of heritage on the World Heritage List; there is undoubtedly more authority to "The Ancient Quarry Landscapes of Egypt" than "Widan el-Faras Ancient Quarry Site". But which other sites than Widan el-Faras could be suggested as belonging to a serial nomination? Given that subsequent sites to be potentially nominated do not necessarily have to fulfil the criteria of "outstanding universal value", it is in particular the criteria related to integrity (condition) and management that need to be seriously evaluated. In addition, sites nominated as World Heritage must in some way hold an official, legal protection status, which is not yet the case for many Egyptian quarries. Four groups of quarries are identified:

1. Existing World Heritage Sites (as part of larger sites)
2. Potential World Heritage Sites with current basic management
3. Potential World Heritage Sites without current management
4. Limestone quarries as potential World Heritage Sites

Group 1 includes the Unfinished Obelisk in Aswan and the two others that are part of larger, existing World Heritage Sites. The quarries in group 2 and 3 are mostly regarded as of "outstanding universal value" and certainly representative or special enough for inclusion in a serial nomination. They are generally in rather good to excellent condition, but have a diverse status in

terms of legal protection and management. Note that gem stone sites have been included here; these are often called "mines".

Limestone quarries are placed in a special group (4) since they are so numerous along the Nile Valley. They have not yet been evaluated more thoroughly, but may include the following important, potential sites to a serial nomination: Abu Sir (L1), el-Babein (L9), Beni Hasan (L21), Deir Abu Hennis (L24), Wadi el-Nakla (L25), Qaw el-Kebir (L75), el-Sawayta (L8), Zawyet el-Amwat (L16), Queen Tiy Quarry (L31) and el-Dibabiya (L91). (The numbers refer to attached map and list of ancient quarries).¹⁵

In total nine sites/landscapes and an additional two or three limestone quarries are thus suggested as candidates to a planned serial nomination.¹⁶ However, in practical terms, only the ones in the second group can probably be forwarded in the first round, given that it takes time to set up management regimes. In addition, it may in the future be considered to change the status of those already included on the World Heritage List to figure as part of "The Ancient Quarry Landscapes of Egypt". In particular, the Unfinished Obelisk would definitely belong here; its inscription as part of "Nubian monuments..." reflects technicalities rather than realities. Moreover, this site is the most famous ancient Egyptian quarry, visited by tens of thousands every year, part of a prominent ancient quarry landscape and also a SCA-centre for activities related to research and preservation of other ancient quarries. It should definitely become the natural spearhead of a World Heritage serial site.

Concluding remarks

Clearly, administering a World Heritage serial nomination is more complex than pursuing one single site. However, in addition to the rather obvious advantages in terms of following up the "Global Strategy" of the World Heritage Centre, thus increasing the potential for inclusion, and ensuring that the ancient Egyptian quarry sites become adequately represented on the World Heritage List, there are a number of additional benefits. First, a serial nomination will have authority in terms of promotion, and thus it may aid in generating resources badly needed for further work on survey, excavation, value assessment, risk assessment, monitoring and – most importantly – conservation and management of ancient Egyptian quarry sites at large. Second, the authority of a serial nomination may aid the global promotion of ancient quarry sites and thus potentially encourage other countries to nominate – and conserve and manage – such often neglected and heavily threatened sites. The "Operational Guidelines" open for transboundary serial World Heritage sites; whether the Egyptian sites can be considered in a

¹⁵ See also note by James A. Harrell III on significant limestone quarries (appendix 3)

¹⁶ Others can, of course, follow, if desirable.

regional, for example Eastern Mediterranean, context is possible, but probably not viable in the first round.

Table 1: Potential ancient Egyptian quarry sites and landscapes to be included in a serial World Heritage nomination. A map and list of all known (mainly) Pharaonic to Roman quarries form an attachment (appendix 1) to this paper. The numbers by each quarry in the table refer to this map/list.

Site/ landscape	Location	Stone or mineral product	Main periods (1)	Highlights	Integrity (condition)	Manage- ment	SCA legal status(2)	WH
1. Existing World Heritage Sites (as part of larger sites)								
Unfinished Obelisk H6	Aswan	Granite	NK-R	Quarrying technology	Rather good	Full, outdoor museum	SCA property	Part "Nu mon Part "Me and Nec Part "An The
Giza quarries L2	Giza	Limestone	OK	Connection to pyramids	Rather good	Basic, outdoor museum	SCA property	
Wadi el-Muluk L85	Luxor west bank	Limestone	NK	Connection to Luxor monuments	Fair	Probably not	SCA property	
2. Potential World Heritage Sites with current basic management								
Widan el-Faras H2	Northern Faiyum	Basalt	OK	Quarry road, early hardstone quarry	Rather good, small parts destroyed	Basic, part of "Lake Qarun Nature Protectorate"	No	Ten part "Ge Qat Lak Nat Res Ten part "Te Ser Kha
Serabit el-Khadim G2	Sinai	Turquoise	MK-LP	Connection quarry/large temple site	Rather good, small parts destroyed	Under development	SCA property	
Mons Smaragdus (Wadi Sikait environs) G6	Eastern Desert	Emerald	R	Permanent desert operation, unique source	Excellent	Basic, part of "Wadi Gemal Nature Protectorate"	No	Ten part "De wad
Gebel el-Silsila S9	Near Kom Ombo	Sandstone	MK-R	Size and location	Rather good, small parts destroyed	Basic (guarding, visitor facil.)	Unclear	No
3. Potential World Heritage Sites without current management (preliminary selection)								
Mons Porphyrites to Claudianus (incl. Gebel Manzal el-Seyl) H10-21	Eastern Desert	Various hardstones	R (Manzal el-Seyl is ED)	Permanent infrastructure in remote desert, special stones	Excellent	No (part of proposed nature protectorate – Shayeb el-Banat)	Unclear	Ten part "Mo cha
Chephren's Quarry H7	Near Abu Simbel	Anorthosite gneiss etc.	OK	Early hardstone quarry, special stone	Rather good, small parts destroyed	No	No, may be under registration	No
Gebels Gulab and Tingar environs H5	Aswan west bank	Silicified sandstone	P, PD-R	Longevity, quarry road network	Rather good, small parts destroyed	No	No	No sma sites area
Wadi Hammamat H28	Eastern Desert	Greywacke etc.	PD-R	Longevity, inscriptions	Rather good, small parts destroyed	Probably not	Unclear	No
Hatnub T8	Near Amarna	Travertine	OK-R	Desert operations, quarry road	Fair, parts destroyed	Probably not	May be under registration	No
el-Qawatir	Near el-	Travertine	Phara-	Underground	Fair	No	Unclear	No

T4	Minya	onitic	operations						
Wadi el-Sheikh H33	Between Beni Suef and el-Minya	Chert (flint)	Phara-onic	Enormous extent	Good	No	Unclear	No	

1. P=Palaeolithic, PD=Predynastic (3-5000 BCE); ED, OK, MK, NK, LP=Early dynastic, Old, Middle, New Kingdom and Late Period (3000-332 BCE), Pt=Ptolemaic period (332-30 BCE); R=Roman period (30 BCE-395 CE)

2. Apart from general protection under the Antiquities Law (1983). SCA=Supreme Council of Antiquities.

Appendices

1. Map and list of all known ancient Egyptian building and ornamental stone quarries, by Per Storemyr and James Harrelll
2. Note on ancient quarries in North Africa outside Egypt, by James Harrelll
3. Note on soft stone quarries in the Nile valley, by James Harrelll
4. Presentation held at the Workshop 16-18 March 2010, kindly conducted by Prof. Samir Ghabbour

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Further information about these publications at:

<http://www.ngu.no/en-gb/hm/Publications/Special-Publication/Issues/special-publication-12/>

Websites

See "Archaeological Geology in Ancient Egypt" by James Harrell for further information on quarry sites - www.eescience.utoledo.edu/Faculty/Harrell/Egypt/AGRG_Home.html

See the project "Conservation of Stone Quarry Landscapes in the Eastern Mediterranean" for much information and reports/papers on ancient Egyptian quarries - www.quarryscapes.no

Appendix 1

List of known ancient Egyptian quarries (next three pages).

