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

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

Meteora

SITE INFORMATION

Country:
Greece
Inscribed in: 1988
Criteria:
(i) (ii) (iv) (v) (vii)

Site description:
In a region of almost inaccessible sandstone peaks, monks settled on these 'columns of the sky' from the 11th century onwards. Twenty-four of these monasteries were built, despite incredible difficulties, at the time of the great revival of the eremetic ideal in the 15th century. Their 16th-century frescoes mark a key stage in the development of post-Byzantine painting. © UNESCO

SUMMARY

2017 Conservation Outlook

Good with some concerns

The outstanding universal value of Meteora is not at serious risk and seems that it will not be affected in the future. There aren't any severe threats that would compromise its current state, however the site and the broader area could greatly benefit from the establishment of a competent management body for the protection and management of the site's natural values. An integrated plan that will take into account in a holistic manner the natural and cultural heritage of the site will greatly benefit the conservation of all its values. However, the financial austerity the country is subjected to is a serious concern that restricts conservation efforts.

Current state and trend of VALUES

Low Concern
Trend: Stable

The outstanding universal value of Meteora is not at serious risk. However, there are a large number of mostly low threats whose cumulative impact is increasing the risk of deteriorating some of the natural, cultural and spiritual values. To reduce current threats and reverse existing negative impacts, the site and the broader area would require the establishment of a competent body that undertakes updating and implementation of the management plan for the whole protected area of Antichasia-Meteora, similarly to the Byzantine Ephorate that manages Meteora's cultural values. Setting up of monitoring mechanisms will ensure that natural and cultural parameters will be controlled

Overall THREATS

Low Threat

There is a large number of threats that endanger the biodiversity and ecological integrity of the site. These include inadequate agricultural and forest practices,

such as overgrazing, land use changes, use of poison baits, infrastructure development pressures, mass tourism and heavy traffic within the site. The large numbers of visitors that inundate the area and, along with the lack of management plan and implementation body for the natural environment of the site pose more serious threats (intensified recently by the adverse effects of the economic crisis). Given that monitoring mechanisms are not in place, there is a lack of data indicating whether these threats are increasing or not. Although the outstanding universal value of the site is not at risk, the establishment of a management authority for the natural heritage of the protected area, which could be also responsible for managing visitors, constitutes an urgent need.
As for potential threats, the continuous process of habitat alteration and deterioration seem to be the most important. The sound management of water resources should be considered a priority. The risk from fire hazards is low. Large seismic events cannot be excluded as a minor threat, as devastating earthquakes have inflicted the area in the distant past.

Overall PROTECTION and MANAGEMENT

Some Concern

Although the site falls under the jurisdiction of several central administration bodies, lack of a locally founded management authority is evident. Its establishment is a priority for the Ministry of Environment, Energy and Climate Change, the current financial crisis, however, hinders such plans. The Ministry of Education and Religion, Culture and Sports that manages the monuments has a general policy and applies specific guidelines for the preservation and protection of the cultural heritage of the site through the competent local Ephorate of Byzantine Antiquities. An integrated plan that will take into account in a holistic manner the natural and cultural heritage of the site (which involves updating the existing management plan for the Natura 2000 area) and its effective implementation could greatly benefit the conservation of all site's values.

FULL ASSESSMENT

Description of values

Values

World Heritage values

► **Superlative natural phenomenon**
Criterion:(vii)

The Meteora rock pillars, created 60 million years ago, rise over 400 m above the ground. Their name derives from the ancient Greek ‘meteoros’, which means suspended in the air. They were formed in the Tertiary period by deltaic river deposits and have been shaped by earthquakes, wind and rain into a great variety of impressive formations (WHC website; IUCN, 1988).

► **Landscape of exceptional natural beauty and aesthetic importance**
Criterion:(vii)

The monumental rocks of Meteora form a unique landscape, which remained unchanged for thousands of years. The site has managed to maintain its environmental and aesthetic values.

