

EUROPE / NORTH AMERICA

SITES OF HUMAN EVOLUTION AT MOUNT CARMEL: THE NAHAL ME'AROT / WADI EL-MUGHARA CAVES

ISRAEL



WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

SITES OF HUMAN EVOLUTION AT MOUNT CARMEL: THE NAHAL ME'AROT / WADI EL-MUGHARA CAVES (Israel) –ID No. 1393

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: Not to inscribe the property under natural criteria

Key paragraphs of Operational Guidelines:

77 Property does not meet natural criteria

1. DOCUMENTATION

a) Date nomination received by IUCN: 11 March 2011

b) Additional information officially requested from and provided by the State Party: Supplementary information was provided to the evaluation process, covering matters related to integrity, protection, management, stakeholder engagement and other matters, following the evaluation mission.

c) Additional literature consulted: Albert, R. et al (1999) **Mode of Occupation of Tabun Cave**; J. Arch. Sci. Mercier, N. & Valladas, H. (2003) **Reassessment of burnt flints from the Palaeolithic site of Tabun Cave, Israel**. J. Hum Evol. Segev & Sass. 2009; **The Geology of the Carmel Region**. Geological Survey Israel. Wells, R.T. **Earth's geological History – A contextual framework for assessment of World Heritage Fossil site Nominations**. IUCN Gland; A. Gibbons (2010) **Close Encounters of the Prehistoric Kind**. Science Mag Volume 328; C. Johnson (2002) **The Rise and Fall of Rudist Reefs**. American Scientist Volume 90

d) Consultations: 10 external reviewers consulted. The mission also met with specialists from University of Haifa, University of Tel Aviv and local, regional and national authorities.

e) Field Visit: Friedemann Schrenk, 3-6 October 2011.

f) Date of IUCN approval of this report: April 2012

2. SUMMARY OF NATURAL VALUES

The nominated property, the Sites of Human Evolution at Mount Carmel: The Nahal Me'arot / Wadi el-Mughara Caves, is located on the western side of Mount Carmel, about 4 km east of the Mediterranean sea shore, in one of the frequent valleys dissecting the dolomitic limestones that dominate the area. The Nahal Me'arot valley lies about 2 km south-east of the town of Atlit, and the Nahal Me'arot / Wadi el-Mughara caves are situated on a cliff at the northwestern face of the valley's southern bank, at the point where Nahal Me'arot opens westward towards the Mediterranean coastal plain. The

nominated property comprises a group of four natural caves (Tabun, Jamal, el-Wad and Skhul) and their geomorphological environs. The 54 ha property is surrounded by a buffer zone of 370 ha which is not included in the nominated area. The four caves are situated within an area of circa 2 hectares, incorporated within the Nahal Me'arot Nature Reserve which covers 310 hectares.

The site is subject to Mediterranean climatic conditions and a large variety of environments are found within walking distance of the caves: riverbeds, hills supporting Mediterranean forests or maquis, swamps, coastal dunes and agricultural fields. These provided in prehistoric times a varied ecotonal setting and an easily accessible catchment area of mountainous and coastal plain terrains. An exposure of a rudist reef (a fossil reef dominated by rudist bivalves from the later Mesozoic, and much older and geologically not connected to the human fossils remains that are the focus of the nomination) of Mount Carmel is a regionally notable geological phenomenon. Due to karst processes, hundreds of caves have formed in the limestones of the Carmel mountains, and about 200 have yielded evidence of early human occupation.

Human fossil remains were discovered at three of the four caves and adjoining terraces of Nahal Me'arot / Wadi el-Mughara:

- Tabun Cave: A complete Neanderthal skeleton (60,000 – 50,000 years BP) and skeletal elements
- Skhul Cave and Terrace: 11 skeletons of Early Anatomically Modern Humans (EAMH) (120,000 – 80,000 years BP)
- el-Wad: Homo sapiens skeletons and skeleton fragments of more than 100 individuals (15,000 – 11,500 years BP)

The Nahal Me'arot / Wadi el-Mughara sites are of globally recognised significance for understanding human evolution because only here remains of Neanderthals (*Homo neanderthalensis*, or regarded by some authors as a subspecies *Homo sapiens neanderthalensis*), originating from Europe, and Early Anatomically Modern Humans (EAMH), originating from Africa, were discovered within the same geological strata. Both fossil human types are key specimens in the

debate concerning the demise of Neanderthals and the origin of *Homo sapiens*. Together with other caves in Israel, the property marks the southernmost geographical extension of Neanderthals and the northernmost geographical extension of EAMH. The fossils and artefacts found in the caves demonstrate a long term co-existence of both hominid species in the Carmel area, and provide a scientific time-scale for the dating of crucial events in human evolution in one of the longest sequences of human presence in the world, from the Lower Palaeolithic through the Neolithic and Chalcolithic periods to the present.