No.	Name	N	E	Stone	Main period	State
Miscellaneous hardstones						
H1	Gebel Ahmar	30.05266	31.29567	Silicified sandst.	P	4
H2	Widan el-Faras	29.66001	30.62001	Basalt	P	3
H3	Tilal Sawda	28.52001	30.54833	Basalt	GR	3
H4	Wadi Abu Aggag	24.14167	32.91001	Silicified sandst.	P/GR	3
H5	Gebels Gulab and Tingar	24.10676	32.87827	Silicified sandst.	P/GR	1
H6	Aswan	24.06176	32.89661	Granite, granodiorite	P/GR	3
H7	Chephren's Quarry	22.80677	31.22657	Anorthosite-gabbro gneiss	P	2
H10	Gebel Manzal el-Seyl	27.54333	33.13001	Tuff	PH/ED	1
H11	Wadi Umm Sidri	27.29701	33.30067	Quartz syenite porphyry	GR	1
H12a	Mons Porphyrites	27.25178	33.30165	Andesite-dacite porphyry	GR	1
H12b	Wadi Abu Maamel	27.25033	33.30133	Granite	GR	1
H13	Badia	27.21451	33.34417	Granite	GR	1
H14	Wadi Umm Towat	27.17017	33.24217	Trachyandesite porphyry	GR	1
H15	Wadi Umm Balad	27.15233	33.28517	Quartz diorite	GR	1
H16	Wadi Qattar	27.08001	33.23683	Granodiorite	GR	1
H17	Wadi Umm Shegilat	26.94367	33.24851	Pegmatitic diorit.	GR	1
H18	Mons Claudianus	26.80917	33.48667	Tonalite gneiss	GR	1
H19	Wadi Barud	26.76533	33.57167	Quartz diorite	GR	1
H20	Wadi Umm Huyut	26.75101	33.46851	Tonalite gneiss	GR	1
H21	Wadi Fatiri el-Bayda	26.73383	33.32317	Quartz diorite	GR	1
H22	Wadi Umm Wikala	26.43067	33.66367	Metagabbro	GR	1
H23	Wadi Abu Gerida	26.36283	33.28533	Syenite porphyr.	GR	1
H24	Wadi Maghrabiya	26.31233	33.39633	Metagabbro	GR	1
H26	Wadi Umm Esh	26.06683	33.61233	Serpentine	GR	4
H27	Bir Umm Fawakhir	26.01283	33.60851	Granodiorite-granite	GR	1
H28a	Wadi Hammamat - E	25.98983	33.56917	Metagraywacke, metaconglomer.	P/GR	1
H28b	Wadi Hammamat - W	25.97767	33.55817	Metaconglomer.	P/GR	1
H29	Gebel Umm Naqqat	25.49633	34.25317	Pegmatitic diorit.	PH/ED	1
H30	Wadi Abu Bokari	25.25217	33.76001	Granodiorite	GR	1
H31	Rod el-Gamra	24.76183	33.98833	Dolerite porphyr.	P	1
H36	Wadi Abu Subeira	24.21633	32.89751	Silicified sandst.	P/GR	3
H37	Aswan - Hod el-Ruba	24.06083	32.88867	Dolerite	P	4
H38	Aswan - Gebel el-Granite	24.04183	32.88901	Dolerite	P	2
H39	Umm el-Sawan	29.71023	30.88924	Silicified sandst.	P	1
Travertine						
T1	Wadi el-Garawi	29.81101	31.45951	Travertine	P	3
T2	Wadi Araba / Wadi Askhar	29.07958	32.05163	Travertine	GR	1
T3	Wadi Umm Argub	28.63501	31.26717	Travertine	P	3
T4	el-Qawatir	28.10333	30.81667	Travertine	P	3
T5	Wadi el-Barshaw	27.70617	30.93601	Travertine	P	2
T6	Wadi el-Zebeida east / Abd el-Azziz	27.68951	30.90583	Travertine	P	3
T7	Wadi el-Zebeida east	27.67601	30.92633	Travertine	P	U
T8	Hatnub	27.55501	31.02317	Travertine	P/GR	3
T9	Wadi Assiut	27.31551	31.35933	Travertine	P	4
Miscellaneous soft stones						
O1	Umm el-Sawan	29.71167	30.88333	Gypsum	P	1
O2a	Wadi Saqiyah north	26.33117	33.65733	Talc schist	GR	2
O2b	Wadi Saqiyah south	26.32601	33.65551	Talc schist	GR	2
O3	Gebel Rokham	25.29967	33.96567	Marble	P/GR	4
O4	Wadi Mubarak	25.26901	34.43733	Steatite	I	1
O5	Wadi Abu Qureya	25.23251	34.04583	Steatite	I	1
O6	Wadi el-Humra	25.23083	33.98667	Steatite	I	1
O7	Wadi Umm Salim	25.12951	34.00833	Steatite	I	1
O8	Gebel Rod el-Barram	25.10251	34.07283	Steatite	GR/I	1
O9	Wadi el-Anba'ut	24.93017	34.92351	Gypsum	GR	1
O10	Wadi Kamoyid	22.60001	34.97667	Steatite	I	1
O11	Wadi Ma'awad	25.31217	33.67333	Talc schist	GR	1
O12	Qasr el-Sagha	29.60584	30.67388	Gypsum	P	1
Chert						
H25	Wadi Hameda	26.21183	33.51617	Chert	B	1
H32	Wadi Araba / Wadi Umm Nihaybar	29.07813	31.59083	Chert	P	2
H33	Wadi el-Sheikh	28.72083	31.01833	Chert	P	2
H34	Hierakonpolis	25.06917	32.77667	Chert	PH/P	2
H35	Wadi Araba / Ain Barda	29.10417	32.08633	Chert	P	2

No.	Name	N	E	Stone	Main period
Gem stones					
G1	Bir Nasib	29.03667	33.39833	Turquoise	
G2	Serabit el-Khadim	29.03667	33.45833	Turquoise	
G3	Wadi Maghara	28.89717	33.37001	Turquoise	
G4	Abu Diyeiba	26.51917	33.82601	Amethyst	
G5	Gebel Zabara	24.77167	34.71833	Emerald	
G6	Wadi Sikait	24.64883	34.79751	Emerald	
G7	Wadi Nugrus	24.61675	34.77908	Emerald	
G9	Wadi el-Hudi	23.96151	33.13067	Amethyst	
G10	Gebel Migif	24.80651	34.45301	Amazonite	
G11	W. Fayrouz/Geb.Hafafit	24.75483	34.57417	Amazonite	
G12	Zabargad Island	23.60167	36.19133	Peridot	
G13	Stela Ridge	22.90001	31.31667	Carnelian	
G14	Umm Harba	24.64201	34.82783	Emerald	
G15	Wadi Abu Rasheid	24.65533	34.75458	Emerald	
G16	Umm Kabu	24.05001	34.10001	Emerald	

No.	Name	N	E	Main period
Limestone				
L1	Mallahet Mariut	30.94686	29.50167	GR
L2	Giza	29.97501	31.13251	P
L3	Saqqara	29.86917	31.21501	ED
L4	el-Lahun	29.23667	30.97083	P
L5	Zawyet Nasr (Gebel Mokattam)	30.02667	31.27001	P
L6	Tura	29.93333	31.29867	P
L7	Masara	29.91501	31.32001	P
L8	el-Sawayta	28.37683	30.80101	P
L9	el-Babein	28.30467	30.75067	P
L10	Deir Gebel el-Teir	28.28167	30.74717	P
L11	Tihna el-Gebel	28.18417	30.77501	P
L12	el-Hawarta	28.16583	30.77667	GR
L13	Nazlet Husein Ali	28.14001	30.77751	GR
L14	Sawada	28.07501	30.80933	P
L15	Nazlet Sultan Pasha	28.06833	30.81751	P/GR
L16	Zawyet el-Amwat	28.05501	30.83167	P/GR
L17	Wadi Sheikh Yasin	28.05251	30.84533	P/GR
L18	Darb Tila Nufal	28.04501	30.85583	P/GR
L19	Dirwa	27.73917	30.70001	GR
L20	Nazlet el-Diyaba	27.94001	30.88183	GR
L21	Beni Hasan	27.91067	30.87167	P/GR
L22	el-Sheikh Timay	27.86167	30.84533	P/GR
L23	el-Sheikh Ibada	27.82651	30.87667	P/GR
L24	Deir Abu Hennis	27.77933	30.92133	P
L25	Wadi el-Nakla	27.75117	30.91933	P/GR
L26	Deir el-Bersha north	27.71917	30.89433	P
L27	Deir el-Bersha south	27.70601	30.89001	P
L28	Sheikh Said	27.69733	30.88951	P
L29	Wadi el-Zebeida west	27.69283	30.90167	P
L30	Wadu el-Zebeida central	27.68951	30.90583	P
L31	Queen Tiy Quarry	27.67817	30.91001	P
L32	Amarna north tombs	27.66201	30.92967	P
L33	Deir el-Quseir	27.49333	30.87301	U
L34	Wadi Abu Helwa	27.42167	30.88167	P
L35	Meir	27.43333	30.70683	P
L36	Deir el-Amir Tadros	27.37951	30.95783	P
L37	Deir Abu Mina	27.35667	31.01467	U
L38	el-Maabda	27.34533	31.02833	U
L39	Deir el-Gabrabi	27.33883	31.10317	P
L40	el-Ketf	27.32667	31.04801	P
L41	Arab el-Atiat	27.33451	31.06617	P
L42	Talet el-Hagar	27.28951	31.30083	U
L43	Assiut / el-Izam	27.15417	31.14833	U
L44	Assiut / Drunka	27.15601	31.17583	P
L45	el-Aldra Maryam/Deir Drunka	27.10333	31.17033	P
L46	Deir Rifa	27.07583	31.18333	P
L47	Sidi Abu el-Haris	27.04501	31.22651	U
L48	Sidi Abu el-Haris tomb / Deir el-Bileida	27.03967	31.22867	U
L49	Deir el-Bileida	27.03251	31.23251	U

