
Mount Carmel Caves (Israel) No 1393

Official name as proposed by the State Party

Sites of Human Evolution at Mount Carmel: The Nahal Me'arot/Wadi el-Mughara Caves

Location

Regional Council Hof-HaCarmel
Northern Israel
State of Israel

Brief description

Located in the steep-sided Nahal Me'arot/Wadi el-Mughara valley on the western side of the landmark Mount Carmel range, Tabun, Jamal, el-Wad and Skhul caves contain cultural deposits representing the past half a million years of human evolution. The site is part of one of the best preserved fossilised reefs of the Mediterranean region and is recognised as providing a definitive chronological framework at a key period of human development. Archaeological evidence covers the appearance of modern humans, deliberate burials, early manifestations of stone architecture and the transition from hunter-gathering to agriculture.

Category of property

In terms of categories of cultural property set out in Article I of the 1972 World Heritage Convention, this is a *site*.

[Note: The property is nominated as a mixed cultural and natural site. IUCN will assess the natural significances while ICOMOS assesses the cultural significances.]

1 Basic data

Included in the Tentative List

30 June 2000

International Assistance from the World Heritage Fund for preparing the Nomination

None

Date received by the World Heritage Centre

27 January 2011

Background

This is a new nomination.

Consultations

ICOMOS has consulted its International Scientific Committee on Archaeological Heritage Management and several independent experts.

Literature consulted (selection)

Bar-Yosef, O., and Callander, J., 'The woman from Tabun: Garrod's doubts in historical perspective', in *Journal of Human Evolution* 37:879-885, 1999.

Gamble, C., and Stringer, C., *Potential Fossil Hominid Sites for Inscription on the World Heritage List: A Comparative Study*, UNESCO, Paris, 1997.

Jelinek, A., 'The Tabun Cave and Paleolithic man in the Levant', in *Science* 216:1369-1375, 1982.

Kaufman, D., 'Mind the gap: questions of continuity in the evolution of anatomically modern humans as seen from the Levant', in *Archeology, Ethnology and Anthropology of Eurasia* 4: 53-61.

Sanz, N., and Keenan, P. (eds), *Human Evolution: Adaptations, Dispersals and Social Development (HEADS), World Heritage Thematic Programme*, World Heritage Paper 29, Paris, UNESCO, 2011.

Stringer, C.B., 'Evolution of early modern humans', in *Cambridge encyclopedia of human evolution*, Cambridge; New York, NY, Cambridge University Press, 1992.

Weinstein-Evron, M., et al, 'After 70 Years: New Excavations at the el-Wad Terrace, Mount Carmel, Israel', in *Journal of the Israel Prehistoric Society* 37:37-134, 2007.

Wolpoff, M.H., *Paleoanthropology*, Knopf, distributed by Random House, New York, c.1980.

Zaidner, Y., et al, 'The Acheulo-Yabrudian of Jamal Cave', in *Journal of the Israel Prehistoric Society* 35:93-115, 2005.

Technical Evaluation Mission

A joint ICOMOS/IUCN technical evaluation mission visited the property from 2 to 6 October 2011.

Additional information requested and received from the State Party

A letter was sent to the State Party on 9 September 2011 requesting clarification on the proposed future serial nomination of additional sites; access to and physical protection of Skhul Cave; the involvement of the Israel Antiquities Authority in management of the property, and the involvement of stakeholders. A response to these queries was received on 12 October 2011 and is included in the relevant sections below. The response also requested that the transliteration from the Hebrew of 'Ma'arot' in the name of the property be corrected to 'Me'arot'.

Date of ICOMOS approval of this report

14 March 2012

2 The property

Description

The nominated property includes four cave sites (Tabun, Jamal, el-Wad including the terrace excavations, and Skhul) in the natural rudist reef of Mount Carmel. The steep-sided valley of the Nahal Me'arot/ Wadi el-Mughara

opening to the coastal plain on the west side of the Carmel range provides the visual setting of a prehistoric habitat. The nominated property covers an area of 54ha within a buffer zone of 370ha. The valley is one of many caused by rainy season watercourses running down the western side of the Mount Carmel range to the coastal plain. The caves are situated on a cliff at the north-western face of the valley's southern bank, at the point where Nahal Me'arot opens westward towards the Mediterranean. During the 1920s-30s when the caves were first excavated and became known worldwide as prehistoric sites, the valley was known as Wadi el-Mughara (literally Valley of the Caves in Arabic). Nahal Me'arot has the same meaning in Hebrew. The nominated property and most of the buffer zone are incorporated within the Nahal Me'arot Nature Reserve. It is arranged today as an open-air display of prehistoric life, with various interpretive features at Tabun, Jamal and el-Wad.

Tabun Cave

The westernmost cave, nearest to the entrance to the property is Tabun, a large cave opening to the north, where Dorothy Garrod uncovered the complete skeleton of a Neandertal woman ('The Woman from Tabun') dated to c.60,000-50,000 BP, during the first excavations at the site in 1929-34. The cave has also yielded Lower and Middle Palaeolithic finds, representing the late Acheulian and Acheulo-Yabrudian cultural entities c.500,000-250,000 BP and a full sequence of the Mousterian c.250,000-45,000 BP.

Jamal Cave

The next cave along to the east is Jamal, a single chamber with an arched entrance clearly visible from the mouth of the valley. Stone structures located outside the cave when it was first investigated by C. Lambert in 1928 were subsequently removed. Excavations during the 1990s yielded artefacts attributed to the Acheulo-Yabrudian cultural entities c.400,000-250,000 BP.