The sites have a firmly established geochronology and thus not only serve as a benchmark for human evolutionary studies, but also have high potential for future interdisciplinary analyses. The palaeoenvironmental changes documented in the caves' sedimentological and palaeobiological record are of high significance for the understanding of human biocultural evolution. These processes can be linked to both regional and global climatic changes such as fluctuations in precipitation, temperature and sea level, and thus provide evidence of the environmental factors that influenced the Neanderthals and EAMH that lived in the area.

3. COMPARISONS WITH OTHER AREAS

Human evolution during the last 2.5 million years relates to natural as well as to cultural development of early humans. It is best to describe this phenomenon as a process of bio-cultural evolution, where natural and cultural factors are continuously influencing each other both ways.

Six of the seven sites on the World Heritage List related to human evolution were inscribed under cultural criteria only. Ngorongoro Conservation Area, Tanzania, was initially inscribed under natural criteria due to the value of the larger Serengeti ecosystem. Recently, the property was also inscribed under cultural criteria because of the outstanding importance of Olduvai Gorge and Laetoli for understanding human evolutionary history. The current tentative lists contain one hominid site (Konso-Gardula, Ethiopia) in the mixed category, and one site (Djourab, Chad) in the natural category, which due to their age of 6 million years, yielded no cultural objects, but fossil remains only. However, most other human evolution sites on tentative lists are noted for nomination in the cultural category, in line with the Committee's past decisions on the inscription of such sites on the World Heritage List.

The property has been nominated under both natural and cultural criteria, and with considerable overlap in the justifications provided for the application, in particular, of cultural criterion (iii) and natural criterion (viii). In terms of its global reputation, the occurrence of two human types, Neanderthals (at Tabun Cave) and EAMH (at Skhul Cave), within the same Middle Palaeolithic cultural

framework (the Mousterian culture) and in one cave system is unmatched anywhere in the world. Neanderthal remains are known from Europe, Eurasia, the Near East and the Levante. Prominent sites such as Saint-Cesaire and Arcy-sur-Cure, France, and the Neander Valley, Germany, are however considerably younger in geological age than those of Nahal Me'arot / Wadi el-Mughara Caves. Whereas in Europe modern *Homo sapiens* is geologically younger than Neanderthals, at the proposed sites EAMH inhabited the area prior to the Neanderthals. In Europe and Eurasia, the co-existence of *Homo sapiens* and Neanderthals is based mainly on archaeological material, not fossil remains. The nominated property is unique in that it displays skeletal remains of both types of humans.

Although palaeontological evidence from the Mousterian period is also found in the Zagros Hills of North East Iraq and in South West Iran, the more than 50 excavated sites in the Levante are the best studied. Among these, the Nahal Me'arot / Wadi el-Mughara Caves were the first sites where faunal remains were studied for reconstructing palaeoenvironmental and climatic change during early hominin evolution. The caves have been the subject of palaeontological and palaeoanthropological research over a period of 90 years. They were among the earliest sites excavated in the southern Levant and studied in a systematic way as early as the late 1920's, and the research on the site had a major impact on the development of new theories on human evolution.

However IUCN considers the application of the natural criteria to this property is not appropriate despite the importance of the property. Compared with other fossil sites included on the World Heritage List under criterion (viii), the Nahal Me'arot / Wadi el-Mughara Caves represent a very low species / intra-species richness (3 closely related human species or subspecies). Whilst the global importance of the property to human evolution appears clear, there has also been a consistent approach to the evaluation of criterion (viii) in relation to fossil sites, following the principles outlined in the long-adopted thematic study on this matter. IUCN has carefully considered this matter, in this case also in consultation with ICOMOS, and concludes that the property does not correspond to the principles required to apply criterion (viii). This is notably because, notwithstanding that the species in question is human, the intent and principle application of criterion (viii) is to recognise the whole of the record of life, and not evolution at the species level. Within listed fossil sites the nearest comparator to test the application of this principle would be Wadi Al-Hitan, where the principal fossil remains that provide the basis of Outstanding Universal Value are those of early whales, but in this instance the consideration of OUV was applied regarding the transition at the much higher taxonomic level of Order (Cetacea). It should also be noted that human evolution clearly is recognised primarily through the application of the cultural criteria, whereas the evolution of all non-human animal groups, whether extant or extinct, can only be recognised in criterion (viii).