Other important biodiversity values

► **Biodiversity rich habitat**

The Antichasia Mountains-Meteora area is a designated SPA (GR1440005) in accordance with the EU Birds Directive, an IBA (GR053) and a Controlled Hunting Area. It is also a designated Site of Community Interest (SCI) of the Natura2000 network (GR1440003). 163 bird species have been recorded in the area, of which 120 nest there. Twelve species are are considered

threatened in the last edition of the Red Data Book of Threatened Animals of Greece (Legakis & Maragou, 2009). The Antichasia Mountains-Meteora area is one of the core breeding areas of Black Kites (Milvus migrans) in Greece (endangered species in Greece and vulnerable in Europe), while it holds three of the last existing territories of the Egyptian Vulture (Neophron percnopterus)in Greece (Critically endangered in Greece and globally endangered); as such, and due to its geographic location, it is considered very important for the coherence of the national Natura 2000 Network (Meliadis et al, 2010). The international importance of the area is further supported by the presence of Long-legged Buzzard (Buteo rufinus), Lesser Spotted Eagle (Aquila pomarina), Lanner Falcon (Falco biarmicus), European Roller (Coracias garrulus) and Red-backed Shrike (Lanius collurio) (Bourdakis, 2009). Other bird species of the area include Short-toed Snake-eagle (Circaetus gallicus), Black Stork (Ciconia nigra), Lesser Grey Shrike (Lanius minor), Semi-collared Flycatcher (Ficedula semitorquata) (HOS, 2013, LIFE10 NAT/BG/000152, 2012). Notable fauna species found at the site include 18 species of bats among which the European free-tailed bat (Tadarida teniotis), otter (Lutra lutra), Brown Bear (Ursus arctus), Wolf (Canis lupus) and wildcat (Felis sylvestris) (Meliadis et al., 2000). In the nearby forested hills and river valley, riverine forests of Platanus orientalis and endemic Centaurea lactifolia and Centaurea kalambakensis are found (IUCN, 1988).

Assessment information

Threats

Current Threats

Low Threat

There is a large number of -mostly low- threats with combined endanger the biodiversity conservation and the landscape integrity of the site. They include land use changes, decrease in traditional livestock breeding practices, development pressures and disturbance to wildlife due to heavy traffic and the large number of visitors the site is receiving. The potential impacts on the

numerous endemic flora species are not known.
In this context, the lack of management plan and implementation body for the natural environment of the site pose more serious threats (intensified recently by the cuttings on the already insufficient staff and resources, due to the economic crisis). Given that monitoring mechanisms are not in place, there is a lack of data indicating whether these threats are increasing or not. Each of these threats compromises different sets of values. Although the outstanding universal value of the site is not at serious risk, the existing pressures are adversely affecting the quality of the site. Hence, establishment of a management authority for the natural heritage of the protected area, which could be also responsible for managing visitor numbers, constitutes an urgent need.

► Livestock Farming / Grazing

Low Threat
Outside site

Animal husbandry is widely practiced in the area. The lack of proper management and insufficient protection has resulted in over-grazing of grasslands (Meliadis et al., 2010) creating negative impacts on both landscape and biodiversity (IUCN Consultation, 2017).

► Poaching

Very Low Threat
Inside site

Poaching constitutes a problem for the area. Sensitized citizens have been reporting several incidents (WHC, 2006; Bourdakis, 2009).

► Utility / Service Lines

Low Threat
Inside site

Regular bus itineraries during summer months add to the pressures caused by organised tour buses and individual visitors (Lyratzaki, 2007).

► Mining/ Quarrying

Low Threat

Outside site

Mining activities take place near Theopetra Cave (inert materials) northeast of the site and sand extraction from riverbeds frequently occurs (Bourdakis, 2009).

► Tourism/ Recreation Areas

Low Threat
Inside site, widespread(15-50%)

Large numbers of visitors, around two million per year, flood the site (conventional forms of tourism mainly, but also partly related to religious, cultural, eco-tourism, and sports tourism) (Lyratzaki, 2007). Camping also poses a threat to the natural environment. Mountain climbing causes disturbance to certain endangered bird species that nest on the rock pinnacles (LIFE10 NAT/BG/000152, 2012).

► Roads/ Railroads

Low Threat
Inside site, localised(<5%)

Pressures for the construction of infrastructure endanger landscape quality and the integrity of the site (opening of new roads, installation of antennas, power transmission network) (Bourdakis, 2009).

