

World Heritage Sites

Protected Areas and World Heritage



WADI RUM PROTECTED AREA JORDAN

The grandeur of the landscape of Wadi Rum lies in its towering red-walled inselbergs of striated sandstone which rise directly from flat valleys floored with pink sands. The surrounding wadis and plain are also studded with pyramidal massifs of similar rock. The many petroglyphs, inscriptions and archaeological remains witness 12,000 years of human occupation and, unusually, the development of four North Arabian scripts, with the languages and cultures of their creators.

COUNTRY

Jordan

NAME

Wadi Rum Protected Area

MIXED CULTURAL AND NATURAL WORLD HERITAGE SITE

2011: Inscribed on the World Heritage List under cultural criteria (iii) & (v) and natural criterion (vii).

STATEMENT OF OUTSTANDING UNIVERSAL VALUE

The UNESCO World Heritage Committee adopted the following Statement of Outstanding Universal Value at the time of inscription:

Brief Synthesis

Wadi Rum Protected Area (WRPA) is located in the southern part of Jordan close to the border with Saudi Arabia, around 290 km south of Amman and 60 km northeast of the coastal city of Aqaba. The total area of WRPA is 74,200 ha. The property extends approximately 42 km from north to south and approximately 33 km from east to west. A buffer zone of c.5 km in width, with some excepted areas, surrounds the area and is stated as having a total area of 60,000 ha.

Wadi Rum is a major feature within the Hisma desert lying to the east of the Jordan Rift Valley and south of the steep escarpment of the central Jordanian plateau. Its natural values include desert landforms developed within continental sandstones. These landforms have been developed under the influence of a combination of various controlling factors, such as lithology, tectonic activities (including rapid uplift, numerous faults and joints) and surface processes (including various types of weathering and erosion associated with desert climate as well as humid climates in the past), representing million years of ongoing landscape evolution.

Widespread petroglyphs, inscriptions and archaeological remains testify to 12,000 years of human occupation and interaction with the natural environment, illustrating the evolution of pastoral, agricultural and urban human activity in the Arabian Peninsula and the environmental history of the region.

Criterion (iii): The Wadi Rum Protected Area bears a unique testimony to the practice of rock art and inscriptions that has been on-going for millennia. The combination of 25,000 petroglyphs with 20,000 inscriptions and their continuity over a period of at least 12,000 years sets Wadi Rum apart from other rock art and/or inscription sites. The petroglyphs, representing humans and animals, are engraved on boulders, stones, and cliff faces. They trace the evolution of human thought, the long term patterns of pastoral, agricultural and urban human activity in the Arabian Peninsula, and the environmental history of a distinct region that has evolved climatically from mildly humid to semi-arid. The engravings indicate an elaborate sense of aesthetics and a pictorial culture. Numerous inscriptions in four different North-Arabian scripts testify to the very early emergence of alphabets from iconic representations, and widespread literacy among pastoral societies in the Arabian Peninsula.

Criterion (v): The variety of landforms at Wadi Rum has played an essential role in fostering human settlement and, as a result, the development of sophisticated intellectual activity that is documented by abundant petroglyphs and rock inscriptions. This graphic testimony to diverse cultural traditions and civilizations over millennia is one of

the world's richest sources of documentation. Nowhere else in the world can one find such a wealth of information that enables the study and understanding of the continuum of settled and mobile lifestyles in a desert landscape illustrating the adaptability and ingenuity of human communities who have made the most of scarce resources to sustain continuous presence after the climate became dryer in the Bronze Age.

Criterion (vii): Wadi Rum is recognised globally as an iconic desert landscape, renowned for its spectacular series of sandstone mountains and valleys, natural arches, and the range of narrow gorges, towering cliffs, massive landslides, and dramatic cavernous weathering forms displayed. Key attributes of the aesthetic values of the property include the diversity and sheer size of its landforms, together with the mosaic of colours, vistas into both narrow canyons and very large wadis, and the scale of the cliffs. The property displays, in a protected setting, an exceptional combination of landforms resulting from drainage incision, severe weathering by salt, biological and other processes, and the undermining of steep sandstone cliffs by these weathering processes, together with the world's most spectacular networks of honeycomb weathering features. Its associations with the writings of T.E. Lawrence, stressed strongly in the nomination, have ensured a high profile for the property and have reinforced its reputation of the area as a classic desert landscape both globally and within the Arab States.