El-Wad Cave

The next cave along to the north-east is the largest, deepest and most visible of the four caves, its name meaning 'Cave of the Stream'. The well-formed arched entrance was once flanked by openings, one of which was enlarged possibly during the medieval period. A medieval limestone wall blocked the opening when it was investigated by Lambert in 1928, and the cave featured stalactites and stalagmites. The wall was removed during Garrod's later excavations. The large entrance chamber leads into five further chambers along a line extending c.80 metres into the cliff. Excavations in the cave and its adjoining terrace have yielded finds over a long sequence from the Middle Palaeolithic to the Neolithic (c.60,000-6,000 BP). These include the first established sequence for the Upper Palaeolithic and the remains of a Natufian hamlet dated to c.15,000-11,500 BP; the latter includes stone-built house remains and a cemetery area containing a large group of skeletons and skeletal fragments numbering more than 100 individuals, some of which were

elaborately ornamented. The excavations on the terrace also yielded ground stone features, art and decorative items, lithics and faunal remains. Together these finds indicate a transition from plant gathering and animal hunting to plant and animal domestication and husbandry, preceding the first farming societies.

Skhul Cave

Skhul Cave ('Cave of the Kids') is located further up the valley around a curve, approximately 100 metres east of the other caves. It is more like a rock shelter than a cave, being only a few metres deep. Quarry blasting in 1928 partly destroyed the face but did not affect the cave itself or its terrace. Excavations by Garrod in 1929, and McCown in 1931-2 yielded Middle Palaeolithic finds attributed to the Late Mousterian culture (c.150,000-45,000 BP), including eleven skeletons of Early Anatomically Modern Humans (EAMH), dated to c.80,000-120,000 BP. One of the two earliest burial sites discovered to date, this site demonstrates evidence of ritual burial, including grave offerings. The nominated property is the only place known in the world to date where both Neandertal and EAMH remains are found in a single Mousterian cultural complex. Both fossil human types are key specimens in the debate concerning the demise of Neandertals and the origin of *Homo sapiens*.

History and development

The evidence from the excavated sites in the Mount Carmel range indicates that humans first occupied the area around 500,000 years ago. It is proposed in the nomination dossier that the prehistoric settlements of Mount Carmel, scattered along its ridges, ravines and coastal plain can be related to the changing shore line of the past 500,000 years, not unlike the Carmel reef itself – a continental shelf built over the millennia by a group of marine bivalves known as rudists that attests to far earlier regional and global climatic changes and fluctuating sea levels. While the majority of sites identified and surveyed throughout Mount Carmel have not yet been excavated, the sites which have been researched may at this point be considered as part of a proposed future national serial nomination. These include Kebara, Misliya, Sefunim, Nahal Oren and Raqefet caves on Mount Carmel and the submerged site of Atlit Yam near the town of Atlit.

Research and archaeological exploration in the Nahal Me'arot/ Wadi el-Mughara area began during the British Mandate period following World War I. The Department of Antiquities was already aware of the potential archaeological value of the area due to the visibility of the caves and finds of flints and flakes on the slopes, when the British Mandate government planned to quarry the valley cliffs for stone with which to construct a new deep-water harbour at Haifa. Trial excavations at el-Wad Cave in 1928 yielded flint and bone implements, querns, beads, stone structures and human remains. The find of a bone sickle haft, carved in the shape of a young animal was identified as the first example of Stone Age art to be discovered in the Near East. Seven excavation seasons were then carried out from 1929 to 1934 by the British

School of Archaeology in Jerusalem and the American School of Prehistoric Research, led by Dorothy Garrod and T. McCown. These investigated el-Wad Cave, Tabun Cave and Skhul Cave. Following the declaration of the State of Israel, and after the 1967 war, excavations were carried out by a number of universities including Michigan, Arizona, Tel Aviv, Haifa and the Hebrew University of Jerusalem. Excavations of the Natufian site by the University of Haifa continue at el-Wad Terrace.

Following the declaration of the caves and their surroundings as a National Nature Reserve in 1971, a protection and development plan was prepared and implemented under the supervision of the Israel Nature Reserves Authority.

3 Outstanding Universal Value, integrity and authenticity

Comparative analysis

Within the immediate region the State Party discussed the significance of the prehistoric sites of the Carmel range including Kebara, Misiya, Sefunim, Nahal Oren and Raqefet caves. The Tabun Cave within the nominated property and the Kebara Cave together represent the southern extremity of the Neandertal occupation dating to 60,000-50,000 BP, and Skhul Cave within the nominated property together with Qafzeh Cave near Nazareth, some 30km east of Mount Carmel represent the northernmost known remains of EAMH, dating to c.80,000-120,000 BP. While the Natufian and Neolithic are attested at el-Wad cave and terrace within the nominated property and Nahal Oren cave, the Lower Palaeolithic is attested only at Tabun and Jamal caves within the property. It was concluded that the cluster of caves at Nahal Me'arot/Wadi Mughara represent an unparalleled long cultural sequence and display an exceptionally rich array of prehistoric findings revealed in 90 years of scientifically sound archaeological research.

The State Party notes that a close examination of the World Heritage List and Tentative Lists reveals that 17 of the sites are related to human evolution (7 on the World Heritage List, 10 on the Tentative Lists). The State Party further notes that when comparing the sites, the following criteria should be considered:

- Interdisciplinarity in producing the nomination dossier and in the evaluation;
- Scientific recognition and ongoing process of research at the site;
- Eligibility depends more on the possibilities to highlight the discoveries and disseminate knowledge than on spectacular, aesthetic or monumental remains;
- Comprehensive research and interpretation of the palaeo-ecological context;
- Facilities for the interpretation of the Outstanding Universal Value of the site;
- Clear and close involvement of local communities.

