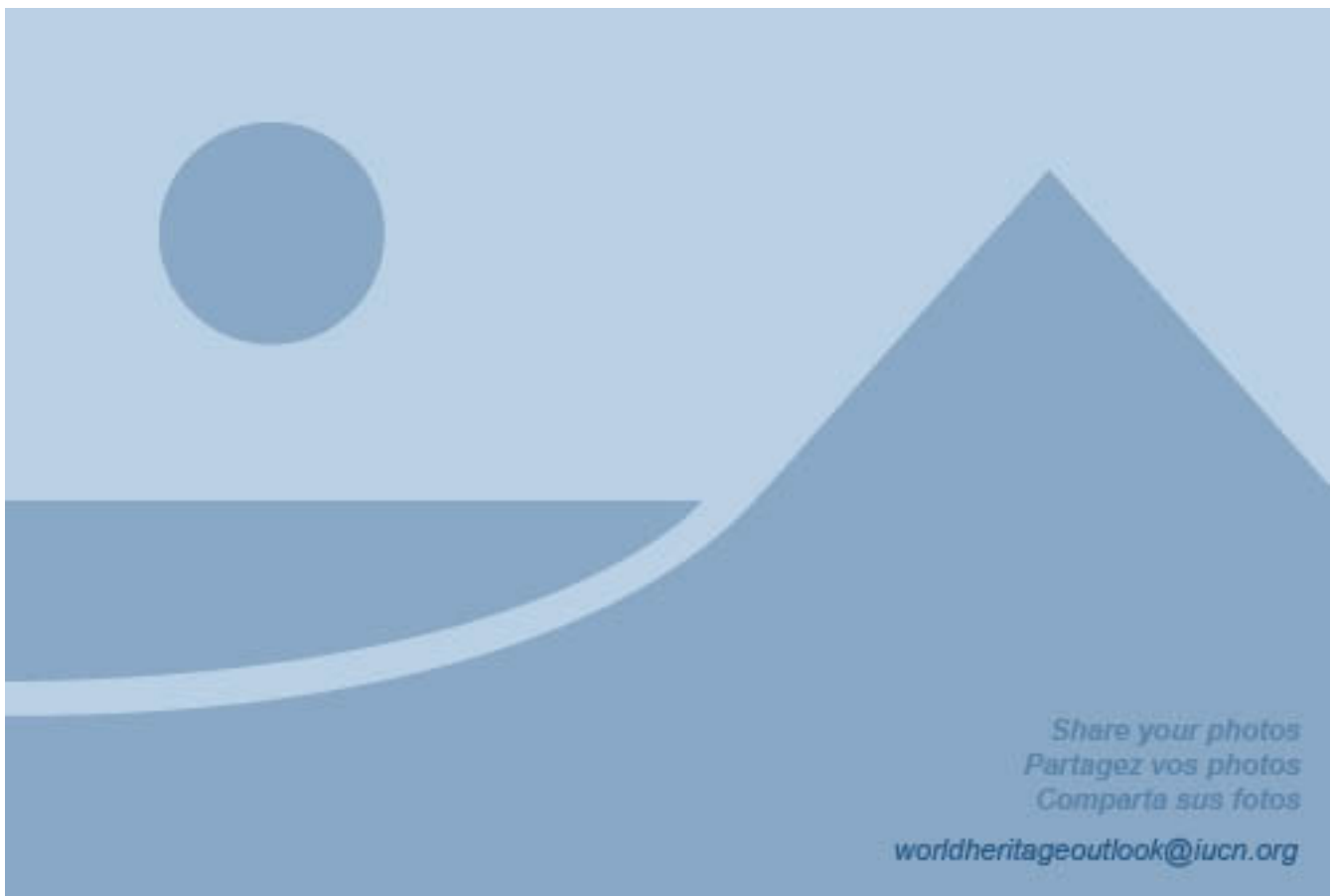


Sitename:-Chengjiang Fossil Site

Site Description:-A hilly 512 ha site in Yunnan province, Chengjiang's fossils present the most complete record of an early Cambrian marine community with exceptionally preserved biota, displaying the anatomy of hard and soft tissues in a very wide variety of organisms, invertebrate and vertebrate. They record the early establishment of a complex marine ecosystem. The site documents at least sixteen phyla and a variety of enigmatic groups as well as about 196 species, presenting exceptional testimony to the rapid diversification of life on Earth 530 million years ago, when almost all of today's major animal groups emerged. It opens a palaeobiological window of great significance to scholarship.