Integrity

The boundaries of the property include the key cultural and natural attributes and are well designed. Low population density and lack of development impacts have helped maintain WRPA in relatively pristine and authentic conditions. Nevertheless there are a number of threats which require careful and increased attention including mainly the impacts of visitor pressure and car tracks, and to a lesser extent possible encroachment of the village of Rum, groundwater exploitation and firewood collection by local people. The boundaries of the property have been clearly defined and the 5km buffer zone surrounding the property is adequately configured to address threats to the area arising from outside its boundaries.

Authenticity

The rock art remains in its original setting, largely unaltered except for the effects of weathering which has led to fading by rain and wind erosion, leaving some hard to distinguish. In addition in some cases, there is the addition of modern graffiti. However the fact that so many have been documented means that their ability to convey the cultural traditions of the people who made them has been captured and they can be studied.

Protection and Management Requirements

WRPA was established as a protected area in 1997 to conserve the desert landforms and ecosystems along with their associated cultural values. The property lies within the Aqaba Special Economic Zone (ASEZA) and was designated as a Special Regulations Area in perpetuity in two phases. In 1997 54,000ha was designated and in 2002 a further 18,000ha was added. The entirety of the property falls within a special regulation considered the strongest governance framework for a protected area in Jordan. The primary plan guiding the management and development program of WRPA is the ASEZA land use plan which covers the whole governorate of Aqaba. The property requires the maintenance and continuous updating of an effective management plan.

IUCN MANAGEMENT CATEGORY

V Protected Landscape

BIOGEOGRAPHICAL PROVINCE

Arabian Desert (2.19.7)

GEOGRAPHICAL LOCATION

The site is in southernmost Jordan in the Hisma desert close to the border with Saudi Arabia, some 260km south of Amman and 45km northeast of Aqaba. Including the surrounding 5km buffer zone, the site averages about 45km from north to south by 38km from east to west. The central management station is at 29°38'22" N by 35°26'92" E.

DATES AND HISTORY OF ESTABLISHMENT

1997: The Wadi Rum Protected Area of 54,000 ha was set up under the Royal Society for the Conservation of Nature (RSCN) as a Special Regulations Area to conserve the landscape and its associated cultural values in perpetuity;

2001: Regulation No.24 for the Development of the Wadi Rum Area came into force;

2002: 18,000ha were added to the Protected Area;

2003: The management of Wadi Rum transferred from the RSCN to the Aqaba Special Economic Zone Authority (ASEZA);

2010: A national committee headed by the Minister for the Environment established to oversee the management of the property.

AREA

The inscribed World Heritage property is 74,180ha. A 59,177ha buffer zone, 5km wide with minor exclusions, surrounds the site. A narrow 14km buffer strip runs along the entrance road from Shakriyeh to and around the central village of Rum.

LAND TENURE

The state owned property lies within the Governorate of Aqaba. It is managed by the Aqaba Special Economic Zone Authority. The cultural artifacts are curated by the national Department of Antiquities in the Ministry of Environment.

ALTITUDE

1,754m (Jebel Rum); J.Umm Adami (1,840m) is in the buffer area near the Saudi Arabian border.

PHYSICAL FEATURES

The unusual grandeur of the landscape of Wadi Rum lies in its towering corridors of red cliff-sided inselbergs of striated sandstone which rise directly from flat valleys floored with pink sands swept clean by the prevailing winds. The surrounding wadis and plain are also studded with pyramidal massifs of similar ancient rock. Among them are clefts and narrow gorges, towers and rockfalls, natural arches and mushroom rocks undercut by wind and groundwater, and dramatic networks of honeycomb weathering in a subtle palette of desert colors.