► Other

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

The use of poison baits continues to threaten the survival of several endangered species inhabiting the site, such as the Egyptian vulture (LIFE10 NAT/BG/000152, 2012) The species was once common and emblematic in the area of Meteora (around 10 pairs estimated in 2003 (Bousbouras, 2003) Report of the monitoring activities of the Egyptian vulture and the Black Kite in Antichasia Ori-Meteora SPA. Hellenic Ornithological Society. In Greek), whereas only one pair remained in 2016 (one of the five remaining in the whole of Greece - LIFE10 NAT/BG/000152).

► Water Pollution

High Threat

Outside site

The use of fertilizers and pesticides causes underground water nitrate pollution. Likewise, uninhibited use of pesticides and fertilizers in agriculture has resulted in serious degradation of soil (Melieadis et al., 2000; Bourdakis, 2009).

► Identity/ Social Cohesion/ Changes in local population and community

Low Threat
Outside site

Locals have abandoned traditional primary sector’s activities and have focused almost exclusively on tourism, with the exception of stock breeding, which is still practiced (Lyratzaki, 2007).

► Other Ecosystem Modifications

Low Threat
Outside site

In the recent past, land use changes related with agricultural policies, have decreased the mosaic of habitats. These changes concern mostly forestation of open fields, decrease of open meadows, decrease of the traditional extensive livestock breeding and its replacement with intensive breeding methods, intensification of agriculture and monoculture dominance (Bourdakis, 2009, Meliadis et al., 2000). The combined effect of all these factors have likely been a reduction of the flora and fauna diversity associated to open mosaics, along with a decrease of the landscape quality and integrity (IUCN Consultation, 2017).

► Logging/ Wood Harvesting

Data Deficient
Inside site, extent of threat not known
Outside site

Intensification of forest management by cutting of mature, old and dead trees endangers certain bird species that nest in those trees (Bourdakis, 2009). Exact impacts on forest biodiversity are not known due to the lack of monitoring and the absence of biodiversity inventories (IUCN Consultation, 2017).

► Housing/ Urban Areas

Low Threat
Outside site

In the past years there has been an increase in development applications submitted for the settlements of Kastraki and Kalambaka on the foothills of Meteora –partly due to population increase. This would entail the extension of buffer zone B (building control) at the expense of zone A (absolute protection). A ‘Zone for Building Activity Control’ that was being considered in the 1980s by the Ministry for the Environment was never approved. Spatial protection of the site is achieved through regulations provided by an Urban Plan, which since 2012 is under revision. Due to the lack of planning regulations, recent building activity proved a negative factor in many cases for the landscape quality (Papageorgiou, 2015).

Potential Threats

Low Threat

As for potential threats, the continuous process of habitat alteration and deterioration seem to be the most important one. Local conditions and preparedness of the competent authorities make fire hazard a low threat. Seismic hazard, however, is a common denominator for the whole country and the absence of devastating earthquakes in the wider area during the last four centuries cannot rule out the possibility of a greater earthquake, like those that occurred during antiquity and the Middle Ages. More advanced research is necessary and could be beneficial for the protection of the site’s heritage. Furthermore, climate change, and more specifically intensification of droughts might pose a serious threat to the ecosystems of the area. Careful management of water resources is deemed necessary to alleviate this threat.

► Fire/ Fire Suppression

Low Threat
Inside site

Although fire hazard is an important potential threat, preventive measures by the Forestry Services and firefighting department have resulted in minimum losses in the area. Fires usually occur in lower altitudes during the summer

months. The entire area belongs to class C according to the Greek fire risk map (fire risk: moderate) (Meliadis et al., 2000; 2010).

► Earthquakes/ Tsunamis

Data Deficient
Inside site

Damage caused by earthquakes has not been significant during the past four centuries, as these have been frequent but not particularly powerful. However, recent palaeoseismological surveys indicate the occurrence of major events in antiquity (and until the 15th AD) of a magnitude of 6.3-6.5. Therefore, further research is recommended (Caputo and Helly, 2005).

► Habitat Shifting/ Alteration

Data Deficient
Inside site

Studies have shown significant increase in dry conditions in the wider region of Thessaly. This increase will become evident in the near future and (specifically during the period 2020-2050) and drought periods will largely increase in severity and duration in the longer term (period 2070-2100) (Loukas et al., 2007).