The nomination dossier then goes on to compare the sites using these criteria in terms of the five values which characterise the nominated property:

(1) Continuous and long sequence of human evolution and adaptation: comparison with 17 sites (Tables 3.05, 3.06, 3.07) found the nominated property to be significant in its display of more than 500,000 years of human evolution, highlighting accelerating technological developments and significant changes in life-ways within an exceptionally long and diverse cultural sequence.

(2) Importance to the history and development of science: compared with 9 sites (Table 3.08) the nominated property was found to be significant as one of the earliest sites in the southern Levant excavated and studied in a systematic way such as to prompt numerous research initiatives in different fields. The site holds potential for future interdisciplinary research that will contribute to global prehistory and knowledge of human evolution.

(3) The presence of Neandertals and EAMH in a limited geographical setting and single cultural complex: comparison with 9 sites (three in Israel) (Table 3.09) shows that the possibility of coexistence of Neandertals with EAMH in Europe is based primarily on archaeology and not on fossil hominid remains, and that the remains in the comparable cases indicate later Modern Humans, first appearing c.30,000 BP, who eventually succeeded the Neandertals.

(4) Middle Palaeolithic burial grounds (earliest burial known to date): compared with 9 sites (including the same three in Israel) (Table 3.10) Skhul Cave was found to be significant along with Qafzeh Cave as representing the largest and earliest occurrence of intentional burial of the dead.

(5) Extensive and repetitive occupations attributed to the Natufian culture of the Epipalaeolithic period, signifying the gradual transitions from Palaeolithic to Neolithic: comparison with 5 other sites in Israel, one in Jordan and one in Syria (Table 3.11) shows that el-Wad stands out as an exceptional example of a Natufian base-camp with rich assemblages of material culture expressing the transition from a hunter-gatherer way of life to sedentary communities just prior to the transition to agriculture.

In summary it is concluded that the nominated property represents one of the longest sequences of the biological and cultural evolution of early modern humans at a key period in human history, and demonstrates the passage from mobile to sedentary lifestyles. Definitive research at the sites over a long period of time, and their state of conservation make the nominated property an exceptional archive for information regarding the natural setting and development of early humans in South-west Asia.

As mentioned above, the State Party views this nomination as the first property of a potential serial national nomination of Human Evolution sites at Mount Carmel, as defined in paragraphs 137-140 of the *Operational Guidelines*. It is intended to consider the other sites for serial nomination when frameworks for adequate protection and management can be established. In its response to ICOMOS' request for clarification on when

this might occur, the State Party advised that as sites are still being researched, it is not yet ready to select any for serial nomination.

ICOMOS notes that The Mount Carmel caves were identified in the 1997 ICOMOS comparative study by Chris Stringer and Clive Gamble *Potential Fossil Hominid Sites for Inscription on the World Heritage List* as one of six fossil hominid properties worldwide most strongly recommended for inscription. Two of these (Sterkfontein Valley in South Africa and Atapuerca in Spain) have since been inscribed.

ICOMOS notes that the nominated property is considered as the type cultural section for the last 500,000 years of human history against which other sites throughout the Levant are compared and contrasted.

ICOMOS notes that the comparative analysis has been undertaken with properties bearing similar values to those of the Nahal Me'arot/Wadi el-Mughara Caves, inscribed or not on the World Heritage List and at national, regional and international level.

ICOMOS considers that the comparative analysis justifies consideration of this property for the World Heritage List.

Justification of Outstanding Universal Value

The nominated property is considered by the State Party to be of Outstanding Universal Value as a cultural property for the following reasons:

- Continuous and long sequence of human evolution and adaptation;
- Covers a key period of human history;
- Overlap of Neandertal range with that of Early Anatomically Modern Humans, evidenced by fossil hominid remains;
- Importance to the research and knowledge of human evolution;
- One of the earliest intentional human burials known to date.

ICOMOS considers that this justification is appropriate. The complex of caves has long been recognised as containing the flagship sites of prehistoric archaeology worldwide. Skhul and Tabun caves are featured in every summary of human evolution for their human remains and artefacts bearing on the origin of the fully modern humans and the fate of the Neandertals. El Wad cave is recognised worldwide for its evidence of the early stages of food production and sedentism. Jamal has yielded exceptional evidence of the material culture of the Middle Palaeolithic period including wooden and stone household utensils and leather processing.

Integrity and authenticity

Integrity

The State Party states that the property, comprising the four caves located in close proximity to each other all within a c.200 metre stretch along the south bank of the wadi together with the surrounding area form a complete prehistoric habitat, as viewed by the succession of communities which occupied them. The immediate topographic setting is clearly defined by the geographical confines of the valley and still conveys that visual habitat.

ICOMOS considers that all elements necessary to express the values of the property are included within the nominated boundary.

The nominated property is of adequate size to ensure complete representation of the caves and the visual habitat defined as the caves, the terrace in which the caves are found and the area that can be viewed from the caves. The caves are intact, in good condition and do not suffer from neglect, except in the case of Skhul Cave, which has been partly defaced with graffiti. The visual habitat is intact except below Skhul Cave where Eucalyptus trees are growing along the riverbed around a water pumping station.

Authenticity

The State Party states that documented research and investigation of the site going back to 1928 testify to the authenticity of the prehistoric remains. These were relatively undisturbed, having been protected by the subsequent accumulation of layers during later occupations. The caves ceased use as dwellings in the early 20th century. The form of the caves and their environs remain largely intact apart from the roof collapse of Tabun Cave which created a 'chimney' opening. The medieval wall blocking the entrance to el-Wad cave was removed during Garrod's excavations, and two stone structures outside the Jamal cave were removed following Lambert's investigation. Creation of the surrounding Nature Reserve in 1971 has ensured protection of the setting. An electric power line crosses the valley from north-west to east, supported on poles, mostly located along the northern bank of the river bed. The site is connected to the national power grid through this power line.