Formed by Miocene and later tectonic faults which opened during the formation of the Dead Sea Fault, four major wadis run north-south, which in the southern half of the site cut across earlier valleys running northwest to southeast. The flat-topped monoliths between the wadis are composed of the 1,000m-thick Rum group of quartz sandstones, composed of four major strata of sands deposited in north-flowing braided rivers and shallow bays of the Tethys Ocean 540 - 470 million years ago. The area has since been uplifted and is still rising faster than the erosion rate at about 70mm per 1,000 years. In this, over millennia, water, salts, biological and thermal weathering have cut through 700m of sandstone working along faults, cracks and joints in the rock, creating an exceptional network of canyons and corridors, where each sandstone weathers in a distinctive way. Covering most of the wadis between them, lie Quaternary alluvial sediments of fans, dunes, mudflats and wide sheets of sand.

At the cliff bottom is the grey PreCambrian basement of plutonic and metamorphic rocks of the Arabian Shield, predominant in the west of the site but dipping under the sandstones to the east. Above a noticeable unconformity lies a 40-60m plinth of liver-brown Lower Cambrian Salab sandstone which weathers to stepped rock-littered slopes. Above this rise the sheer cliffs of the Middle to Upper Cambrian Umm Ishrin formation formed of oxydised iron-rich bands, rust and dark red, yellow and buff-white, horizontally striated where less iron-rich rock has been eroded out. The colours come from the dissolution of internal calcite cements and secondary mineralization. Deep vertical jointing created the perpendicular towers, rock walls, blocks and massive rock falls. Honeycomb and tafoni weathering fret some cliff faces. The overlying Lower Ordovician Disi formation capping the buttes, is a relatively soft grey-white sandstone, which exfoliates into low domes. Arches occur in this rock. The Lower Ordovician Umm Sahm Formation in the southeast is highly fractured and jointed, resulting in pyramidal hills with step-like sides. Marine trace fossils are found in each formation except the Umm Ishrin.

A line of long dry mudflats along the northern border reveals the drainage pattern of a wetter past. Where the sandstone meets the impermeable rocks of the Shield two main and eleven small springs have sustained life since Palaeolithic times. The one at the eastern base of Jabal Rum determined the site of the fort and village of Rum.

CLIMATE

The desert climate is very hot and dry but occasionally touched by weather systems from the Mediterranean. Average maximum and minimum winter temperatures range between -1.5°C and 31°C with a relative humidity of 54%, summer temperatures, between 16°C and 45°C with 26% relative humidity. The annual rainfall of 50 to 100mm falls in winter but serious droughts have become frequent. The prevailing winds are northwesterly.

VEGETATION

The sparse flora has 158 species. In the north, east and centre, sand-dune vegetation covers 60% of the site dominated by mature sand-fixing *Haloxylon persicum*, which is valued for camel fodder and fuelwood, also *Retama raetam*, *Calligonum comosum*, *Neurada procumbens* and *Hammada scoparia*. To the west and south grow species of the stony hammada desert, *Anabasis articulata*, *Caralluma spp.*, *Fagonia spp.*, *Gymnocarpos decendrum*, *Helianthemum lippii*. In areas of rocky detritus the widespread northern umbrella thorn acacia *Acacia raddiana* grows, with *Anabasis articulata*, *Retama raetam*, *Tamarix spp.*, *Achillea fragrantissima*, *Artemisia herba-alba*, *Zilla spinosa*, and on the cliff tops, a sparse woodland of relict Phoenician juniper *Juniperus phoenicea*.

FAUNA

The fauna is typical of the north Arabian desert except that the site adjoins the species-rich eastern Mediterranean coastal flyway and many resting migrant birds pass through. There are records of 26 mammals, 119 birds, 34 breeding and 85 migratory species, 34 reptiles and 78 arthropods. The mammals include grey wolf *Canis lupus*, Blanford's fox *Vulpes cana*, caracal *Caracal caracal*, striped hyena *Hyaena hyaena*, and wild cat *Felis silvestris*. The opportunistic red fox *Vulpes vulpes* is common. The Rum Mountains are ideal habitat for the ibex *Ibex nubiana* (VU) which live on them, and since 2005 Arabian oryx *Oryx leucoryx* have been re-introduced with help from the Abu Dhabi Environmental Agency. The Cape hare *Lepus capensis*, rock hyrax, *Procavia capensis*, two species of bat and ten rodents are recorded, among them three toed jerboa *Jaculus jaculus*, Ewall's sand gerbil *Meriones crassus*, fat sand rat *Psammomys obesus* and Cheesman's gerbil *Gerbillus cheesmani*. The goitered gazelle *Gazella subgutturosa* (VU) might be present, and not long ago Asiatic jackal *Canis aureus*, sand cat *Felis margarita* and Arabian leopard *Panthera pardus nimr* (CR) also existed in the area.