Thus, in the view of IUCN, the application of criterion (viii) to human fossil remains should only be entertained in the most exceptional circumstances, and specifically in situations where a property that demonstrates OUV cannot be found to correspond to the cultural criteria, which is not the case for the nominated property.

IUCN also notes that the suggested justification of criterion (viii) is that the prehistoric settlements of Mount Carmel, scattered along its ridges, ravines and coastal plain, can in part be related to the changing shore line of the past 500,000 years. The nomination suggests that they are analogous to the rudist reef of the Carmel, a late Mesozoic continental shelf edge phenomenon which attests to far earlier regional and global climatic changes and fluctuating sea-levels, and that together, these two phenomena define a cultural-geographic entity. IUCN considers that these phenomena are largely not analogous to each other, and that the relationship of more recent karst processes that forms the caves would be the most obvious geological value that would relate to the use of the area by humans, and especially the creation of the opportunity for the preservation of archaeological and palaeontological evidence. Whilst the rudist reef is clearly an interesting phenomenon, it was formed by physical natural ecological processes long before the advent of any human life on Earth, nor with any particular linkage to the much more recent preservation of the evidence of human presence in the area. There is a very large disjunct (more than 60 million years) between the phenomena.

IUCN notes that, independently of its analysis that criterion (viii) is not applicable to the property, ICOMOS also reaches the same conclusion when the property is viewed through the lens of the cultural criteria, and ICOMOS's comments are set out below in this regard. Thus, IUCN would conclude that there is a potential case for the Committee to consider inscription on the World Heritage List in relation to the cultural criteria, but notes that this will be evaluated by ICOMOS. IUCN does not consider the nomination should be accepted for inscription under criterion (viii). In view of this fact IUCN does not draw further conclusions regarding the application of the requirements for the Integrity, Protection and Management as it anticipates these matters will be considered in relation to the application of cultural criteria to the property.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

An area of circa 310 hectares surrounding the Nahal Me'arot / Wadi el-Mughara site was declared a Nature Reserve (Nahal Me'arot Nature Reserve) in 1971. The property is part of the Nahal Me'arot Nature Reserve and thus protected under the National Parks, Nature Reserves, National Sites and Memorial Sites Law of 1998 and managed by the Israel Nature and Parks Authority (INPA). An agreement between INPA and the

Israel Antiquities Authority (IAA) of 2005 facilitates cooperation, conservation, and effective management of antiquity sites in Nature Reserves and National Parks. Co-operation between INPA and IAA is excellent on all levels. The site is protected by state and statutory laws. The area devoted to visitors' facilities was annexed to the Nahal Me'arot Nature Reserve in 1989. A strip of land along the western perimeter of the proposed buffer zone, designated as agricultural land, is leased to the adjacent settlements, Kibbutz Ein Carmel in the North and Moshav Geva Carmel in the South. The property is also part of the UNESCO-recognised Mount Carmel Biosphere Reserve.

4.2 Boundaries

The four caves which make up the site are located in close proximity to each other, all within a stretch of c.200 metres. The surrounding areas, together with the Nahal Me'arot / Wadi el-Mughara caves, form a complete habitat of prehistoric life, defined by still intact visual and physical boundaries. The topographic setting of the caves is clearly defined by the geographical confines of the westward sloping valley and the rudist reef which forms its two banks, providing a visual basin of the prehistoric habitat as viewed by the succession of communities which occupied the caves and their terraces.

The property and its buffer zones are located on state-owned land. The buffer zone comprises 370 hectares, of which the eastern 4/5 (buffer zone A) is part of the Nahal Me'arot Nature Reserve, and the western 1/5 (buffer zone B) is leased to the adjacent settlements: Kibbutz Ein Carmel to the North and Moshav Geva Carmel to the South. In supplementary information provided to ICOMOS and IUCN following the evaluation mission, the State Party indicates that it will consider the option to develop over time a serial nomination to include further component parts in the region, but is not in a position yet to provide further details.