ICOMOS considers that the nomination is based on truthful and credible sources. The archaeological knowledge generated at the Nahal Me'arot/Wadi el-Mughara site has established the caves and their region the Levant as crucial to understanding human, biological, behavioural and cultural origins. The caves, terraces and excavated structures, together with excavated artefacts and human remains, truthfully and credibly express the value of the property. The authenticity of the habitat is impacted by the Eucalyptus trees and water pumping station at Skhul Cave.

ICOMOS considers that the conditions of integrity and authenticity have been met.

Criteria under which inscription is proposed

The property is nominated on the basis of cultural criteria (iii), (v) and natural criterion (viii). ICOMOS and IUCN had an exchange of views on the use of criterion (viii).

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

This criterion is justified by the State Party on the grounds that the site of the Nahal Me'arot/ Wadi el-Mughara Caves displays one of the longest prehistoric cultural sequences in the world. From the Acheulian complex, at least 500,000 years BP, through the Mousterian culture of 250,000-45,000 years BP, and up to the Natufian culture of 15,000-11,500 years BP and beyond, it testifies to at least half a million years of human evolution. As such, it has become a key site of the chrono-stratigraphic framework for human evolution in general, and the prehistory of the Levant in particular. Research at Nahal Me'arot/ Wadi el-Mughara Caves has been ongoing since 1928, and continues to promote multidisciplinary scientific dialogue. The potential for further excavation and archaeological research at the site is to date far from exhausted.

ICOMOS considers that this justification is appropriate.

ICOMOS considers that this criterion has been justified.

Criterion (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;

This criterion is justified by the State Party on the grounds that The Nahal Me'arot/ Wadi el-Mughara Caves are a central site of the Natufian culture in its Mediterranean core zone. This significant regional culture of the late Epipalaeolithic period presents the transition from Palaeolithic to Neolithic ways of life, from nomadic to complex, sedentary communities, bearing testimony to the last hunter-gatherer society and the various adaptations it underwent on the threshold of agriculture.

ICOMOS considers that this justification is appropriate.

ICOMOS considers that this criterion has been justified.

ICOMOS considers that the nominated property meets criteria (iii) and (v) and conditions of authenticity and integrity and that Outstanding Universal Value has been demonstrated.

Description of the attributes

The attributes carrying the Outstanding Universal Value of the property are:

- The four caves, terraces, unexcavated deposits and excavated artefacts and skeletal material testifying to the long sequence of occupation at the site;
- The Nahal Me'arot/ Wadi el-Mughara landscape providing the prehistoric setting of the caves;
- El-Wad Terrace excavations, remains of stone houses and pits comprising evidence of the Natufian hamlet.

4 Factors affecting the property

Development pressures

According to the nomination dossier there are no development or construction programmes that can affect the site at present. The property is not subject to mining, logging or grazing. The property is uninhabited. It has been protected as a nature reserve since 1971; neighbouring areas including part of the buffer zone are designated agricultural lands or open forested nature reserves by their statutory classifications. At the southern edge of the buffer zone there is an active commercial nursery which is accessed by the road leading to the site and has its own parking area. Otherwise the buffer zone is also uninhabited. Approximately 15 farmers access the agricultural fields within the buffer zone to cultivate their crops there.

ICOMOS considers that development pressures are extremely unlikely to affect the property or threaten its cultural values. Greenhouses are the only structures allowed in Buffer Zone B which is zoned solely for agricultural purposes. Existing local, district and national planning authorities provide a strong safeguard against future development.

Tourism pressures

According to the nomination dossier, annual visitor numbers to the Nature Reserve peaked at 100,000 in 1989-90 and then dropped considerably to 35,046 in 2002. Since then numbers have risen gradually to 45,816 in 2010. The fluctuation is attributed to changes in recreational habits and the budgets for school curricular visits. Entrance to the site is fenced and visitors must pay an entrance fee. The carrying capacity of the Nature Reserve has been assessed at 800 people per day, but this is reached only on select peak days during autumn and spring holidays. Staffs direct visitors to different areas of the Reserve on those days to avoid overcrowding. The caves area within the Nature Reserve is itself fenced and the entrance is monitored by park staff. Vandalism has not been a problem at the site.

ICOMOS notes that elevated tourist pressure is unlikely to pose a direct threat to the archaeological deposits within the caves, since there are designated walkways (at el-Wad) and areas are barred off at Tabun and Jamal caves,

preventing people from disturbing the archaeological deposits. There is potential for vandalism at Skhul cave, which is outside the fence which controls access to Tabun, Jamal and el-Wad caves and is not on the tourist circuit. It is separately accessed via a path through the Nature Reserve. The cave is not well presented and has suffered some graffiti.

Environmental pressures

The State Party states that no harsh environmental conditions threaten the property or buffer zone. The site is not subject to pollution. El-wad cave is subject to fruit bat invasions and humidity.

Natural disasters

The State Party states that the site is not threatened by floods or earthquakes. However forest fires have occurred nearby in the Mount Carmel National Park. Fire protection equipment at the property includes 4 wheel fire reels, fire extinguishers, two fire hydrants and a portable fire hose cart. Water is available from the water pumping station on site. Vegetation along paths and in parking areas is cleared and trimmed as part of the regular work plan. Park personnel are trained in fire protection regulations and assisted by personnel from other nature reserves in the area when necessary. The nearest fire department is 30 minutes away near the cities of Hadera and Haifa. A small fire station is located in the Mount Carmel Park. All are available on call.

ICOMOS considers that fires would not threaten the caves or archaeological deposits within them. However they could destroy the site laboratory/museum/library and any artefacts and documents within them which comprise attributes of the Outstanding Universal Value of the site.