Conservation Outlook

Rating:-Good

Justification:-The site is protected under law and relatively effectively administered by a management authority with the guidance of comprehensive management plans. Former low-level threats have been overcome, but new threats such as the illegal collection of fossils and future demand for more infrastructure development associated with growing visitor numbers will require careful management.

Current state and Trend of values

State:-Good

Trend:-Stable

Justification:-The current state of the outstanding universal geological values of the property is good and the trend is stable. The site is relatively limited in area and the fossil localities are inherently vulnerable to disturbance or damage. However, these have not proved to be a problem for protection of the site and its fossils to date, and no future problems are envisaged given the effective protection and management regime of the property. The property benefits from having no permanent resident population and few visitors, many of whom are scientists. There is, however, evidence of illegal collection and sale of fossils, which so far has not been addressed and which is of concern.

Overall Threats

Overall Rating:-Low Threat

Summary:-Current threats are few and a likely substantial increase in visitor numbers in the near future is the major potential threat to the property. Current threats from inappropriate tourism infrastructure development and inappropriate use of introduced species in re-forestation are partly recognized and should be mitigated. Former mining activities occurred in the buffer zone only. However, illegal collection and sale of fossils is a key threat to the site, which so far has received little attention. Overall, the threat level to the outstanding geological values of the site is low.

Protection and Management

State:-Effective

Justification:-Overall the effectiveness of management of the property can be assessed as mostly effective. The protection laws, management system, research and environmental monitoring are of excellent standard. Funding and staffing appear adequate for present needs. Inappropriate visitor infrastructure development has caused concerns in the past but continuation of this is unlikely. The management authority will need to be vigilant regarding potential impacts from any future increase in visitation levels. There should be more engagement with the local community and more transparency about actions taken to protect the site. Improved protection is desirable for some fossil localities in the area surrounding the property.

Assessment Information

Value

World Heritage Values

State:-Good

Trend:-Stable

1: An exceptional fossil record of the rapid diversification of life on Earth during the early Cambrian period

State:-Good

Trend:-Stable

Description:-The palaeontological evidence of the site is unrivalled for its rich species diversity for early Cambrian times. To date at least 16 phyla, plus a variety of enigmatic groups, and about 200 species have been documented. Taxa recovered include algae, sponges and cnidarians along with numerous bilaterian phyla, including the earliest known chordates. The quality of fossil preservation is exquisite, including both the soft and hard tissues of animals with hard skeletons, along with a wide array of organisms that were entirely soft-bodied and, therefore, relatively unrepresented in the global fossil record. The fossils and rocks of the property, together, present a complete record of an early Cambrian marine community (Babcock et al., 2001; China, 2011; Dzik, 2004; Hagadorn, 2002; IUCN 2012; Hou et al. 2004;).

Other Biodiversity values

Threats

Current Threats

1: Mining/ Quarrying

Threat Rating:-Very Low Threat

Justification:-Until 2004 phosphate mining occurred in the buffer zone and mines were closed in 2008. The complex process of mine rehabilitation has begun but will take many years to complete (36COM. 8B.9; China, 2011; IUCN 2012).

2: Tourism/ Recreation Areas

Threat Rating:-Low Threat

Justification:-Construction of a walkway involved deep excavation of a fossil locale and a museum was built over the site of the first fossil discoveries (36COM. 8B.9; China, 2011; IUCN 2012).

3: Other Ecosystem Modifications

Threat Rating:-Low Threat

Justification:-Since 1997 there has been replanting as part of a forest restoration programme. Introduced species were used but recently this practice has been replaced by the use of native plants (IUCN, 2012).

4: Other

Threat Rating:-High Threat

Justification:-So far, there is no effective action against illegal fossil collections, which cause the damage on the site and the loss of valuable fossil material (IUCN Consultation, 2014).

Potential Threats

1: Tourism/ visitors/ recreation

Threat Rating:-Low Threat

Justification:-Visitor levels are currently very low (4-5,000 annually), but are expected to grow significantly to around 30-40,000 per annum (36COM. 8B.9; China, 2011; IUCN, 2012).

Protection and management

Overall Rating:-Effective

Justification:-Overall the effectiveness of management of the property can be assessed as mostly effective. The protection laws, management system, research and environmental monitoring are of excellent standard. Funding and staffing appear adequate for present needs. Inappropriate visitor infrastructure development has caused concerns in the past but continuation of this is unlikely. The management authority will need to be vigilant regarding potential impacts from any future increase in visitation levels. There should be more engagement with the local community and more transparency about actions taken to protect the site. Improved protection is desirable for some fossil localities in the area surrounding the property.