Protection and management

Assessing Protection and Management

► Relationships with local people

Data Deficient

An estimation of the relationships with local people with regard to nature conservation will only be possible after the establishment of a management authority for the natural heritage. It can be said, however, that local communities initially reacted negatively when the broader area was designated as a Natura 2000 site, fearing potential development restrictions. However, people’s mentality regarding the designation has altered in more recent times. Locals (monks, nuns and the residents of the village of Kastraki and the town of Kalambaka) are extremely proud of the cultural and spiritual

values of Meteora, which are also central to the local economy.

▶ Legal framework

Mostly Effective

The responsible agent for the management of the natural heritage of the protected area (Antichasia Mountains-Meteora) is the Ministry of Environment, Energy and Climate Change (formerly named Ministry of Environment Spatial Planning and Public Works), while the agent responsible for the protection of the cultural heritage respectively is the Ministry of Education and Religion, Culture and Sports and more specifically the 19th Ephorate of Byzantine and Post-byzantine Antiquities, seated in the town of Trikala, Thessaly. The legal framework is considered sufficient.

▶ Enforcement

Data Deficient

Data deficient

▶ Integration into regional and national planning systems

Some Concern

The management plans for the cultural heritage of Meteora and the natural heritage of the broader area were considered to be well integrated into regional and national planning systems, according to the Periodic report (2006). However, landscape connectivity was not included, and the adequacy of these plans with regards to conservation challenges facing the natural values is unclear (IUCN Consultation, 2017).

▶ Management system

Some Concern

Although there is a management authority for the protection of the cultural and archaeological heritage of the site as a Sacred Site, as well as guidelines and the general policy by the competent Ministry for the protection of monuments, there is no authority neither a management plan for the management of the site’s natural heritage. Although its establishment has been planned, it has not been implemented yet. Further delays will put at additional risk the biodiversity of the broader area. Moreover, the financial

crisis has restricted all Ministries' budgets, with adverse effects for all areas under their jurisdiction. A holistic and integrated management plan for the site is considered an essential and urgent need.

► Management effectiveness

Some Concern

Except for the Ministry of Environment, Energy and Climate Change, the broader area is also under the jurisdiction of other Ministries, such as the Ministry of Development, Competitiveness, Infrastructure, Transport and Networks, the Ministry of Rural Development and Food, other competent Ministries, the Church and the Region of Thessaly. This management system, according to the Periodic report (2006), is considered rather effective. However, there is a lack of effective management on the ground, and no management effectiveness evaluation has been undertaken (IUCN Consultation, 2017).

► Implementation of Committee decisions and recommendations

Highly Effective

The Committee decision with regard to the clarification of the property's boundaries has been implemented, as indicated in the Decision 33COM 8D (WHC, 2009).

► Boundaries

Mostly Effective

The archaeological site that includes the rock pillars has been delimited by a Decision of the Ministry of Culture (70206/3687) in 2005. The broader protected area, which includes all significant elements of the natural environment, is defined as a SPA and SCI (largely overlapping areas) in accordance to national environmental legislation; internal zoning of the protected area (absolute protection and buffer zones) is still pending, although it consists a priority for the Ministry of Environment, Energy and Climate Change.

► Sustainable finance

Some Concern

The current financial crisis limits the abilities of the State to allocate sufficient funds for the management needs of both the natural and cultural assets of the site, creating critical management limitations. The monasteries, however, invest the entrance fees of the museums that operate in many monasteries in restoration and conservation activities necessary for the maintenance of the monuments. European Programmes of the Community Support Framework (CSF) constitute other sources of funding.

► Staff training and development

Data Deficient

Currently, no training and development programmes are available for the staff of the 19th Byzantine Ephorate, which is responsible for the management of the site.

► Sustainable use

Some Concern

For hundreds of years, the monks responsible for the operation of the monasteries have used sustainably natural resources for their subsistence. Moreover, the sacred nature of the site has been proved beneficial for the conservation of the natural environment included in Buffer Zone A. However, modern land uses have an adverse effect on the integrity of the site. Large visitor numbers and heavy traffic within the site exert considerable pressures on the habitat and climate change consequences may further jeopardise the site.