Impact of climate change

ICOMOS considers that fires are occurring more frequently in the Mediterranean region than previously.

ICOMOS considers that the main threats to the property are forest fires.

5 Protection, conservation and management

Boundaries of the nominated property and buffer zone

The boundary of the property defines the natural basin of the prehistoric habitat of the caves site. It encloses the valley and its slopes above and opposite the caves, running along the north and south ridges and narrowing down to the river bed to cross the valley east of Skhul Cave. The buffer zone is in two parts. Zone A follows the outline of the Nature Reserve as defined in National Outline Plan No. 8 for National Parks, Nature Reserves and Landscape Reserves, which in 1981 redefined and slightly enlarged the boundaries of the 1971 nature

reserve. Zone B is a 500 metre wide strip of agricultural land along the western boundary, which is leased to the adjacent settlements: Kibbutz Ein Carmel to the north and Moshav Geva Carmel to the south.

ICOMOS notes that there is no fence marking the property boundary but considers that none is needed because the existing maps and the concept of the visual habitat means there is no ambiguity in the boundaries of the nominated area.

ICOMOS considers that the boundaries of the nominated property and of its buffer zone are adequate.

Ownership

The property and buffer zone are owned by the State of Israel.

Protection

Legal Protection

The caves and their surroundings were declared a National Nature Reserve in 1971. The property is primarily protected legally by the National Parks, Nature Reserves, National Sites and Memorial Sites Law 1998, administered by the Israel Nature and Parks Authority (INPA). The powers vested in the INPA are also enshrined in the Wildlife Protection Act (1955), the Planning and Building Law (1965) and the Antiquities Law (1989). The Israel Antiquities Authority (IAA) issues excavation permits annually, pending a submission of a summary report of the previous year's excavation season. No activity is allowed on site without permits from the IAA and the INPA, and no further development or physical interventions are allowed within the Nature Reserve.

Effectiveness of protection measures

ICOMOS notes that the property is protected at the highest national level possible in Israel and that legal protections are enforced.

ICOMOS considers that the legal protection for the property is adequate.

Conservation

Inventories, recording, research

The archaeological sites at the property have been excavated during long periods over the past 90 years. The University of Haifa continues to excavate at el-Wad terrace. In 1967 a prefabricated field laboratory of 175 sqm was installed near the river bed below el-Wad Terrace for the preliminary study and storage of finds, and storage of equipment. The hominid remains and artefacts uncovered are on display and in storage at museums and academic institutions around the world as listed in the nomination dossier. Numerous published reports of the excavations are available in journals and books as listed in the bibliography.

ICOMOS considers that these records provide a baseline for monitoring any future changes to the site.

Present state of conservation

Extensive interpretative signage and information panels are provided at the site. The tour begins with the most ancient and general (regional geology of 200-50 million years BP, the Palaeo-Tethys Ocean and the Rudist reef), progresses onwards to the formation of the caves (a few million years BP) and culminates in the prehistoric cultures at this site (500,000 years BP and onwards).

Tabun Cave

Excavations here ceased in 2002. Most of the inner cave is still filled with sediment and awaits further research. A roof was constructed above the collapsed roof opening in 1989 to protect the cave from the weather. The cliff face above the cave opening was structurally supported during Jelink's excavations at the cave (1967-71). The cave itself can be viewed only from the observation terrace along the visitors' trail. Brecciated layers at the opening of the cave are protected by this terrace, as is the area outside the cave, under the footpath.

ICOMOS notes that the exposed section is in excellent condition as the cave roof has protected it from erosion. The cave still has substantial archaeological potential to contribute new insights into human history.

Jamal Cave

Excavations took place between 1992 and 1994. A local stratigraphic section was exposed and the cave appears to offer only limited deposits for further investigation. As with the Tabun Cave, the interior of the cave and the reconstructed scene of Middle Palaeolithic period life within it can be viewed from outside the cave, beyond metal railings which prevent public access.

ICOMOS considers this cave is in excellent condition.

El-Wad Cave

Geo-physical surveys show that the inner chambers (iii to vi) still contain at least 3 metres of deposits above the bedrock. The public can access this cave via a wide, paved path designed as a floating concrete plate supported on spacers to minimise contact with the remaining deposit layers. The excrement of occasional fruit bat occupation of the cave has caused some decay to the path. Metal netting has been installed at the entrance in an attempt to reduce the bat population. An audio-visual presentation was installed here in 1989, the electric of which are housed in a small stone-clad building near the cave. Only a small area at the northern end of the large terrace which extends down the slope in front of el-Wad and Jamal caves has been excavated. This area is the subject of ongoing research and is protected by a surrounding fence and portable greenhouse cover. Finds are stored in the onsite laboratory for preliminary analysis before being transferred to the Zinman Institute of Archaeology,

University of Haifa, where the skeletal remains are consolidated and preserved.

ICOMOS notes that the excavations on el-Wad terrace exposed several Natufian rock-cut basins. Reference to photographs taken shortly after the excavations indicate that there has been some erosion and dissolution of the basins since exposed. ICOMOS recommends that consideration could be given to some form of protection, such as a protective cover.

Skhul Cave

This cave, which is essentially a rock shelter rather than a cave, is not visible from the entrance to the wadi and is not on the visitors' circuit. It can be accessed separately via the walking trail in the Nature Reserve. It has not been investigated since excavated by Garrod and McCown in 1934. Apart from isolated breccia patches on the cave walls, there appears to be no capacity for further investigation as bedrock has been reached in the cave and terrace. There is some graffiti on the wall of the cave. There is a grove of Eucalyptus trees in the wadi bed below the cave, surrounding a concrete water pumping station.

