IUCN Conservation Outlook Assessment 2014 **(archived)**
Finalised on 06 November 2014

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

2014 Conservation Outlook

Good with some concerns

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. However, the site will be able to maintain current biodiversity only with heightened diligence, funding and direction, particularly to address the threat of invasive species. 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 pollution (gas) 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 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 over use of water resources in nearby agricultural areas could decrease surface water imperiling 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 aspects biodiversity into management, such as for example the site’s biodiversity values. Monitoring and research need to be more focused on management needs and 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 on-going geologic processes are most apparent and rare speleothems continue to form, enabling scientists to study geological processes in a virtually undisturbed environment (Statement of Significance, 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 world-wide because of their size, mode of origin (i.e. dissolution via sulfuric acid), exceptional geologic 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

meters (18 feet) in length. (Statement of Significance, 2006).

Other important biodiversity values

► **Biodiversity**

Park contains large number of species of birds, mammals and reptiles. Over 15 species of bats known from park, large colony of Brazilian Free-tailed Bats which sometimes exceeds 1,000,000 in number. Approximately 900 species of plants known from park, with many examples of species at the margins of their range. Recent studies have discovered several moth species new to science and some new to the United States, some new to New Mexico. Numerous single-celled organisms known from caves, especially Lechuguilla Cave and studies show the potential for cancer inhibiting properties in some of them. Exhibit adaptations to cave existence, feed on inorganic materials. Ten year study is expected to show high degree of biodiversity with several thousands of species present.

Assessment information

Threats

Current Threats

Very Low Threat

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

► **Invasive Non-Native/ Alien Species**

High Threat

Inside site
Outside site

Exotic plants and animals threaten biological stability of native ecosystems.

▶ Other Ecosystem Modifications

High Threat
Inside site

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

▶ Livestock Farming / Grazing

Low Threat

Occasional breach of park fences results in grazing impacts. There are insufficient personnel to monitor fence lines.

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 imperiling 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

▶ 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 (PR, 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 (PR, 2013).

▶ Tourism and interpretation

Highly Effective

Tourism appears to be well-managed (PR, 2013).

▶ Monitoring

Some Concern

There is considerable monitoring, but it is not directed at management needs (PR, 2013).

► Research

Some Concern

There is considerable research ongoing; however, it is not directed towards management needs (PR, 2013).

► Relationships with local people

Mostly Effective

Overall, relationship with local people is good, but closer partnerships with all local stakeholders would benefit protection and management of the site (R2, R3). Local communities provide some input, but do not have direct role in the management of the site (PR, 2013).

► Legal framework and enforcement

Mostly Effective

Carlsbad Caverns was designated as
a national park in 1930.Two thirds of the area are 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 (PR, 2013).

► Integration into regional and national planning systems

Data Deficient

Data deficient

► Management system

Mostly Effective

The General Management Plan is from 1996 and therefore out of date, though draft management plans for karst and cave management, wastewater rehabilitation and fire management have been developed since 1996. (http://www.nps.gov/cave/parkmgmt/planning.htm)

▶ Management effectiveness

Highly Effective

The management system in place appears adequate and is being fully implemented (PR, 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 OUV; however, they could be improved (PR, 2013). The site has no buffer zone.

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 aspects biodiversity into management, such as for example the site’s biodiversity values. Monitoring and research need to be more focused on management needs and 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 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.

Other important biodiversity values

▶ Biodiversity

Park contains large number of species of birds, mammals and reptiles. Over 15 species of bats known from park, large colony of Brazilian Free-tailed Bats which sometimes exceeds 1,000,000 in number. Approximately 900 species of plants known from park, with many examples of species at the margins of their range. Recent studies have discovered several moth species new to science and some new to the United States, some new to New Mexico. Numerous single-celled organisms known from caves, especially Lechuguilla Cave and studies show the potential for cancer inhibiting properties in some of them. Exhibit adaptations to cave existence, feed on inorganic materials. Ten year study is expected to show high degree of biodiversity with several thousands of species present.

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**
High Concern
Trend: Data Deficient

Lack of 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 does not have any plans for biodiversity studies or to determine which species are in danger of being lost from the park. Exotic species continue to degrade the overall park environment.

Additional information

Key conservation issues

▶ **Control of exotic species**
Local

This park has a long list of exotic species, plant and animal, that threaten the biological stability of the park.

▶ **Healthy bat populations**
Local

Bats are threatened by climate change, pesticide contamination from wintering

areas, threat of white nose syndrome.

▶ **Degradation of area water resources**

Local

Water mining in recent times can result in lowered water table, this impacts water levels in area caves and surface water such as at Rattlesnake Springs which contains a very high number of threatened/endangered species.

▶ **Oil and gas development**

Local

Oil and gas development threatens park resources with use of water, nearby habitat fragmentation, pollution issues, potential gas escape into area caves, and elimination of dark skies

▶ **Preservation of biodiversity**

Local

Biodiversity values of the site are being impacted by invasive species and there is a need to develop an understanding of what occurs in the park and monitoring to protect these resources

Benefits

Understanding Benefits

▶ **Is the protected area valued for its nature conservation?**

By highlighting values at the park other than only caves, this helps to stress their importance and need for study and understanding

Summary of benefits

Having a World Heritage Site in the community of southeastern New Mexico helps to raise the status of the area and promote visitation by visitors, especially from those coming from other countries.

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 banding Cave Swallows
3	Dr. Diana Northup		Study of cave microbes
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.	Impacts of exotic species on park biodiversity	
2	N.A.	Biodiversity studies in park to evaluate number of species and distribution	
3	N.A.	Potential impacts of gas flow from area gas wells, gas pipelines, etc.	

REFERENCES

№	References
1	Bailey, V. 1928. Animal life of the Carlsbad Cavern. Monograph of the American Society of Mammalogists. 3: 1-195
2	Degenhardt, W. G., C. W. Painter, and A. H. Price. 1996. Amphibians and Reptiles of New Mexico. University of New Mexico Press. Albuquerque, NM Geluso, K. N., and K.
3	Discussions with park staff
4	Discussions with people who use park (i.e., researchers, hikers, members of area conservation groups, etc.)
5	Geluso. 2004. Mammals of Carlsbad Caverns National Park, New Mexico. Bulletin of the University of Nebraska State Museum, Number 17. Lincoln, Nebraska
6	Levine, D. and Pyne, N. 2010. The Best of America Under Threat from Underfunding. Environment America Research and Policy Center. Washington, D.C.
7	Metzler, E. H., E. C. Knudson, R. W. Poole, J. D. Lafontaine, and M G. Pogue. 2013. A review of the genus Ogdoconta Butler (Lepidorptera, Noctuidae, Condicinae, Condicini) from North America north of Mexico with descriptions of three new species. ZooKeys. 264: 165-191.
8	Metzler, E. H., and E. C. Knudson. 2011. A new species of Elasmia Moschler from New Mexico and Texas, and a new subspecies of Elasmia Mandela (Druce) from Texas and Oklahoma (Lepidopters, Nothodontidae, Nystaleinae), ZooKeys. 149: 51-67.
9	Periodic Report (PR), 2013.
10	West, S. 1995. Cave Swallow (Hirundo fulva). In The Birds of North America, No. 141. (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, and The American Ornithologists’ Union. Washington, D. C.