No.	Name	N	E	Main period	State
L50	el-Balyza	27.02151	31.23951	U	2
L51	el-Balyza / Abu Khurs	27.00667	31.24451	U	2
L52	el-Abu Khurs / el-Zaraby	26.98667	31.24851	U	2
L53	el-Zaraby	26.97417	31.25001	P	2
L54	el-Adra Maryam	26.92717	31.28317	P	3
L55	el-Mashaya	26.91501	31.28917	U	3
L56	el-Ghanayim Bahari	26.89001	31.30633	GR	2
L57	Sidi Mansur	26.88083	31.31233	U	2
L58	el-Ghanayim Qibli	26.87067	31.31967	U	2
L59	el-Aghana	26.86001	31.32901	U	2
L60	el-Qarya Bil Diweir	26.84251	31.33401	U	2
L61	Sidi Abu Khiris tomb	26.78151	31.35883	U	2
L62	Nag el-Tawalib	26.77333	31.37651	U	2
L63	Nag Hamad	26.50933	31.66267	GR	3
L64	el-Salmuni	26.20417	31.87583	P	3
L65	Wadi Naqb el-Salmuni	26.19351	31.86583	P	1
L66	Wadi Emu	27.11951	31.35683	U	2
L67	el-Khawalid	27.09351	31.38701	U	2
L68	el-Nazla el-Mustagidda	27.07867	31.39367	U	1
L69	Deir Tasa	27.06333	31.40451	U	2
L70	el-Iqal Bahari	26.99251	31.45917	U	2
L71	el-Baiyadiya	26.95951	31.46133	U	3
L72	el-Iqal el-Qibli	26.94317	31.48017	P/GR	2
L73	el-Hammamiya	26.93717	31.48733	P	2
L74	Antaeopolis	26.92417	31.49251	P	2
L75	Qaw el-Kebir	26.92583	31.50517	P/GR	2
L76	el-Nawawra	26.83533	31.53633	U	2
L77	el-Khazindariya	26.79451	31.54151	P	2
L78	Nazlet el-Haridi	26.77483	31.55351	U	2
L79	Abu el-Nasr	26.76233	31.56367	GR	2
L80	Abu el-Nasr/el-Galawiya	26.76167	31.59333	P	2
L81	el-Galawiya	26.75951	31.62233	U	2
L82	Istabl Antar	26.71283	31.67483	P	2
L83	Qurnet Salamuni	26.61901	31.75483	U	U
L84	el-Salamuni	26.61783	31.76451	P	3
L85	Wadi el-Muluk	25.74633	32.62251	P/GR	2
L86	el-Gebelein / el-Ghrera	25.49767	32.47901	P/GR	4
L87	Nag el-Ahaywa	26.43433	31.83717	P	U
L88	Sidi Musa	26.41501	31.84533	P/GR	2
L89	Nag el-Buza	26.09501	32.30301	U	U
L90	Gebel el-Gir	26.10451	32.69501	P/GR	2
L91	el-Dibabiya	25.50133	32.51933	P/GR	2
L92	Wadi Umm Zanatir	28.93833	32.39501	B	1
L93	Wadi Abu Mu'aymil	28.89833	32.32501	B	3
L94	Wadi el-Sheikh Muhammad	28.12433	30.78701	U	2
L95	Wadi Umm Damarana	28.82483	32.06567	I	4
L96	Abu Sir	29.88301	31.20417	P	2
L97	Dahshur - Mastaba Faraon	29.82017	31.20083	P	2
L98	Dahshur - Red Pyramid	29.80201	31.19667	P	2
L99	Siwa Oasis	29.20501	25.54333	P	4

Sandstone

S1	Hierakonpolis	25.07567	32.74333	P/GR	U
S2	el-Mahamid	25.13767	32.78267	P/GR	2
S3	el-Kab	25.13451	32.81751	P/GR	1
S4	el-Keijal	25.06833	32.86301	U	2
S5	Nag el-Raqiein	24.74633	32.92033	U	2
S6	Nag el-Hosh	24.73651	32.92117	GR	1
S7	Wadi el-Shatt el-Rigal	24.68501	32.92351	P	1
S8	Nag el-Hammam - N	24.67751	32.92483	P	2
S9a	Gebel el-Silsila - W	24.64901	32.92917	P	2
S9b	Gebel el-Silsila - E	24.64283	32.93333	P/GR	1
S10	el-Kilh Sharq	25.04951	32.88883	GR	2
S11	el-Bueib	24.80983	32.91433	P	3
S12	Nag el-Fuqani	24.20883	32.85883	GR	2
S13	Sheikh Mohammed	24.16283	32.86833	U	1
S14	Sidi el-Hasan	24.34983	32.92801	GR	3
S15	el-Hadedoon	24.30917	32.91133	GR	3
S16	Gebel el-Hammam	24.22717	32.87483	P	4
S17	Gebel Qubbet el-Hawa	24.10183	32.88767	U	2

No.	Name	N	E	Main period
S18	Aswan	24.06176	32.89501	U
S19	Dabod	23.89667	32.85333	GR
S20	Qertassi	23.70001	32.88501	GR
S21	Tafa	23.46501	32.86177	GR
S22	Kalabsha	23.55083	32.86333	GR
S23	Abu Hor / Merowa	23.45833	32.89167	GR
S24	Qurta	23.04167	32.66667	P/GR
S25	Agayba	22.85001	32.55833	U
S26	Tumas	22.75167	32.14667	P
S30	Qasr Ibrim	22.64833	31.99167	P/GR
S31	Nag Deira	22.50667	31.89167	P
S32	Gebel el-Teir	25.50278	30.55687	P/GR
S33	el-Muweih	25.94501	33.39851	GR
S34	Bir el-Kanayis	25.00417	33.30001	P/GR
S35	Nag el-Hammam - S	24.66601	32.92501	P
S36	Bahariya Oasis	28.34701	28.85583	GR
S37	Dakla Oasis	25.68167	28.83833	GR
S38	Saint Simeon	24.09467	32.87567	P

The Stone Quarries of Ancient Egypt

Explanations:

The quarry numbers correspond with the numbers on the map (front side).

When possible, the quarry names given are those used in scholarly publications. Other names refer to the ancient site, modern village, or natural feature, such as wadi (course) or gebel (hill/mountain).

Coordinates (north latitude and east longitude) are given in decimal degrees, following the WGS84 datum. They represent the location of a quarry or an area of multiple workings comprising a quarry.

Main period refers to the periods in which the quarry was primarily worked. In many instances the quarries were also worked in other periods and later. The following abbreviations are used:

PH: Prehistoric (Late Predynastic)

ED: Early Dynastic

P: Pharaonic (Old Kingdom through Late Period)

GR: Graeco-Roman

B: Byzantine (Late Roman)

I: Islamic

U: Unknown

State refers to the current condition of the quarries, as determined by visits. The following abbreviations are used:

1: Intact

2: Largely intact

3: Partially destroyed

4: Largely destroyed

ULN: Under Lake Nasser

U: Unknown

NOTABLE ORNAMENTAL AND GEM STONE QUARRIES IN NORTH AFRICA OUTSIDE OF EGYPT

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In North Africa to the west of Egypt there was no significant use of ornamental and building stones prior to the Classical Greco-Roman period. There are, consequently, comparatively few quarries known in this region and none are well studied. All date to the Roman period and, with the exception of one for amazonite, these quarries are all for ornamental stones. Other known quarries for ornamental stones are found south of Egypt in Sudan and Ethiopia, and these are both contemporary with and pre-date the Roman period. Besides the ones listed below, there must be many other unknown quarries outside of Egypt, especially for building and utilitarian stones, but probably also for ornamental and gem stones.

ALGERIA (two quarries)

1. Location: Cap de Garde district, near the modern city of Annaba (ancient ‘Hippo Regius’) in the northeast corner of Algeria; approx. coordinates N 36° 55’, E 7° 45’

Stone: graphitic marble (‘greco scritto’ of the Italian stonecutters)

Age: Roman, 1st to 3rd centuries AD

References: Borghini (1989: 237), Dodge & Ward-Perkins (1992: 153), Lazzarini & Sangati (2004: 87), and Price (2007: 73)

2. Location: near the spring of Ain Tekbalet in the northwest corner of Algeria; approx. coordinates N 35° 8’, W 1° 12’

Stone: travertine (‘alabastro a pecorella’ of the Italian stonecutters)

Age: Roman

References: Borghini (1989: 150), Lazzarini & Sangati (2004: 86), and Price (2007: 54-55)

TUNISIA (three quarries)

1. Location: near the modern village of Chemtou (ancient ‘Simitthus’) in the northwest corner of Tunisia; approx. coordinates N 36° 30’, E 8° 34’

Stones: limestone breccia ('giallo antico' of the Italian stonecutters and 'marmor numidicum' of the Romans), and bituminous limestone ('nero antico' of the Italian stonecutters)

Age: Roman, 2nd century BC to 4th or 5th century AD

References: Horn (1979), Borghini (1989: 214-215), Dodge & Ward-Perkins (1992: 157), Lazzarini & Sangati (2004: 85), and Price (2007: 76, 90-91)

2. Location: near the modern village of Hencir el-Kasbat (ancient 'Thuburbo Maius') in the northeast corner of Tunisia; approx. coordinates N 36° 23.5', E 9° 54.5'