ICOMOS considers that the graffiti on the wall of the cave does not pose a major threat to the cultural values of the cave but is unsightly. In its response to ICOMOS' query on the physical protection of Skhul Cave, the State Party states that the cave is not a management problem because it is a shallow cave with an exposed rock terrace and no remaining archaeological deposits. The lack of visibility from the entrance to the site and lack of interpretative installation means that the cave is of interest only to visitors with a scientific interest. However ICOMOS considers that the graffiti should be cleaned off. It indicates potential for vandalism, which suggests the need for enhanced protection/presentation of the cave.

ICOMOS also considers that removal of the Eucalyptus trees growing in the wadi bed below Skhul Cave is desirable because they are an alien species not part of the natural visual landscape, together with the downsizing or removal of the water pumping station.

Active Conservation measures

The caves, terraces and their environs are checked by Park staff at the start of every work day before the site is opened to the public. In particular the structurally stabilised cliff area above Tabun Cave is monitored daily for fallen rock. Humidity levels in el-Wad cave are monitored daily.

ICOMOS notes that changes in humidity do not pose a major threat to archaeological deposits.

Maintenance

Vegetation at Tabun cave and el-Wad terrace is routinely monitored to ensure that exposed sections remain visible

and to limit root damage to the archaeological deposits. Shrubs are first sprayed with herbicide and then cut away.

Effectiveness of conservation measures

ICOMOS considers that the active conservation measures are appropriate to preserving the integrity and authenticity of the property.

ICOMOS considers that the conservation measures are adequate but should be supplemented in relation to Skhul Cave and its adjacent visual habitat, and the Natufian rock-cut basins on el-Wad terrace.

Management

Management structures and processes, including traditional management processes

The site has been managed by the Israel Nature and Parks Authority (INPA) since 1971. During preparation of the World Heritage nomination of the property, a Steering Committee of stakeholders was established, including representatives of INPA, the Antiquities Authority, Haifa University, the Kibbutzim and Moshavim, the Society for the Protection of Nature in Israel, the Society for the Preservation of Israel Heritage Sites, the Carmel Tourism Association, and is chaired by the Head of the Hof-HaCarmel Regional Council (HHRC). This will become the governing body at the regional level following inscription and will ensure coordination between on site activities management by INPA and the policies of the World Heritage Forum at the national level. The Forum was set up by INPA, which has responsibility for 8 World Heritage sites in Israel, to discuss issues pertaining to these sites, as well as sites on the Tentative List and new nominations under preparation. It meets twice a year and is attended by site managers and members of the National Commission for UNESCO.

An agreement between the Antiquities Authority and the INPA was signed in 2005 which outlines the effective protocol necessary to facilitate cooperation, conservation and management of Antiquities in Israel's Nature Reserves and National Parks. A copy of this (in English) was provided as part of the State Party's response to ICOMOS' query on this.

Buffer Zone A is managed by INPA subject to the regulations of the Israel Antiquities Authority for preserving archaeological sites. Buffer Zone B is managed by the relevant members of the Steering Committee: INPA, HHRC, and representatives of the kibbutz and moshav.

Policy framework: management plans and arrangements, including visitor management and presentation

A Site Conservation and Management Programme describing all management procedures for the site was prepared in 2003 and currently serves as the foundation for the day to day management of the site.

The Nature Reserve encompassing the nominated property serves the public as a green lung for multiple recreational activities, including trails for hiking and biking. A recreation and picnic area is located on the banks of the Nahal Me'arot river bed east of the entrance to the Nature Reserve. The caves are an additional attraction and since 1989 visitors' facilities and interpretation have been improved. Visitor facilities currently include stairways and ramped paths between the caves, and interpretative features at and in the caves. The immediate area around the cluster of Tabun Cave, Jamal Cave and el-Wad Cave is fenced with an entrance gate and adjoining shelter. An area of land immediately to the west of the Nature Reserve accommodates car parking, a round office building for the Nature Reserve staff, an adjoining round visitor centre with cashier point and souvenir shop, and public toilets. Also near the office and car park, a third round building houses a library, which also functions as a conference centre accommodating 50 people. All buildings on the site are single-storied and measure a total of approximately 450 sq m.

The previous Local Urban Building Plan HC-185 which covered provision of some of these buildings is now being replaced with a new plan that will consolidate the existing situation. In addition, it is now proposed to designate 0.5ha of land near the entrance to the site for a new museum of prehistory and adjacent research centre. There is also a need to improve the junction of the access road to the site with the main Route 4 by providing a turning lane. The access road itself will also be widened. The current parking area at the site accommodates 85 cars and 5 buses. This will be expanded if necessary. A plan to install high voltage power lines along Route 4 is the subject of negotiations to ensure that this is located on the west side of the road, outside the buffer zone.

It is planned to upgrade the existing access trail to the caves with resting points and a new viewing deck at el-Wad Cave. An upgraded all-site-encompassing Interpretation and Maintenance Plan is proposed.

Specific details related to the interpretation and presentation of the site are provided in the nomination dossier.

ICOMOS considers that in general the existing signage, interpretive displays, infrastructure, and site tours are excellent. It is noteworthy that the stratigraphic section exposed during previous excavations at Tabun Cave is extremely impressive and unusual relative to most archaeological sites. Not only is it impressive for its size (23 meters) and temporal span (almost 500,000 years), but it provides visitors with an unparalleled opportunity to visually grasp the concepts of stratigraphy and cultural change through time.

However ICOMOS considers that given its location outside the fenced area that encloses the tourist circuit, Skhul Cave – which contributes substantially to the property's Outstanding Universal Value – is not well integrated with the other caves at the property. Aside from

a small sign briefly describing the archaeological findings, there are not additional interpretive measures. The fossils known from Skhul Cave are of major importance to archaeology and palaeoanthropology, yet this is not made clear at the site.

