IUCN Conservation Outlook Assessment 2017 **(archived)**
Finalised on 09 November 2017

Please note: this is an archived Conservation Outlook Assessment for Carlsbad Caverns National Park. To access the most up-to-date Conservation Outlook Assessment for this site, please visit https://www.worldheritageoutlook.iucn.org.

Carlsbad Caverns National Park

SITE INFORMATION

Country:
United States of America (USA)
Inscribed in: 1995
Criteria:
(vii) (viii)

Site description:

This karst landscape in the state of New Mexico comprises over 80 recognized caves. They are outstanding not only for their size but also for the profusion, diversity and beauty of their mineral formations. Lechuguilla Cave stands out from the others, providing an underground laboratory where geological and biological processes can be studied in a pristine setting. © UNESCO

SUMMARY

2017 Conservation Outlook

Good with some concerns

The cave resources of the site which form the basis of its Outstanding Universal Value are well protected. However, additional staff could be used, in particular as park visitation is increasing. The site will be able to maintain current biodiversity only with heightened diligence, funding and direction, particularly to address the threat to air and water quality from adjacent development outside the park. There are no current threats to the geological values of the site for which it was inscribed. But increased oil and gas development can increase contamination of water resources and air pollution (volatile organic compounds) could threaten all cave resources.

Current state and trend of VALUES

Good
Trend: Stable

The cave resources of the site which form the basis of its Outstanding Unviersal Value are well protected yet additional staff could be used to monitor people passing through the cave, in particular as park visitation is increasing.

Overall THREATS

Low Threat

There are no current threats to the geological values of the site for which it was inscribed. However, exotic plants and animals threaten the biological stability of native ecosystems. Increased oil and gas development can increase contamination of water resources and pollution (gas) could threaten all cave resources. Lowered water table as a result of drought, climate change and overuse of water resources in nearby agricultural areas could decrease surface water imperilling riparian areas.

Overall PROTECTION and MANAGEMENT

Mostly Effective

Overall, protection and management of the site are mostly effective. However, funding and human resources could be increased. Almost all available resources are used for cave protection and visitor services, and increased resources could help better integrate other biodiversity aspects into management, such as the site’s biodiversity values. Monitoring and research need to be more focused on management needs and an understanding of the site’s Outstanding Universal Value.

FULL ASSESSMENT

Description of values

Values

World Heritage values

► **Geological features**
Criterion:(viii)

Carlsbad Caverns National Park is one of the few places in the world where ongoing geological processes are most apparent and rare speleothems continue to form, enabling scientists to study geological processes in a virtually undisturbed environment (World Heritage Committee, 2006). Capitan Reef is the largest exposed Permian Reef in the world, approximately 250 million years old. The Capitan Reef, in which Carlsbad Caverns and Lechuguilla Cave (and other caves) formed, is one of the best preserved and most accessible complexes available for scientific study in the world. The more than 100 limestone caves within Carlsbad Caverns National Park are outstanding and notable worldwide because of their size, mode of origin (i.e. dissolution via sulphuric acid), exceptional geological features and unique rock formations.

► **Rare and unique speleothems**
Criterion:(vii)

The park’s primary caves, Carlsbad and Lechuguilla, are well known for the abundance, diversity and beauty of their decorative rock formations. Lechuguilla Cave exhibits rare and unique speleothems, including a great abundance of large calcite and gypsum formations, including the largest accumulation of gypsum ‘chandeliers’, some of which extend more than six

metres (18 feet) in length (World Heritage Committee, 2006).

Other important biodiversity values

► Biodiversity

The park contains a large number of species of birds, mammals and reptiles (Bailey, 1928). Over 15 species of bats have been recorded in the park, including a large colony of Brazilian free-tailed bats which sometimes exceeds 1,000,000 in number (Geluso & Geluso, 2004; West, 1995). Approximately 900 species of plants are found in the park, with many examples of species at the margins of their range. Recent studies have discovered several moth species new to science and others new to the United States and some new to New Mexico (Metzler et al., 2013; Metzler & Knudson, 2011). Numerous single-celled organisms live in the caves, especially Lechuguilla Cave (Cunningham et al., 1995), and exhibit adaptations to cave existence, feeding on inorganic materials. Studies show the potential for cancer inhibiting properties in some of them. A ten-year study is expected to show a high degree of biodiversity with several thousands of species present.

Assessment information

Threats

Current Threats

Very Low Threat

There are no threats to the geological values of the site. However, exotic plants and animals threaten the biological stability of native ecosystems.

► Invasive Non-Native/ Alien Species

High Threat
Inside site

Outside site

Exotic plants and animals threaten the biological stability of native ecosystems.

▶ Other Ecosystem Modifications

High Threat
Inside site

Change in plant composition due to grazing, climate change and habitat fragmentation on the boundaries of the park.

▶ Livestock Farming / Grazing

Very Low Threat
Inside site, localised(<5%)

There have been no breaches of the boundary fence in the past two years.

Potential Threats

High Threat

Increased oil and gas development can increase contamination of water resources and pollution (gas) could threaten all cave resources. Lowered water table could decrease surface water imperilling riparian areas.

▶ Oil/ Gas exploration/development

High Threat
Outside site

Increased oil and gas development can increase contamination of water resources and pollution (gas) could threaten all cave resources.

▶ Crops

Low Threat
Outside site

Lowered water table decreases surface water which could imperil riparian areas.