► Education and interpretation programs

Mostly Effective

The majority of visitors are well aware of the World Heritage status of the site. There is a sufficient number of signs indicating its status and the World Heritage Convention Emblem is used in certain publications. There is still need, though, for more effective awareness raising, particularly regarding the sacred nature of the site and the monastic lifestyle which require silence and solitude (IUCN Consultation, 2017).

► Tourism and visitation management

Mostly Effective

Although hundreds of thousands of visitors are estimated to visit the site yearly, only a limited number holds a sufficient understanding of its spiritual nature. Meteora is mostly valued for their breathtaking beauty and awe-inspiring shapes. When monks engage in meaningful conversations with people (whenever possible) they report a change of attitude and a deeper appreciation of the sacred site and its relation to the natural environment. More effective communication means might make interpretation easier (additional signs, relevant information provided by guides and monks during conducted tours, printed material, etc.).

► Monitoring

Some Concern

The absence of a management authority and a management plan for the natural heritage of the site goes along with the absence of monitoring activities. Its establishment will permit the development of relevant indicators, which should focus on the main threats. No official monitoring programme is in place for the cultural heritage of the site either. The LIFE project titled: ‘Urgent measures to secure the survival of the Egyptian vulture (Neophron percnopterus) in Bulgaria and Greece’, which included Meteora, completed in 2016, found that only one pair remained in the site (one of the five remaining in the whole of Greece) and that at least 4 Egyptian vultures have been poisoned in the area since 2012 due to the illegal use of poison (LIFE10 NAT/BG/000152)
There is no evidence of monitoring of the status of other endangered bird species, nor of the status of the numerous endemic flora species in the site.

► Research

Some Concern

Within the framework of the project ‘Management actions in SPAs in Greece’ a comprehensive Special Environmental Study has been drafted in 2000. An additional ornithological study has been carried out more recently (2009) as part of a re-evaluation programme for 69 IBAs of Greece launched by the Ministry of Environment. The LIFE project titled: ‘Urgent measures to secure

the survival of the Egyptian vulture (Neophron percnopterus) in Bulgaria and Greece', which included Meteora, completed in 2016, found that only one pair remained in the site (one of the five remaining in the whole of Greece) and that at least 4 Egyptian vultures have been poisoned in the area since 2012 due to the illegal use of poison (LIFE10 NAT/BG/000152)
There is no evidence of monitoring of the status of other endangered bird species, nor of the status of the numerous endemic flora species in the site.

Overall assessment of protection and management

Some Concern

Although the site falls under the jurisdiction of several central administration bodies, lack of a locally founded management authority is evident. Its establishment is a priority for the Ministry of Environment, Energy and Climate Change, the current financial crisis, however, hinders such plans. The Ministry of Education and Religion, Culture and Sports that manages the monuments has a general policy and applies specific guidelines for the preservation and protection of the cultural heritage of the site through the competent local Ephorate of Byzantine Antiquities. An integrated plan that will take into account in a holistic manner the natural and cultural heritage of the site (which involves updating the existing management plan for the Natura 2000 area) and its effective implementation could greatly benefit the conservation of all site's values.

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

Mostly Effective

The WH site of Meteora is included in the broader Natura 2000 area, therefore the protection and management system is in principle able to address threats outside the site, as well. Of course, the delay in establishing the required mechanisms cancels in fact this opportunity today.

State and trend of values

Assessing the current state and trend of values

World Heritage values

▶ Superlative natural phenomenon

Low Concern
Trend:Stable

The famous Meteroa rock pillars have been so far unaffected by the mostly low threats that endanger the site (Periodic report, 2006). Large visitor numbers, however, must be controlled in order to avoid degradation trends in the future and the much needed management authority for natural heritage will ensure the sustainable development of the broader area.

▶ Landscape of exceptional natural beauty and aesthetic importance

Low Concern
Trend:Stable

This unique landscape could be more efficiently safeguarded if it was not overwhelmed by tourism demands, which sustain financially the monasteries and allow for the conservation of the cultural heritage, but must be regulated to protect the spiritual and natural values of the site (Periodic report, 2006, Meliadis et al., 2000). The geological features have remained unchanged for thousands of years. Although the character of the impressive rock formations has been preserved, both the aesthetic quality and integrity of the surrounding landscape have deteriorated, mainly due to inadequate development and agricultural practices, along with heavy traffic within the site (IUCN Consultation, 2017).