ICOMOS considers that any proposal for new buildings at the property such as the proposed new museum of prehistory and adjacent research centre should be referred to the World Heritage Committee for review in accordance with paragraph 172 of the *Operational Guidelines for the Implementation of the World Heritage Convention*.

Risk preparedness

The current fire prevention and protection provisions are likely to be upgraded following the widespread forest fire in 2010. It is noted in the nomination dossier that the caves and unexcavated remains are unlikely to be affected by fire. However any artefacts and documents kept in buildings on site would be at risk.

The unstable cliff face above the entrance to Tabun Cave is periodically surveyed so as to anticipate the possibility of a large-scale rock slide.

Involvement of the local communities

Representatives of the nearby Kibbutzim and Moshavim settlements are included on the Steering Committee. In response to ICOMOS' query re this, the State Party pointed out that the ICOMOS mission met with stakeholders as co-ordinated by the regional council, including kibbutz and moshav members, school teachers, local guides, university researchers and NGOs.

ICOMOS considers that it was clear that the local community had been actively involved in the nomination and fully supported it.

Resources, including staffing levels, expertise and training

Funding for the management of the site including staff salaries and maintenance comes from the INPA annual budget. Contributions are also provided from local and regional government offices. Individual project funding is provided via special INPA allocations, including a special budget for guided tours. Admission fees contribute 70%-80% of the site's expenditure.

Personnel include a site manager, a ranger/warden, one part-time custodian/maintenance worker, and a cashier who is also the site administrator. Seasonal employees are hired as necessary. All staff receive periodic training within INPA. Guides are employed by the Carmel Education Guiding Centre and are often Haifa University students majoring in history, geography, tourism, archaeology and biology. All must be licensed guides or certified by the Ministry of Education. The excavations at el-Wad terrace are directed by the Zinman Institute of

Archaeology at the University of Haifa. Guides are periodically updated about the research.

Effectiveness of current management

ICOMOS considers that the current management of the nominated property is adequate except in relation to Skhul Cave as discussed above.

In conclusion, ICOMOS considers that the current management of the nominated property is adequate. ICOMOS recommends that special attention is needed for the physical protection and presentation of Skhul Cave and its adjacent visual habitat. The management system should be extended to ensure adequate fire protection.

6 Monitoring

An annual Maintenance Work Plan is prepared by the site manager and approved by the INPA Carmel and Coast Regional Office. This specifies a number of key activities including periodic survey of the cliff face; clearing of vegetation, trimming shrubs along pathways and in the parking areas, checking the protective roof over the exposed layers of the el-Wad excavations, checking humidity in el-Wad cave, which is an active carstic cave with water dripping and forming stalagmites, and checking the fruit bat colony.

ICOMOS considers that the monitoring arrangements are adequate.

7 Conclusions

ICOMOS considers that the nominated property meets criteria (iii) and (v) and conditions of authenticity and integrity and that Outstanding Universal Value has been demonstrated.

Recommendations with respect to inscription

ICOMOS recommends that Sites of Human Evolution at Mount Carmel: The Nahal Me'arot/Wadi el-Mughara Caves, State of Israel, be inscribed on the World Heritage List on the basis of **cultural criteria (iii) and (v)**.

Recommended Statement of Outstanding Universal Value

Brief synthesis

The four Mount Carmel caves (Tabun, Jamal, el-Wad and Skhul) and their terraces are clustered adjacent to each other along the south side of the Nahal Me'arot/Wadi el-Mughara valley. The steep-sided valley opening to the coastal plain on the west side of the Carmel range provides the visual setting of a prehistoric habitat.

Located in one of the best preserved fossilised reefs of the Mediterranean region, the site contains cultural deposits representing half a million years of human evolution from the Lower Palaeolithic to the present. It is recognised as providing a definitive chronological framework at a key period of human development.

Archaeological evidence covers the appearance of modern humans, deliberate burials, early manifestations of stone architecture and the transition from hunter-gathering to agriculture. The attributes carrying Outstanding Universal Value include the four caves, terraces, unexcavated deposits and excavated artefacts and skeletal material; the Nahal Me'arot/ Wadi el-Mughara landscape providing the prehistoric setting of the caves; el-Wad Terrace excavations, and remains of stone houses and pits comprising evidence of the Natufian hamlet.

Criterion (iii): The site of the Nahal Me'arot/ Wadi el-Mughara Caves displays one of the longest prehistoric cultural sequences in the world. From the Acheulian complex, at least 500,000 years BP, through the Mousterian culture of 250,000-45,000 years BP, and up to the Natufian culture of 15,000-11,500 years BP and beyond, it testifies to at least half a million years of human evolution. As such, it has become a key site of the chrono-stratigraphic framework for human evolution in general, and the prehistory of the Levant in particular. Research at Nahal Me'arot/ Wadi el-Mughara Caves has been ongoing since 1928, and continues to promote multidisciplinary scientific dialogue. The potential for further excavation and archaeological research at the site is to date far from exhausted.

Criterion (v): The Nahal Me'arot/ Wadi el-Mughara Caves are a central site of the Natufian culture in its Mediterranean core zone. This significant regional culture of the late Epi-Palaeolithic period presents the transition from Palaeolithic to Neolithic ways of life, from nomadic to complex, sedentary communities, bearing testimony to the last hunter-gatherer society and the various adaptations it underwent on the threshold of agriculture.

Integrity

The Nahal Me'arot/Wadi el-Mughara site includes all elements necessary to express the values of the property, comprising the caves and the visual habitat. The caves are intact, in good condition and do not suffer from neglect, except in the case of Skhul Cave, which has been partly defaced with graffiti. The visual habitat defined as the caves, the terrace in which the caves are found and the area that can be viewed from the caves is intact except below Skhul Cave, where Eucalyptus trees are growing along the riverbed around the water pumping station.