Protection and management

Assessing Protection and Management

► Relationships with local people

Mostly Effective

Overall, the relationship with local people is good, but closer partnerships with all local stakeholders would benefit protection and management of the site (IUCN Consultation, 2017; Degenhardt et al., 1996). Local communities provide some input, but do not have a direct role in the management of the site (State Party of the United States of America, 2013).

► Legal framework

Mostly Effective

Carlsbad Caverns was designated as a national park in 1930. Two-thirds of the area is also gazetted as wilderness. The Federal Government has full jurisdiction over all lands within the park boundary through the US Department of the Interior and National Park Service. A Land Protection Plan approved in 1984 is in place covering the private tract. The most recent Periodic Report notes some deficiencies in the implementation of the legal framework (State Party of the United States of America, 2013).

► Enforcement

Mostly Effective

NPS has cooperative enforcement agreements in place with adjacent jurisdictions that supplement park ranger staff.

► Integration into regional and national planning systems

Some Concern

The inadequacy of planning and policy coordination and compatibility among adjacent federal land managers, principally the US Forest Service and the Bureau of Land Management (BLM), poses continuing threats to national park resources. However, BLM has recently agreed to avoid new oil and gas

leasing in one area nearest to the park boundary.

▶ Management system

Mostly Effective

The General Management Plan dates from 1996 and is, therefore, out of date, though draft management plans for karst and cave management, wastewater rehabilitation and fire management have been developed since 1996.

▶ Management effectiveness

Highly Effective

The management system in place appears adequate and is being fully implemented (State Party of the United States of America, 2013).

▶ Implementation of Committee decisions and recommendations

Highly Effective

No decisions issued requiring implementation.

▶ Boundaries

Some Concern

Boundaries of the site are adequate to protect the site’s Outstanding Universal Value; however, they could be improved (State Party of the United States of America, 2013). The site has no buffer zone.

▶ Sustainable finance

Mostly Effective

The available budget is sufficient; however, further funding could help enhance the management of the site to international best practice standards (Levine & Pyne, 2010; State Party of the United States of America, 2013).

▶ Staff training and development

Mostly Effective

Current staffing is sufficient, but could be increased.

► Sustainable use

Highly Effective

Not a concern.

► Education and interpretation programs

Some Concern

There are some education and interpretation programmes in place, but this could be improved (State Party of the United States of America, 2013).

► Tourism and visitation management

Highly Effective

Tourism appears to be well-managed (State Party of the United States of America, 2013).

► Monitoring

Some Concern

There is considerable monitoring, but it is not directed at management needs (State Party of the United States of America, 2013). A new air quality monitoring station is being added to the park this year.

► Research

Some Concern

There is considerable research ongoing; however, it is only partially directed towards management needs (State Party of the United States of America, 2013). A new bat research programme has been recently added, even though ‘white nose syndrome’ has not been detected in the park to date.

Overall assessment of protection and management

Mostly Effective

Overall, protection and management of the site are mostly effective. However, funding and human resources could be increased. Almost all available resources are used for cave protection and visitor services, and increased

resources could help better integrate other biodiversity aspects into management, such as the site's biodiversity values. Monitoring and research need to be more focused on management needs and an understanding of the site's Outstanding Universal Value.

▶ **Assessment of the effectiveness of protection and management in addressing threats outside the site**
Some Concern

Oil and gas extraction on or near park boundaries is of particular concern and the site has limited capacity to deal with this threat.

State and trend of values

Assessing the current state and trend of values

World Heritage values

▶ **Geological features**
Good
Trend:Stable

The unique geological features of the site have been well preserved and remain in good state.

▶ **Rare and unique speleothems**
Low Concern
Trend:Stable

The cave resources of the site which form the basis of its Outstanding Universal Value are well protected, yet additional staff could be used to monitor people passing through the cave, in particular as park visitation is increasing.

Summary of the Values

▶ **Assessment of the current state and trend of World Heritage values**

Good

Trend: Stable

The cave resources of the site which form the basis of its Outstanding Unviersal Value are well protected yet additional staff could be used to monitor people passing through the cave, in particular as park visitation is increasing.

▶ **Assessment of the current state and trend of other important biodiversity values**

Low Concern

Trend: Improving

Insufficient funding is one of the main issues that hamper a proper assessment of biodiversity values in the park and what needs to be done to maintain them. The park has only recently expanded biodiversity studies to determine which species are in danger of being lost from the park. Exotic species continue to degrade the overall park environment.

Additional information

Benefits

Summary of benefits

Having a World Heritage Site in the community of southeastern New Mexico helps to raise the status of the area and calls attention to the unique resources and values of the park, while promoting visitation to the park, especially by international visitors.

Projects

Compilation of active conservation projects

№	Organization/ individuals	Project duration	Brief description of Active Projects
1	Dr Eric Metzler		10 year study of moth species found in park
2	Steve West		Ongoing 35-year study of birds in the park, especially ringing cave swallows.
3	Dr. Diana Northup		Long-term study of cave microbes and status and condition of the native bat populations.
4	Hazel Barton		Oligotrophy in caves.
5	Jim Cornett		Population dynamics and ecology of Ocotillo.

Compilation of potential site needs

№	Site need title	Brief description of potential site needs	Support needed for following years
1	N.A.	Potential impacts of gas flow from area gas wells, gas pipelines, etc.	
2	N.A.	Biodiversity studies in park to evaluate number of species and distribution.	
3	N.A.	Impacts of exotic species on park biodiversity.	

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