Stones: two varieties of fossiliferous limestone ('astracane dorato' and 'lumachella orientale' [or 'lumachella d'Egitto'] of the Italian stonecutters)

Age: Roman

References: Borghini (1989: 242), Lazzarini & Sangati (2004: 86), and Price (2007: 157, 160)

3. Location: at Gebel Aziza in north-central Tunisia; approx. coordinates N 36° 11', E 9° 45'

Stone: bituminous limestone (another variety of the 'nero antico' of Italian stonecutters)

Age: Roman, 1st to 3rd centuries AD

References: Borghini (1989: 254-255), Dodge & Perkins (1992: 158), Lazzarini & Sangati (2004: 85), and Price (2007: 76)

LIBYA (one quarry)

Location: at Zuma in the Eghe Mountains in southwest Libya; approx. coordinates N 23° 21.4', E 19° 34.2'

Stone: amazonite

Age: Roman and possibly earlier

References: de Michele & Piacenza (1999)

SUDAN (two quarries)

1. Location: at Tumbos, Third Cataract on the Nile River in northern Sudan; precise coordinates N 19° 42.8', E 30° 23.4'

Stones: Granite and granite gneiss

Age: Egyptian New Kingdom (18th dynasty, 14th-15th centuries BC) and Napatan-Meroitic period (6th century BC to 3rd century AD)

References: Harrell (1999a, 1999b)

2. Location: at Daygah, Fourth Cataract on the Nile River in northern Sudan; precise coordinates N 18° 34.0', E 31° 56.9'

Stone: Granite gneiss and granodiorite gneiss

Age: Napatan-Meroitic period (6th century BC to 3rd century AD)

References: Harrell (1999b)

ETHIOPIA

Location: near the modern (and ancient) city of Aksum in northern Ethiopia; approx. coordinates N 14° 8', E 38° 41'

Stone: possibly either granite or granodiorite, but not well documented

Age: Aksumite period (1st to 4th centuries AD)

References: Phillipson (1994: 192; 1998: 92)

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**A note on significant *soft stone* quarries in the Nile Valley
(limestone, travertine, sandstone, chert)**

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**WELL-PRESERVED AND ARCHAEOLOGICALLY SIGNIFICANT
LIMESTONE QUARRIES**

Those probably or definitely protected by close proximity to antiquity sites

L1¹⁷ at Abu Sir near an ancient lighthouse and temple (Pt-R)

At one time there were many Ptolemaic and Roman limestone quarries between Alexandria in the east and Abu Sir in the west, but today apparently only those near Abu Sir survive. With their rectilinear, enclosure-like form, these are very different from the limestone quarries in the Nile Valley. They are additionally significant in that the monuments built from their stones still exist nearby, and they are also the only quarries known from the Pleistocene Alexandria Formation.



¹⁷ Numbers refer to attached quarry map/list



L2 at the Khafre pyramid (OK: 4)

This is the only surviving Old Kingdom limestone quarry where one can see how the pyramid core blocks were extracted.



L9 at el-Babein near the tomb of the same name (OK/MK & NK: 19-20)

This is a good example of a Dynastic limestone quarry and is visually striking because of the isolated quarry outlier locally known as "el-Babein" ('the little gate').



L21 at Beni Hasan near the tombs of the same name (OK/MK-NK, R)

This quarry has spectacular high and long, open-cut quarry faces at two levels along a soaring limestone cliff.



L22 near el-Sheikh Timay and some tombs ? (OK/MK-Pt)

This has nice quarry galleries but otherwise is nothing special.



- L23 near el-Sheikh Ibada and the Antiopolis ruins and tombs (OK/MK, R)

This has nice quarry galleries but otherwise is nothing special.

>>> no photo

- L24 at Deir Abu Hennis near tombs (NK-R)

This has an extensive series of quarry galleries, mostly well preserved and some with inscriptions.

>>> no photo

- L25 in Wadi el-Nakla near tombs (OK/MK, NK:18, L:30, Pt)

This has an extensive series of deep quarry galleries, mostly well preserved and some with inscriptions. The 30th dynasty gallery may be the largest in Egypt, and penetrates all the way through a mountain with entrances on both sides.





L65 near Abydos with its many tombs, temples and other ruins (MK-L?)

This extensive series of deep quarry galleries is the principal source of stone used for the ancient limestone monuments of Abydos.



L75 near Qaw el-Kebir (western part of quarry field) and the Antaeopolis ruins and tombs (OK/MK-NK, Pt-R)

This has nice open-cut and gallery workings, the latter still largely unexplored.



L77-79 on Gebel el-Haridi near tombs and the ruins of an ancient settlement (OK/MK- NK, Pt)

This has a nice series of open-cut and gallery workings, but otherwise is nothing special.





L85 near Qurna and Wadi el-Muluk, the Valley of Kings (NK: 18, LP: 26, R)

This has well-dated, extensive open-cut and some gallery workings, the latter with red lines and other markings on the ceilings indicating the quarrying progress. Additionally, this quarry is the source of stone used for the nearby Hatshepsut temple.



Those probably not protected or of unknown protection status

L8 at el-Sawayta (NK-LP)

This has an extensive series of visually striking, open-cut workings that show well the steps in block extraction.



L16 near Zawyet el-Amwat (NK-R)

This quarry is unique for the well-preserved evidence of quarrying techniques employed, including especially trenching and undercutting that are unlike anything seen in other limestone quarries.





L31 'Queen Tiye' quarry near Wadi el-Zebeida and el-Amarna (NK: 18)

This has well-dated open-cut and some gallery workings that show in vivid detail the quarrying technologies employed during the Amarna period, including the cutting of 'talatat' blocks and the use of a new method of undercutting. This is also one of the largest limestone quarries.



L75 near Qaw el-Kebir (eastern part of quarry field) (OK/MK-NK, Pt-R)

This has an extensive series of gallery workings, some with ceiling lines and other marks documenting the quarrying progress but these are different from those found in the Qurna/Wadi el-Muluk and el-Dibabiya quarries. These galleries were also used as early Christian hermitages as evidenced from the traces of paintings left on the walls.





L91 near el-Dibabiya (NK:19, 3IP:21, R)

Of all the limestone quarries in Egypt, the galleries at this one have the best preserved and most extensive ceiling lines and markings left by the quarrymen. Traces of inscriptions are present, and this quarry is also the only one known from the Paleocene Tarawan Formation.





WELL-PRESERVED AND ARCHAEOLOGICALLY SIGNIFICANT TRAVERTINE QUARRIES

Those probably not protected or of unknown protection status

T1 in Wadi Garawi near the ancient Sadd el-Kafara dam (OK:4)

This has a single visually striking open-cut working along a travertine vein.



T4 at el-Qawatir (OK/MK-NK)

This has open-cut and underground workings along several travertine veins.

>>> no photo but visible on Google Earth

T5 in Wadi el-Barshawī (MK)

This has open-cut and underground workings in a cave-fill travertine deposit. For this type of deposit, this is the only quarry with underground workings preserved.



T7 near Wadi el-Zebeida (NK:19)

This has a single open-cut working in a cave-fill travertine deposit and also a legible 19th dynasty rock-cut stela.



T8 at Hatnub (OK:4-6, MK:12, NK:18, R)

This has one main and a few smaller open-cut workings in cave-fill travertine deposits. In the main pit there are several painted inscriptions. Although this is the most famous of the travertine quarries (mainly because of its inscriptions), it is actually one of the smallest.



WELL-PRESERVED AND ARCHAEOLOGICALLY SIGNIFICANT SANDSTONE QUARRIES

Those definitely protected by close proximity to antiquity sites

S9a, b at Gebel el-Silsila (MK-NK, Pt-R)

This is the largest sandstone quarry and spans the greatest period of time, and it is the only sandstone quarry with gallery workings. Additionally, it is rich with evidence of ancient quarrying technologies, and possesses numerous stelae and shrines.





Those probably not protected or of unknown protection status

S2 at el-Mahamid (OK/MK, Pt)

This has a nice open-cut quarry face as well as an interesting quarry outlier like the one at el-Babein, but otherwise is nothing special.



S6 at el-Hosh (Pt-R)

This visually striking, open-cut quarry is especially notable for its well-preserved tool marks, and rock-cut quarrymen's signs and rope holds.





S8 near Nag el-Hammam (MK-NK)

After Gebel el-Silsila, this may be the largest surviving sandstone quarry. It has an extensive series of open-cut workings.



I do not have a photo of the main quarry

WELL-PRESERVED AND ARCHAEOLOGICALLY SIGNIFICANT *CHERT* QUARRIES


Not protected

H33 in Wadi el-Sheikh (OK-MK ?)

This is one of ancient Egypt's largest quarries of any rock type and it is by far the largest known Dynastic quarry for chert. It has a spectacular series of open pits and trenches on the surface and, in one part, a unique network of underground shafts and tunnels.



Note: there surely are other quarries that belong on these lists but I am not familiar enough with them to know if they are both well-preserved and archaeologically significant.