4.3 Management

In 2003, a Site Conservation and Management Programme which describes all management procedures for the site was prepared, and it currently serves as the foundation for site management. The Management Steering Committee headed by the Hof Carmel Regional Council (HCRC) is highly committed, and includes representatives of all national, regional and local stakeholders, including INPA, IAA, Haifa University, Carmel Drainage Authority, Kibbutz Ein Carmel & Moshav Geva Carmel, the Society for the Protection of Nature in Israel (SPNI), The Society for Preservation of Israel Heritage Sites (SPIHS), and the Carmel Tourism Organization.

Special responsibilities are in place for the management of the property and its buffer zones. The management of the property and buffer zone A, both within Nahal Me'arot Nature Reserve, is defined within the INPA

regulation for National Parks and Nature Reserves and subject to the regulations of the IAA for preserving palaeontological sites. Buffer zone B is jointly managed by the relevant members of the Steering Committee – INPA, HCRC, Moshav Geva Carmel and Kibbutz Ein Carmel.

Management of the site, including the cost of staff salaries and regular maintenance, is financed through the annual budget of the INPA with individual site accounting. Total yearly budget is ca.USD 130,000 of which more than ¾ is covered by income from admission fees and a souvenir shop. It is expected that increasing tourism will improve the funding of activities at the sites.

The permanent staff at Nahal Me'arot Nature Reserve includes a site manager, one ranger, one part-time maintenance worker, and an administrator as well as two educational staff. All staff are well trained and highly committed. Seasonal employees are hired as necessary. The site buildings are well managed and include a Visitors and Educational Centre and a Library. The Regional Learning Programmes offered at the site are of high standard. IUCN also noted the strong and welcome support of the local community which was evident throughout the field mission.

4.4 Threats

At present there are no apparent threats to the site's natural values. The buffer zone is designated as agricultural land (banana growing) by state law and cannot be used for any other purpose. Strict protection and regulation of the fossil resources are in operation. Future paleontological excavations will however be invasive, and therefore require special regulations, which need to be agreed upon by the stakeholders.

Skhul cave, which is considered to be exhausted regarding its sediments but retains historic importance, is not included in the fenced visitors' area, and vandalism is potentially difficult to control. IUCN suggests to include Skhul cave into the protected visitors area. In order to achieve this, it might be necessary to relocate the large pumping station, situated in the wadi at the beginning of the footpath leading to Skhul cave.

5. ADDITIONAL COMMENTS

5.1 ICOMOS comment on application of criteria

As noted above, IUCN has considered carefully the application of criteria to this property, and in line with the new processes of coordination that IUCN and ICOMOS have introduced and are continuing to develop for jointly evaluating mixed properties, IUCN requested ICOMOS views on the application of cultural criteria. IUCN also noted that the human fossils, caves and geological strata of the property are intimately linked to the cultural attributes, which include artefacts and archaeological strata. IUCN also took note of the reflections of the

newly conceived HEADS Thematic Programme of the World Heritage Centre, including the suggestions on possible reflections on the application of criteria (viii) in relation to human evolution.

ICOMOS noted the nomination is made on the basis of criteria (iii), (v) and (viii), and that the justification for criterion (iii) and criterion (viii) advanced in the nomination are somewhat similar. The suggested justification for criterion (iii) notes the nominated property has "become a key site of the chrono-stratigraphic framework for human evolution in general, and the prehistory of the Levant in particular." The main difference in the justifications is the idea included in (viii) that the changing shoreline and fluctuating sea levels provide an insight into the earth's history.

With the exception of the consideration of the evidence for changing shorelines and sea levels, ICOMOS considered that the remaining justifications for (iii) and (viii) are so similar as to suggest that both should not be accepted. They also advised IUCN that ICOMOS considered that the justifications for criterion (iii) is valid in terms of relating them to finds that reflect an extensive period in early human history the full extent of which is outstanding. ICOMOS recommended that IUCN consider this overlap and the difficulties of the cultural and natural criterion being justified in similar ways. ICOMOS does not consider that it would be helpful to inscribe this property for both cultural and natural values for the same (or similar) time sequences for remains of early man.

IUCN welcomes ICOMOS analysis of this matter, and considers that the fact that both IUCN and ICOMOS reached the same conclusion that criterion (viii) is not applicable, for differing but complementary reasons, reinforces the non-applicability of this criterion.