Summary of the Values

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

Low Concern

Trend: Stable

The outstanding universal value of Meteora is not at serious risk. However, there are a large number of mostly low threats whose cumulative impact is

increasing the risk of deteriorating some of the natural, cultural and spiritual values. To reduce current threats and reverse existing negative impacts, the site and the broader area would require the establishment of a competent body that undertakes updating and implementation of the management plan for the whole protected area of Antichasia-Meteora, similarly to the Byzantine Ephorate that manages Meteora's cultural values. Setting up of monitoring mechanisms will ensure that natural and cultural parameters will be controlled

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

High Concern

Trend: Data Deficient

The broader area of Antichasia Mountains and Meteora is an important biotope, which hosts a large number of flora and fauna species, many of them endangered. Uncontrolled human activities and climate change pose a serious threat on the integrity of the site; ornithological studies indicate a decline in the population of several endangered vultures since the time of the site's inscription (Bourdakis, 2009), whereas the lack of proper management measures, backed by recent financial restraints of the state authorities pose further concern. Updated information is required to assess the current condition of most species of fauna and flora.

Additional information

Benefits

Understanding Benefits

► **Importance for research**

Although museums operate in each monastery, their premises can be considered as museums in their entirety. Splendid examples of Byzantine and Post-byzantine architecture, one only visit to them may provide invaluable knowledge to scientists and the general public. Famous painters

such as Theophanes the Cretan (founder of the Cretan School of painting) and Frangos Katelanos, created their masterpieces in the monasteries of Meteora.

► Outdoor recreation and tourism

Most of the numerous visitors are not pilgrims, hence they choose Meteora as a destination due to its outstanding cultural and natural values. Eco-tourism, cultural tourism, sports tourism, along with religious tourism, constitute the main source of income for the local community, which has abandoned all traditional economic activities and rely almost exclusively on tourism.

► Wilderness and iconic features

The views of the huge rock pillars that resemble a stone forest are awe-inspiring and the impression on visitors is enhanced by the presence of the monasteries on their tops. This outstanding sacred landscape is considered unique in the world.

► Sacred natural sites or landscapes

Intact through the centuries, Meteora Sacred Natural Site maintained its integrity because of its sacred nature and has been receiving immense numbers of pilgrims since the establishment of the monasteries. Hundreds of faithful seek their spiritual guidance on an everyday basis and the monks are kept busy in an attempt to comfort and support those in need.

► History and tradition

The monasteries are unique specimens of religious architecture (Byzantine and Post-byzantine), hosting remarkable works of art (frescos, icons, manuscripts, vestments, silverware, etc.). Second in significance in Greece only to Mount Athos, the impressive monasteries were established in the 14th century and are characteristic examples of human determination. They constituted the field in which anonymous and famous architects, painters, craftsmen and labourers excelled.

Summary of benefits

Meteora WH site has a lot to offer to both locals and visitors. The outstanding cultural and spiritual values, paired with its educational role and potential and the benefits provided by the environment have shaped a unique site, which must be safeguarded at all costs. A fine example of the interaction between nature and people, they provide the ideal setting for recreation, contemplation, environmental education and support of the local economy.

Projects

Compilation of active conservation projects

№	Organization/ individuals	Project duration	Brief description of Active Projects
1	The Bulgarian Society for the Protection of Birds/BirdLife Bulgaria Hellenic Ornithological Society WWF Greece RSPB		‘Urgent measures to secure the survival of the Egyptian vulture (Neophron percnopterus) in Bulgaria and Greece’. Its goal is to prevent the extinction of the Egyptian vulture in Bulgaria and Greece, targeting 27 Natura 2000 zones in Bulgaria and Greece.

Compilation of potential site needs

№	Site need title	Brief description of potential site needs	Support needed for following years
1	Establishment of a management authority	Monitoring trends, controlling visitors, controlling traffic within the site, coordination of efforts.	
2	Additional staff training an resources	Kalampaka’s Forestry Service would benefit from enhancement with extra staff, wiht adequate training, and sufficient resources.	

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