The Ancient Stone Quarry Landscapes of Egypt:

Proposal for a New *Serial* World Heritage Site

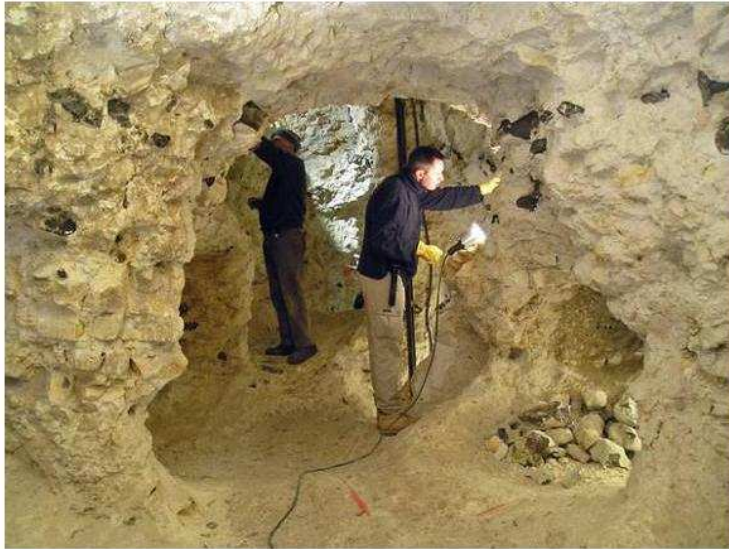
Per Storemyr, James A. Harrell and Adel Kelany

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Contribution to the *Workshop on the Harmonization of World Heritage
Tentative Lists in the countries of North and East Africa*,
UNESCO, Cairo, 16-18 March 2010

This presentation contains two parts: photos and text

Quarries: seriously underrepresented on the World Heritage List



Neolithic Flint Mines at Spiennes, Belgium:

Currently the only site inscribed by virtue of its value as a quarry

Photo: JL Dubois, www.minesdespiennes.org

Egypt: Quarrying since the Early Palaeolithic



Tool quarries: a common North African/Saharan heritage

From Aswan, photo: P Storemyr



Building and ornamental stone quarries:

Egypt unique in a global context

From Aswan

Key characteristics of Egypt's ancient building and ornamental stone quarries

- Age: From 3.000 BC onwards (to the Roman period)
- Number: More than 200 quarry extensive sites
- Total extent: Several thousand km²
- Types: Hard and soft stone, gem stone
- Condition: From truly excellent to very poor
- Major threat: Modern development
- Management: Generally poor (lack of awareness and resources), but special conservation dep. within SCA is established

Why a serial WHS?

- The quarries can only be understood and truly appreciated in their totality
- No individual site representative of all
- A serial site will hold more authority than a single site
- WH-status key for preservation and management of a representative selection

Potential sites: Hard stone

- Unfinished Obelisk, Aswan (currently part of the Nubian WHS). Open-air museum and ancient stone centre
- Other parts of the Aswan quarry landscape
- Chephren's quarry, Lower Nubia
- Widan el-Faras, Northern Faiyum
- Wadi Hammamat, Eastern Desert
- The mainly Roman quarry landscape between Mons Porphyrites and Mons Claudianus, Eastern Desert
- *All qualify as WHS (partially except for management criteria)*



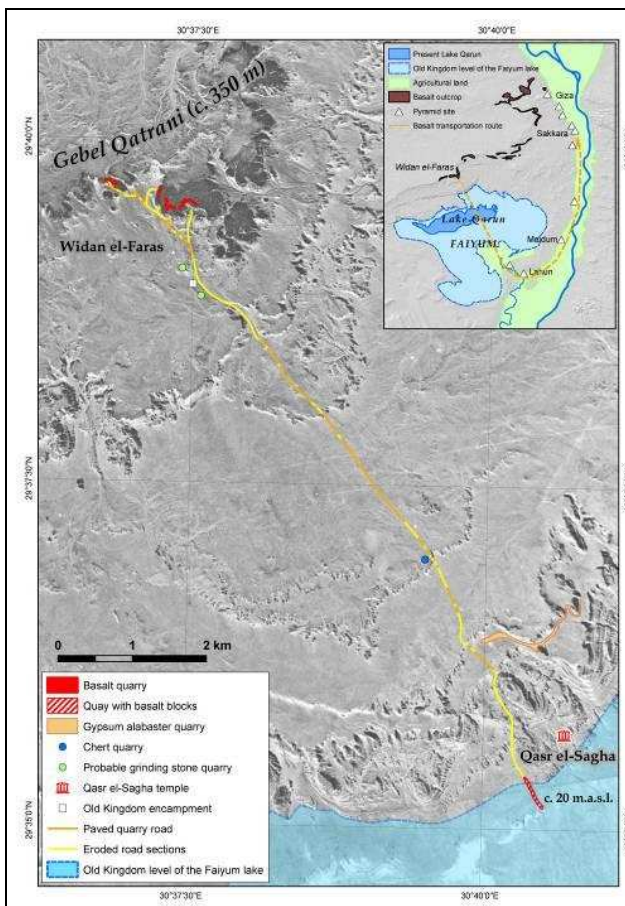
Widan el-Faras, Northern Faiyum

Highlights:

World's oldest paved
road (Old Kingdom)

Proximity to and use at
the pyramid sites

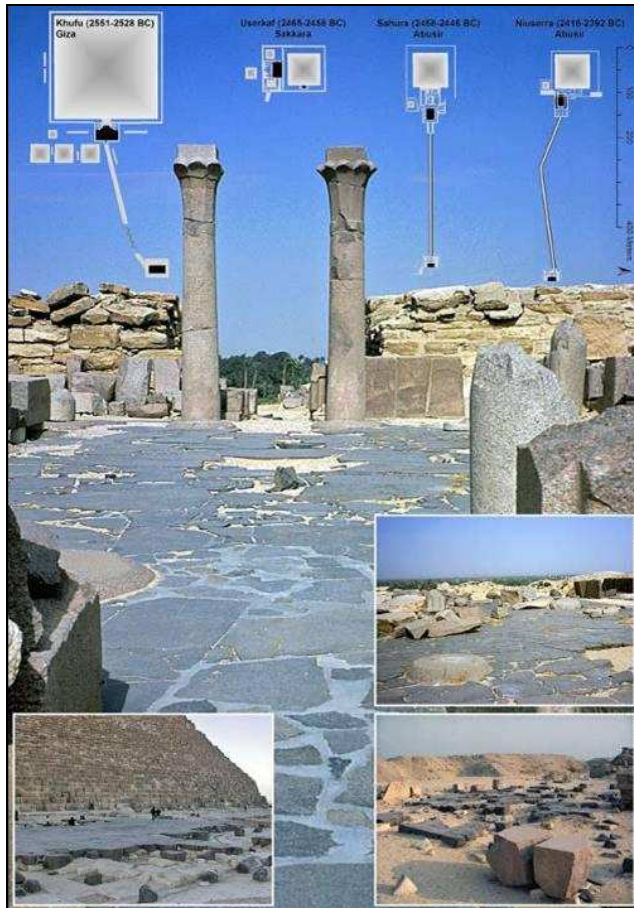
**NB! Work on WHS
nomination ongoing
(as single site)**