Thirty four reptile species from nine families have been recorded in the Protected Area: snakes from the *Colubridae*, *Viperidae* and *Leptotyphlopidae* and lizards of the *Gekkonidae*, *Agamidae*, *Lacertidae*, *Scincidae*, *Chamaeleonidae* and *Varanidae*. Among these are the Arabian horned viper *Cerastes gasperettii* and western sand boa *Eryx jaculus*, desert monitor lizard *Varanus griseus* and Arabian toad-headed agama *Phrynocephalus arabicus*, chameleon *Chamaeleo chameleo*, middle-eastern short-fingered gecko *Stenodactylus doriae*, Ruppell's snake-eyed skink *Ablepharus ruppellii* and the skink *Lacerta lacerta cf. kulzeri*, discovered here in 2000. The Protected Area is an Important Bird Area. Species include Middle Eastern restricted-range species such as sand partridge *Ammoperdix heyi*, Hume's tawny owl *Strix butleri*, Tristram's grackle *Onychognathus tristramii* and Sinai rosefinch *Carpodacus sinoicus*. The black eagle *Aquila verreauxii* is also seen.

CONSERVATION VALUE

The unusual rectangular landscape of Wadi Rum resembles a city of mountains which combines the chromatic grandeur of sheer rock with the serenity of desert sands. The many legible petroglyphs, inscriptions and archaeological remains are witness to 12,000 years of human pastoral life and the development of four northern Arabian scripts, documenting the languages and cultures of their creators.

CULTURAL HERITAGE

The valley of Ramm is believed to have been the site of Iram, once a city of the tribe of 'Ad castigated in sura 89 of the Qu'ran. It has one of the world's richest collections of rock art where 25,000 petroglyphs and 20,000 inscriptions cut into rocks and cliff faces document an ancient site of sustained cultural activity. There are signs of Palaeolithic work and Neolithic foundations. Pictures of cattle from the Chalcolithic period between 4500 and 3200 BCE, indicate a wetter climate, and of goats in the succeeding Bronze Age before 2000 BCE, a drier one. Pecked in the rock are pictures of ostriches, lions and leopards, oryx and wolves and of past clans and activities: hunting, fighting, supplication and dance. The ruins of a Nabatean temple to Allat remain. It is the pictorial and written record on rock of 12,000 years of bedouin life, which documents in four scripts, Thamudic, Kufic, Safaitic and Nabatean, the emergence of alphabets from icons among these literate pastoral societies of early north Arabia. The inscriptions are cut on boulders, stones, and cliff faces, often in fissures off the main wadis, and are largely unaltered except for erosion by rain and wind despite some modern graffiti. Much has been recorded, permitting modern study and understanding of the cultural traditions of their creators. In the First World War the Arab force opposing the Turks used Rum as a base. The Allies' liaison officer T.E. Lawrence left an eloquent description of the area and campaign in his *Seven Pillars of Wisdom*.

LOCAL HUMAN POPULATION

In 2003 the population of the site and buffer zone was 4,225. The small 1,135-strong village of Rum in the centre of the site and its access road from Shakriyeh lie in a narrow strip of buffer zone. It was founded in 1934 around the Desert Police fort and a major spring in the territory of the Zalabya Bedouin with whom livestock grazing has been almost supplanted by adventure ecotourism as a source of income. Five villages (population 2,780) exist on the northern edge of the site along the main potash railway line from Ma'an to Aqaba. Disi, the main village, is the headquarters of the Zawaidah bedouin who own the local wells. Their income from livestock is also supplemented by large more popular tourist camps. Three smaller tribal groups live in three villages north of the site (population 360).