6. APPLICATION OF CRITERIA

The **Sites of Human Evolution at Mount Carmel: The Nahal Me'arot / Wadi el-Mughara Caves** have been nominated under natural criterion (viii).

Criterion (viii): Earth's history and geological features

The Sites of Human Evolution at Mount Carmel: The Nahal Me'arot / Wadi el-Mughara Caves provide unique evidence of the co-existence of Neanderthals and Early Anatomically Modern Humans during upper Pleistocene times, and the correlation of climate change with human evolutionary processes for a period of around 0.5 million years. However, these values relate to the application of the cultural criteria, and notably criterion (iii). The nominated property demonstrates primarily evolutionary change for a single genus (*Homo* spp), making the degree to which it preserves the record of life on Earth much narrower than existing fossil site inscriptions under this criteria, whilst the associations suggested between separate phases of landscape change in the late

Mesozoic rudist reef, which records life more than 60 million years before human presence on Earth, and during the upper Pleistocene, appear to be coincidental. Whilst the property appears to IUCN to have a strong case to be considered as of Outstanding Universal Value, criterion (viii) is not applicable in this case.

IUCN considers that the nominated property does not meet this criterion.

7. RECOMMENDATIONS

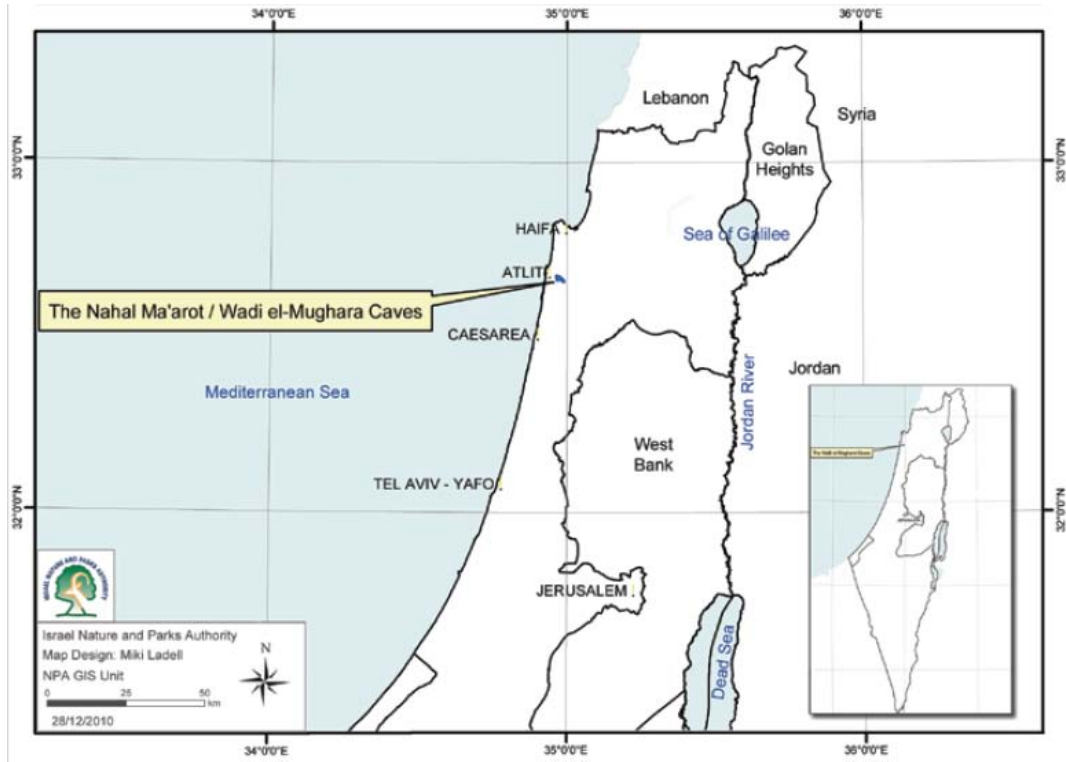
IUCN recommends that the World Heritage Committee adopt the following draft decision:

The World Heritage Committee,

1. Having examined Documents WHC-12/36.COM/8B and WHC-12/36.COM/INF.8B2;

2. Decides not to inscribe the **Sites of Human Evolution at Mount Carmel: The Nahal Me'arot / Wadi el-Mughara Caves (Israel)** on the World Heritage list under natural criterion (viii).

Map 1: Location of the nominated property



Map 2: Nominated property and buffer zone