Map of Widan el-Faras

Basalt

Five quarries - may
correspond to use at
different pyramids

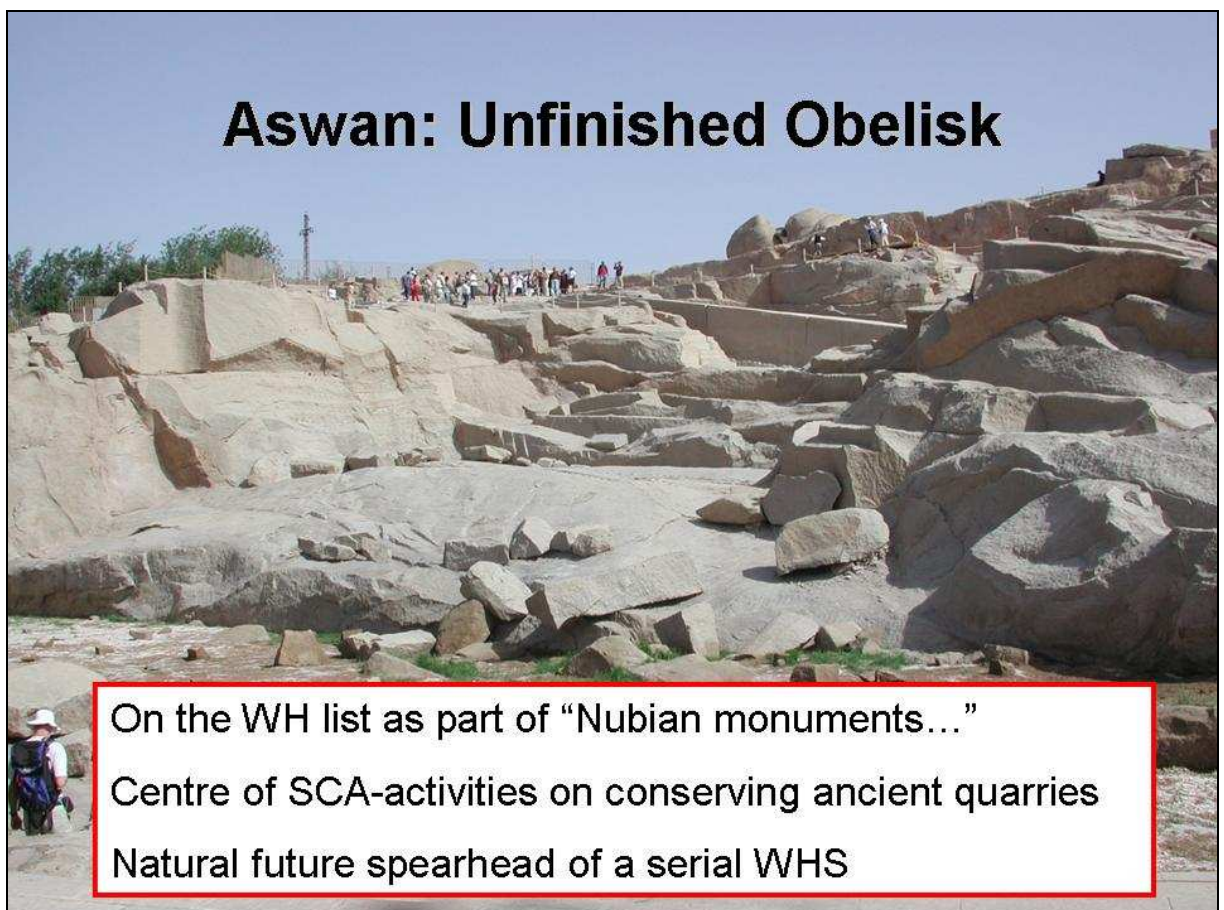


Basalt at the pyramid sites

Giza, Abu Sir, Sakkara:

Khufu
Userkaf
Sahura
Niuserra

Aswan: Unfinished Obelisk



On the WH list as part of “Nubian monuments...”

Centre of SCA-activities on conserving ancient quarries

Natural future spearhead of a serial WHS



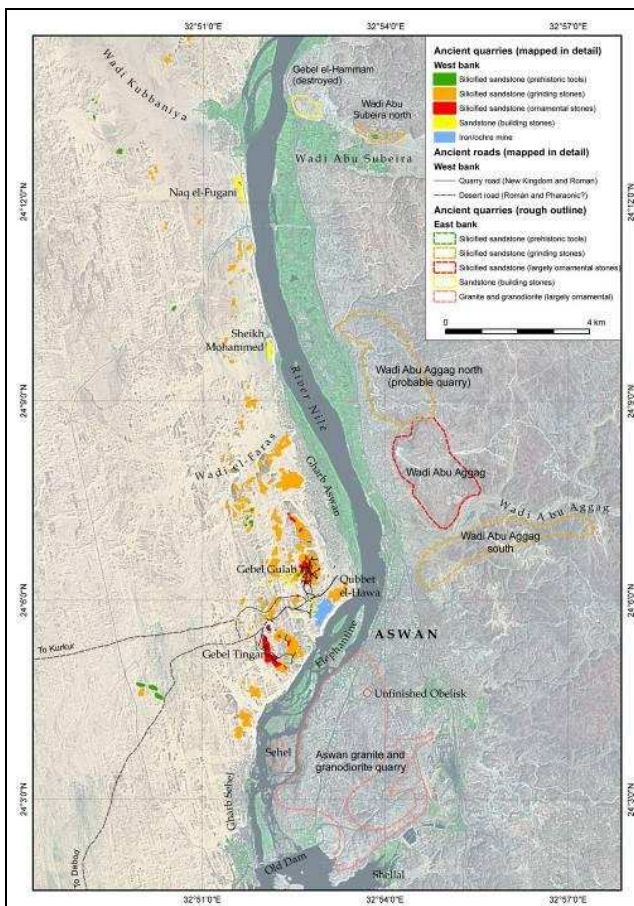
Aswan: West Bank

Highlights:

Quarrying of quartzite from the Palaeolithic to the Roman period

Unique New Kingdom road network

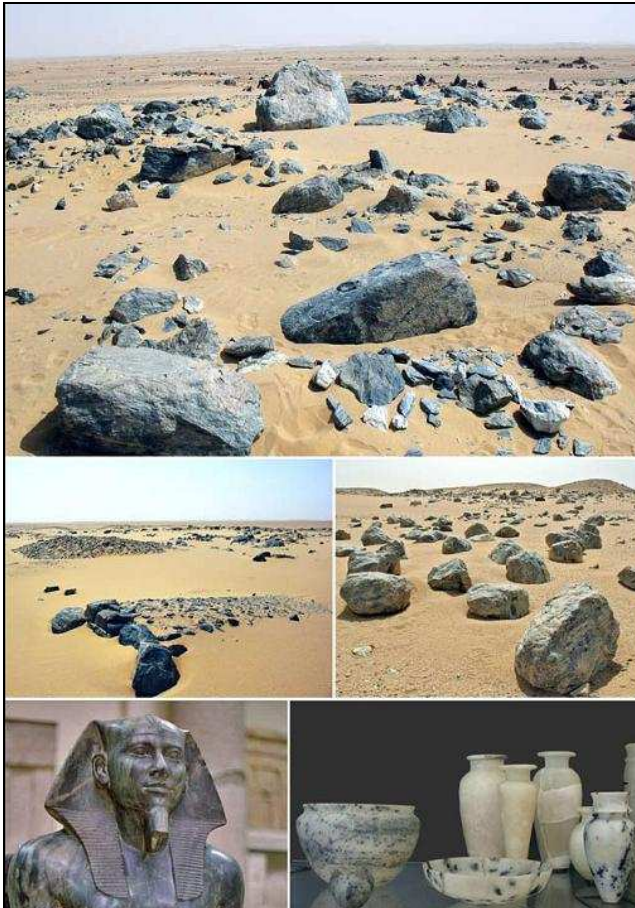
Associated archaeology such as rock art



Map of the Aswan quarry landscape

World's largest and most long-lived ancient quarry landscape

Granite
Quartzite
Sandstone
c. 100 km²



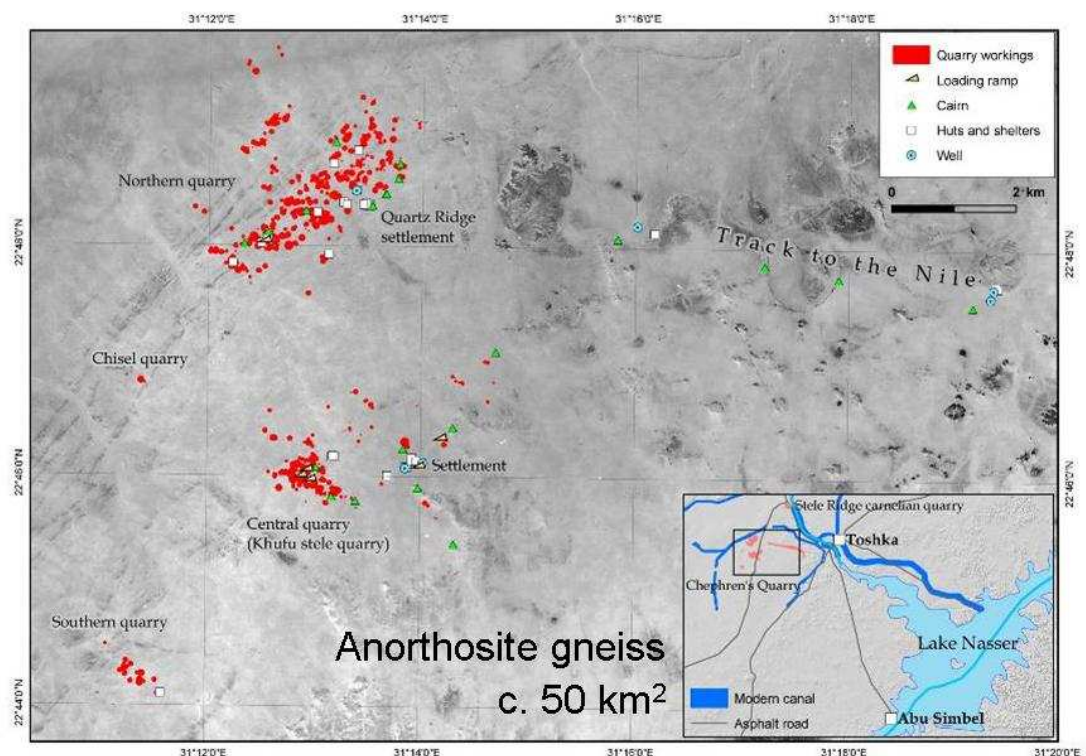
Chephren's Quarry, Lower Nubia

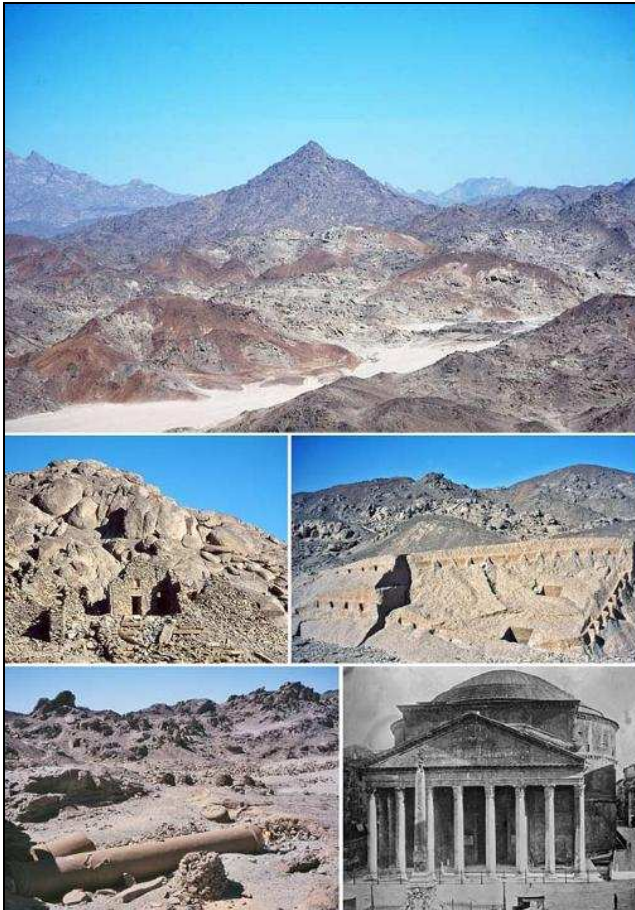
Highlights:

Earliest sculpture quarry of its kind globally (Old Kingdom)

Excellent preserved, but threatened by the Toshka project

Map of Chephren's Quarry





Mons Claudianus, Eastern Desert

Highlights:

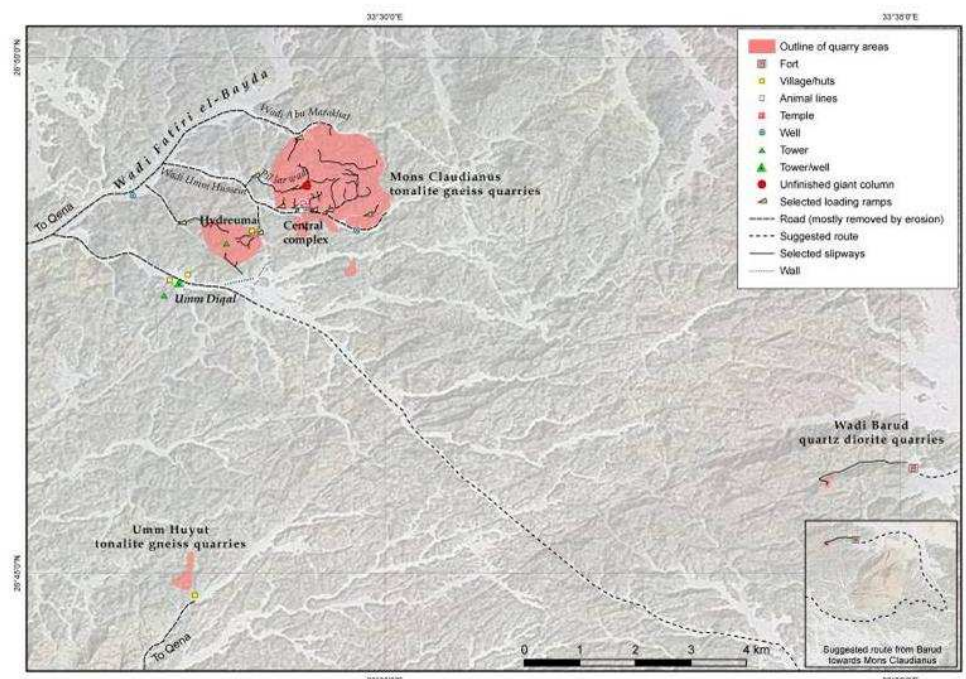
Remote – symbolic of
Rome's exploitation in
deserts

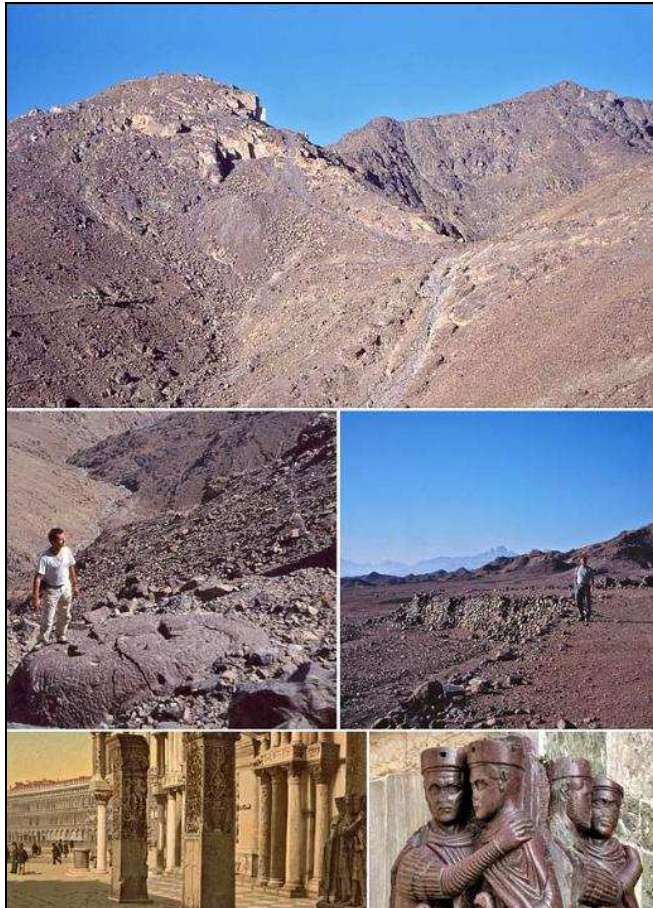
Quarry infrastructure

Massive fort

Map of Mons Claudianus

Tonalite gneiss





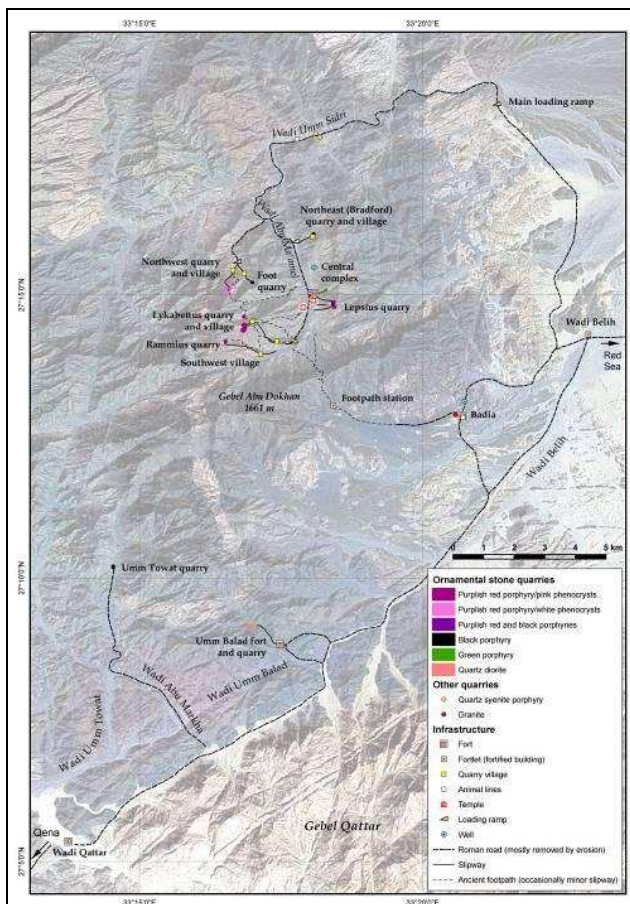
Mons Porphyrites, Eastern Desert

Highlights:

Remoteness

Massive fort and satellite villages at quarry sites

Altitudes and road network



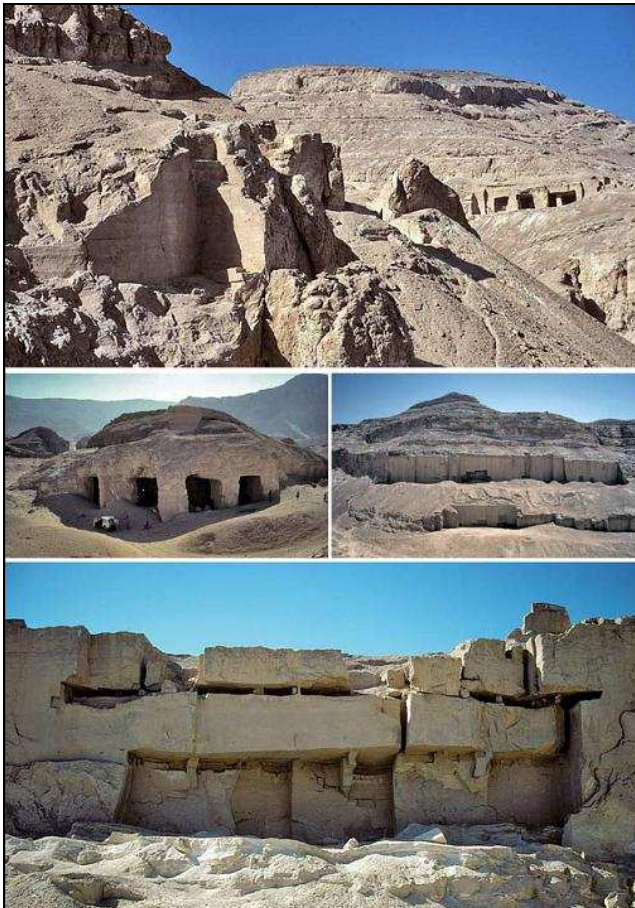
Map of Mons Porphyrites

Various types of porphyry

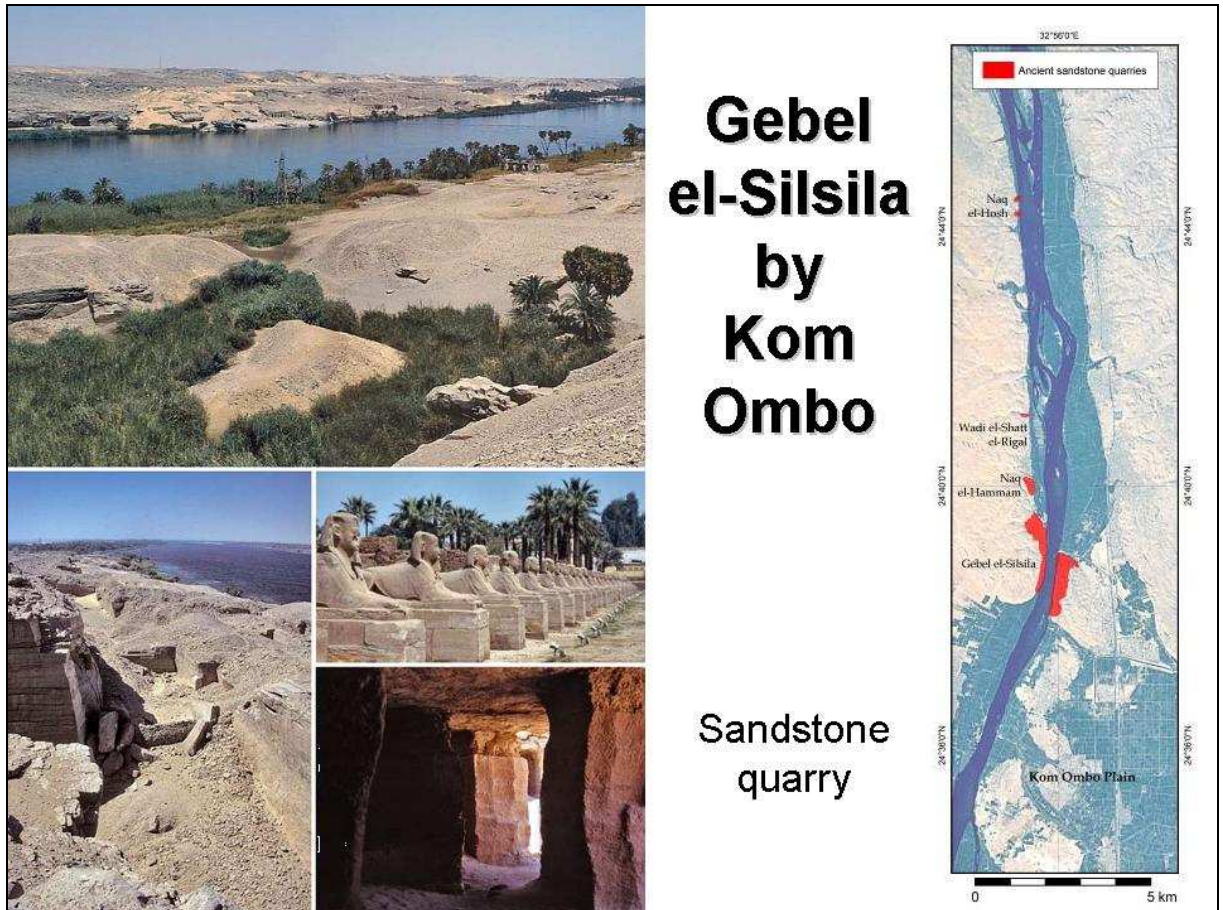
Note road network

Potential sites: Soft stone

- Gebel el-Silsila, Upper Egypt (sandstone, visitor centre)
 - Hatnub, by Amarna (gypsum)
 - el-Qawatir, by Minya (gypsum)
 - About 10 limestone quarries along the Nile Valley
- Yet unclear whether all these quarries qualify as WHS in their own right. But they do as part of a serial site.*



**Selection of
gallery
limestone
quarries**



Potential sites: gemstone and chert

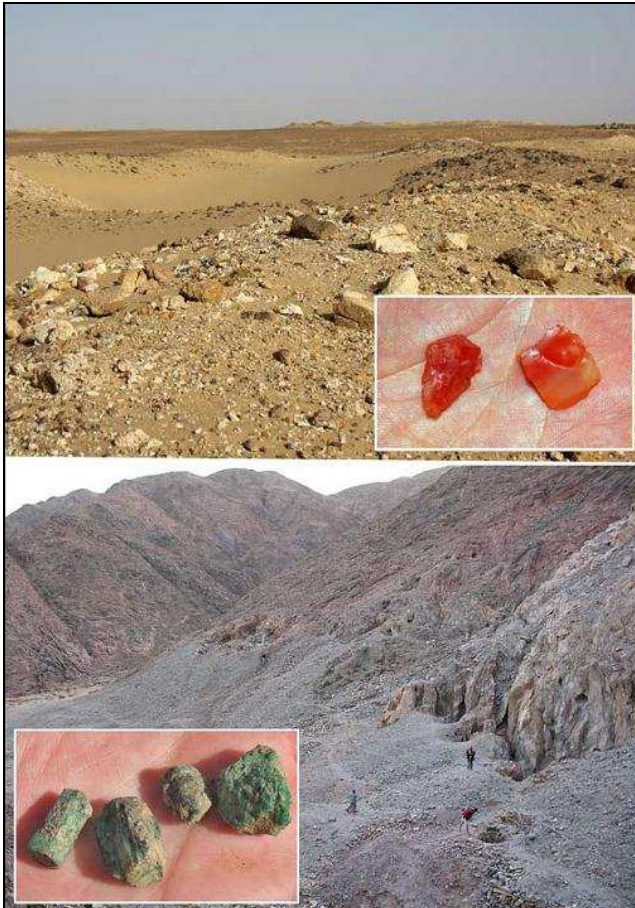
- **Gemstone:**

- Serabit el-Khadim, Sinai
- Mons Smaragdus (Wadi Sikait environs), Eastern Desert
- Stele Ridge (as part of Chephren's Quarry, Lower Nubia)
- Also possible: Wadi el-Hudi and Abu Diyeiba

- **Chert:**

- Wadi el-Sheikh, by Minya
- Also possible: Wadi Umm Nikhaybar, Eastern Desert

- *Serabit probably qualify as WHS in its own right. The others may or may not.*



Gem stone quarries

Stele Ridge, Lower Nubia (carnelian)



Mons Smaragdus or Wadi Sikait, Eastern Desert (emerald)


Conclusions and challenges

- Widan el-Faras as the first step in a planned serial nomination
- Aswan (Unfinished Obelisk) as a future spearhead of a serial site
- Serial site will hold authority and be representative of the totality of Egyptian quarries from the early Pharaonic to the Roman period
- Legal protection issues and management needs to drastically improve – and a serial site may aid!

See also: www.quarryscapes.no

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 Conservation of ancient stone quarry landscapes in eastern Mediterranean

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[Quarry landscape of the month](#)

The QuarryScapes Project: conservation of ancient stone quarry landscapes in the Eastern Mediterranean
 The spectacular monuments and cities of the ancient Near East are testament to an industrial past where large-scale stone procurement remains unsurpassed. Yet, stone quarries are forgotten as key archaeological sites, rich in material remains of crucial significance if we are to understand the social and technological practices of an age when stone was quarried and transported *par excellence*. Largely invisible, undocumented and unprotected, these ancient quarry landscapes are being destroyed from actions such as modern development and quarrying.

The inspiration for the 'QuarryScapes' project comes from the necessity to put these ancient industrial landscapes on the map before it is too late and to raise awareness of their research potential across a broad spectrum of audiences, from archaeological researchers to the interested public. The 'QuarryScapes' project drew together professionals from academic and other institutions in Egypt, Jordan, Turkey, UK, Belgium, Italy and Norway to focus specifically on documentation, conservation and heritage management of these fragile quarry landscapes within the first collaborative and innovative project of its kind.

EU sixth framework programme, specific targeted research project
 Contract number: 015416
 Start date – End date: 01/11/05 – 31/10/08

NEWS
December 2009
 New book: a special volume with papers from the QuarryScapes project soon printed.
November 2008
 Final workshop: the third QuarryScapes workshop was held in Aswan 12. - 15. October
June 2008
 Final Reports: available for download
June 2008
 More Palaeolithic quarries in Aswan Recent visits to the Aswan West Bank in Egypt have added new discoveries...
April 2008
 QuarryScapes third workshop Aswan, October 12-15 2008