VISITORS AND VISITOR FACILITIES

In 2010 some 300,000 tourists visited Wadi Rum itself, mostly foreigners who in 2008 were 93% of the visitors. Activities include guided 4WD tours, horse and camel trekking, hiking and individual camping. There is a visitor centre near the north end of the site and an information centre at the guesthouse in Rum. 28 desert campsites are run by local Bedouin with the Wadi Rum management. Rock climbing is popular though mountain rescue relies on the few local bedouin trained in rescue techniques. Larger tented encampments, favoured by the Jordanians themselves, exist outside the site near Disi where camel racing, car rallies and ballooning are permitted. There is bus connection to Aqaba.

SCIENTIFIC RESEARCH AND FACILITIES

Several epigraphic missions have surveyed the area: Savignac in 1932 and 1935, Harding & Littman in 1952, Harding in 1971. An Italian scientific mission under E. Borzatti von Löwenstern has surveyed the rock art of the area since 1978 (Borzatti, 2005: 135-150). Since 1996 a systematic inventory made by a Franco-Jordanian mission under S. Farès and published in 1997, 2001 and 2004 has covered North Arabian, Greek and Latin inscriptions. Current projects continue to complete the inventory of these sites. Many studies of the geology and geomorphology of the area have been made during the last thirty years. A Research and Monitoring plan is being developed which should benefit from research partnerships with universities in Jordan and abroad. There is a research station and staff accommodation in Rum village.

MANAGEMENT

The Aqaba Special Economic Zone Authority's land use plan for the whole governorate of Aqaba guides the area's management and development program through the Authority's Wadi Rum Management Unit. The property falls within the jurisdiction of Regulation No. 24 for the Development of the Wadi Rum Protected Area (2001) and the national Environmental Protection law of 2006 which aims to conserve the area while developing tourism. It provides the strongest protected area governance framework in Jordan. It prohibits construction except within Rum village, hunting, introducing alien species, off-track driving, mining, extraction, pollution, habitat destruction and woodcutting. The Regulation provides an outline of the composition and role of the Wadi Rum Area Committee, specifies itemised environmental management and visitor management plans and allows for the sustainable use of natural resources by local people. The traditional bedouin ownership of the area is not seen to conflict with the recent legislation. A review in 2011 of the Protected Area bylaw and associated articles will provide new and amended regulations to ensure enhanced control and management. The Department of Antiquities and the Ministry of Environment continue to direct the study of the rock art and inscriptions under the Antiquities law of 1988. A monitoring program will record dune movement, changes of vegetation, numbers of livestock and the effects of grazing, the state of archaeological sites, the movements of bedouin and impacts of visitors.

MANAGEMENT CONSTRAINTS

The area has so far been preserved by its low population density and lack of development. But the present relatively low visitor numbers and the destructive impacts of car tracks will increase in future; as will the growth of Rum village, groundwater drawdown, overgrazing and the collection of firewood by local people. These will require greater regulation of development, waste management, tourist facilities and visitor driving. Some 500 to 1000 4WD operate in the area, exceeding safe limits, disturbing the vegetation and wildlife and leaving obvious visual scars: on the single track network connecting the main visitor sites it has been virtually impossible to enforce regulations.

COMPARISON WITH SIMILAR SITES

Formations characteristic of the Hisma occur as far north as Petra and run south into Saudi Arabia, culminating in the monumental little known red sandstone monoliths and dramatic gorges of the Wadi

Qaraqir 150 km south, and the World Heritage site of Al-Hijr which also has inscriptions, 200 km beyond that. There are comparably memorable landscapes and far richer cultural remains in the later Nabatean sites. Among comparable existing World Heritage desert properties, Tassili n'Ajjer in southern Algeria is a large geologically striking incised plateau with more wildlife and much but less concentrated rock art. Air et Ténéré in Niger, part desert mountain range and part sand plain, also has some rock art. The sandstone landscapes of Monument Valley in Arizona, Canyonlands National Park in Utah, Uluru Kata-Tjuta and Purnululu in Australia are striking, possessing rock art but geomorphologically unlike Wadi Rum. China also has notable but very different sandstone landscapes in the Danxia World Heritage site.