Authenticity

Archaeological research over 90 years has established the authenticity of the Nahal Me'arot/Wadi el-Mughara site as a crucial record of human, biological, behavioural and cultural origins. The caves, terraces and excavated

structures, together with excavated artefacts and human remains, truthfully and credibly express the values of the property. The authenticity of the habitat is impacted by the alien Eucalyptus trees and water pumping station.

Management and protection requirements

Legal protection is provided at the highest national level possible in Israel. The caves and their surroundings were declared a National Nature Reserve in 1971. The property is protected by the National Parks, Nature Reserves, National Sites and Memorial Sites Law 1998, administered by the Israel Nature and Parks Authority (INPA) and the Antiquities Law (1978) and the Antiquities Authorities Law (1989). Research activities or excavations within the nominated property require permits from both the INPA and the Israel Antiquities Authority (IAA). INPA and IAA share responsibility for the management of the archaeological resources that sustain the Outstanding Universal Value of the property. An agreement between the Antiquities Authority and the INPA (2005) outlines the effective protocol necessary to facilitate cooperation, conservation and management of Antiquities in Israel's Nature Reserves and National Parks.

A steering committee of stakeholders was established to oversee the nomination and will serve as a governing body that integrates local, regional, and national management of the site. The steering committee includes representatives of the INPA, the IAA, archaeologists from Haifa University, the Carmel Drainage Authority, Kibbutz Ein HaCarmel and Moshav Geva Carmel (who lease the agricultural land designated as Buffer Zone B), the Society for the Protection of Nature in Israel, the Society for the Preservation of Israel Heritage Sites, the Carmel Tourism Organization, and the Hof HaCarmel Regional Council. A Site Conservation and Management Programme describing all management procedures for the site was prepared in 2003 and currently serves as the foundation for the day to day management of the site.

ICOMOS recommends that the State Party give consideration to the following:

- removing the invasive *Eucalyptus* trees growing along the valley floor below Skhul Cave;
- downsizing, conceal or remove the water pumping station located near Skhul Cave;
- cleaning off the graffiti observed on the wall of Skhul Cave;
- including Skhul Cave on the main tourist circuit and improve the presentation of the cave in order to enhance its protection, better integrate the cave with the others, and ensure that its significance is made clear;
- evaluating possible erosion of the rock-cut basins on el-Wad Terrace and if need be, consider including a

protective cover of the basins to limit erosion due to rainfall and exposure;

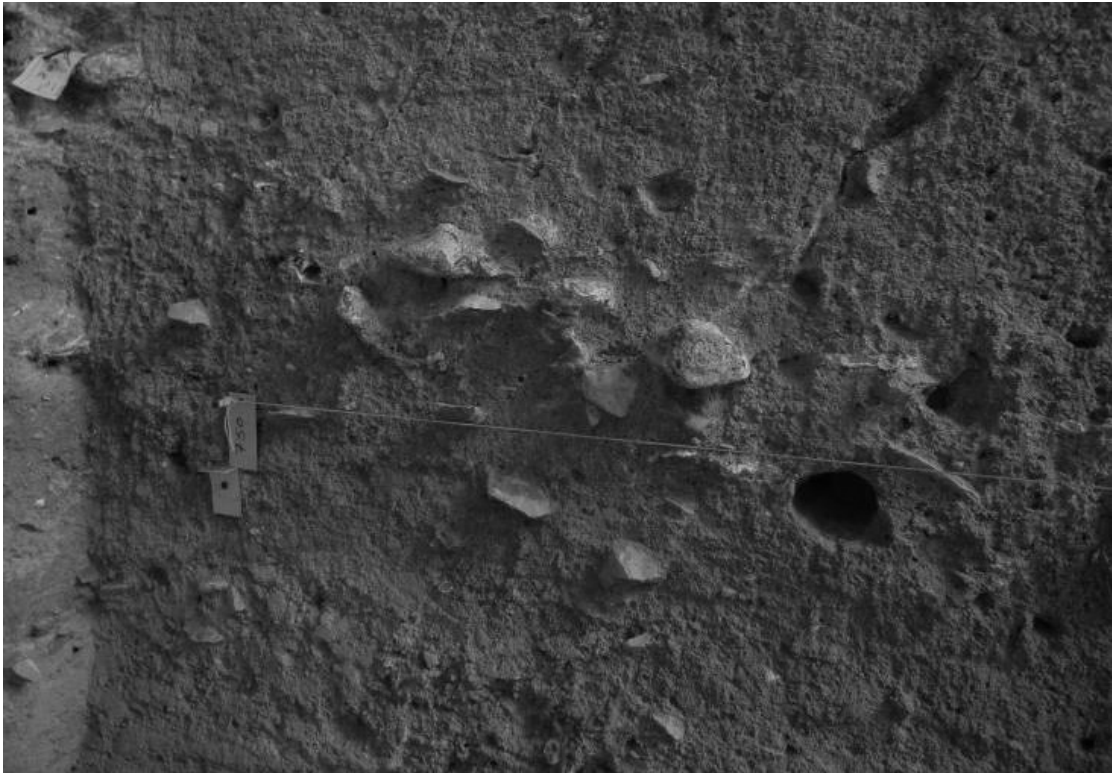
- referring any proposal for new buildings at the property such as the proposed new museum of prehistory and adjacent research centre to the World Heritage Committee for review in accordance with paragraph 172 of the *Operational Guidelines for the Implementation of the World Heritage Convention*.



Map showing the boundaries of the nominated property



General view of the site



In situ artifacts in excavation walls of Tabun Cave



Jamal Cave



Skhul Cave