STAFF

There are established posts for 82 full-time and 32 part-time staff. About 10 are graduate-level administrative staff, at least 6 are scientists, plus 30 technical staff, 20 guards and rangers including 4 oryx rangers, and 7 staff of a camel-racing centre at Disi. The staff is mostly local Bedouin and with the use of local staff, local stakeholder participation is easier. Technical capacity has been built up through on-the-job training. Ranger patrols enforce the law both within Wadi Rum and in the buffer zone.

BUDGET

A Wadi Rum Development Fund was established in 2001 to ensure the area's financial and institutional stability. The current income from entrance fees goes to the national treasury and is reimbursed to ASEZA as an annual budget. The staff is supported by both national agencies and international aid. In 2009 the site received some JD1.3 million (US\$1,834,940) for operation and management, supplemented by funds in 2006-7 from the USAID SIYAHA tourism development project and JD1 million (US\$1,411,490) from Abu Dhabi for oryx reintroduction.

LOCAL ADDRESS

Commissioner for Environment, Aqaba Special Economic Zone Authority, P.O. Box 2565, Aqaba 77110, Jordan

REFERENCES

The principal sources for the above information were the original World Heritage nomination, IUCN's evaluation report and Decision 35 COM 8B.15 of the UNESCO World Heritage Committee.

Abdelhamid, G. (1990). *The Geology of the Jabal Umm Ishrin Area (Wadi Rum)* Map Sheet No. 3049 II, Bulletin 14. Ministry of Energy and Mineral Resources, Natural Resources Authority, Amman.

Aqaba Economic Zone Authority (2010). *The Hashemite Kingdom of Jordan. Wadi Rum Protected Area. A Proposal for Inclusion in the World Heritage List.* Office of the Commissioner of Environment, Aqaba.

Borzatti von Löwenstern, E. (2005). *Quadri di Pietra. 8000 Anni d'Arte nel Deserto*, Bologna: Casa Editrice Nuova S1, Italy.

Goudie, A., Migon, P., Allison, R. & Rosser, N. (2002). Sandstone geomorphology of the Al-Quwayra area of south Jordan. *Zeitschrift für Geomorphologie* 46, 165-190.

Goudie, A. & Seely, M. (2011). *World Heritage Desert Landscapes*. IUCN, Gland.

Howard, T. (2007). *Treks and Climbs in Wadi Rum*. Cicerone Press.

IUCN (2010). *World Heritage Nomination - IUCN Technical Evaluation Wadi Rum Protected Area (Jordan)*. IUCN, Gland, Switzerland.

Lawrence, T. E. (1940). *Seven Pillars of Wisdom*. Jonathan Cape, London.

Osborn, G. & Duford, J. (1981). Geomorphological processes in the inselberg region of SW Jordan. *Palestine Exploration Quarterly*, January-June pp. 1-16.

Powell, J. (1989). Stratigraphy and sedimentation of the Phanerozoic rocks in central and south Jordan. Part A: Ram and Khreim groups. *Bulletin No. 11*, Geology Dir., Natural Resources Authority.

Ruben, I. & Nasser, G. (1999). *Review of the Archaeology of the Wadi Rum Protected Area*. The Royal Society for the Conservation of Nature, Amman.
<http://www.wadirum.jo/Library/Rum%20Reports/archmenu.htm>

Selley, R. (1972). Diagnosis of marine and non-marine environments from the Cambro-Ordovician sandstones of Jordan. *Journal of Geological Society of London*, Vol.128, pp. 135-150.

Smith, B. (2009). Weathering processes and forms. In Parsons, A. & Abrahams, A. (eds.). *Geomorphology of Desert Environments*, Springer Science+Business Media.

Tholbecq, L. (1998) The Nabateo-Roman site of Wadi Ramm, a New Appraisal, *Annual of the Department of Antiquities of Jordan* 42: 241-254.

Wray, R. (1997). A global review of solutional weathering forms on quartz. *Earth-Science Reviews*, Vol. 42, pp. 137-160.

DATE

December 2011.