Protection and management value

1: Research

Protection Rating:-Highly Effective

Justification :-The property has been the subject of intensive research since the first fossil discoveries were reported in the 1985 (Zhang & Hou, 1985). Recent high-profile Chengjiang research papers (Ma et al., 2012; Tanaka et al. 2013; Ma et al., 2014) made further breakthrough in evolutionary studies.

2: Monitoring

Protection Rating:-Some Concern

Justification :-The monitoring programme is extensive and well conducted (IUCN, 2012).

3: Tourism and visitation management

Protection Rating:-Effective

Justification :-Low numbers of tourists visit the property and most international tourists are scientists. Interpretation is excellent (IUCN, 2012).

4: Education and interpretation programs

Protection Rating:-Effective

Justification :-Very good curation and display of fossils in a purpose-built museum (IUCN, 2012).

5: Sustainable use

Protection Rating:-Data Deficient

Justification :-.

6: Staff training and development

Protection Rating:-Some Concern

Justification :-The 13 permanent staff and 16 part-time staff are adequate to cope with current management requirements (IUCN, 2012). Better staff training would be beneficial.

7: Sustainable finance

Protection Rating:-Effective

Justification :-Current funding is adequate (IUCN, 2012).

8: Boundaries

Protection Rating:-Highly Effective

Justification :-The boundaries are appropriate. They are well delimited and signed (IUCN, 2012).

9: Implementation of Committee decisions and recommendations

Protection Rating:-Data Deficient

Justification :-.

10: Management effectiveness

Protection Rating:-Effective

Justification :-Existing staffing and financial resources are sufficient to provide an effective response to management needs under current types and levels of demand (IUCN, 2012).

11: Management system (for transboundary/serial properties, integrated management system should also be described/evaluated)

Protection Rating:-Highly Effective

Justification :-The management system is rated as sufficient for current needs. Three management plans apply in the property (IUCN, 2012).

12: Integration into regional and national planning systems (including sea/landscape connectivity)

Protection Rating:-Data Deficient

Justification :-.

13: Legal framework

Protection Rating:-Some Concern

Justification :-The property and its fossils are protected by national and provincial legislation. Enforcement is generally good; however, there is an increasing concern over illegal trade of fossil collections, which have received too little attention by local authorities (36COM. 8B.9; China, 2011; IUCN, 2012).

14: Relationships with local people (including stakeholder relationships, participatory management, rights, and access to benefits and equity)

Protection Rating:-Some Concern

Justification :-There has been little involvement with the local community (IUCN, 2012). A better engagement is needed to ensure local communities understand the protection policy and are able to participate in protection activities.

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

Rating :-Effective

Justification :-More planning, management effort and protection are required for the significant fossil localities outside the property that provide scientific context for the fossil assemblage in the property (IUCN, 2012).

Best Practice Examples

Justification :-no Jstification avilable

Additional Information

Key Conservation Issues

1: .

Scale :-Local

Description :-.

Benefits

1: Knowledge

Community within site :-Minor

Community outside site :-Major

Wider Community :-Minor

Summary :-The property is one of the world's most significant fossil sites and of great importance to the science of paleontology. Discovery and study of the fossils here have provided the best known picture of early Cambrian marine life and have revolutionized our understanding of the evolution of life on Earth. The fossil record is extremely well researched and reported in the scientific literature and the fossil assemblage is well curated and displayed.

2: Nature conservation values

Community within site :-Minor

Community outside site :-Major

Wider Community :-Minor

Summary :-Although it is a relatively small site and the original vegetation cover is much modified by previous human uses, the property provides effective protection for fossil localities that have internationally significant scientific and conservation values.

Projects

Active Conservation Projects			
N.O	Organization/individuals	Brief description of Active Projects	Contact Details
1			

Active Conservation Projects

Brief description of Active Projects			
N.O	Organization/individuals	Brief description of Active Projects	Contact Details
No Data Available			

References

Rn0	References
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9	Ma, X. et al., 2012. Complex brain and optic lobes in an early Cambrian arthropod. <i>Nature</i> , 490: 258-261.
10	Tanaka, G. et al., 2013. Chelicerate neural ground pattern in a Cambrian great appendage arthropod. <i>Nature</i> , 502: 364-367.
11	Ma, X. et al., 2014. An exceptionally preserved arthropod cardiovascular system from the early Cambrian. <i>Nature Communications</i> , 5: 3560. DOI: 10.1038/ncomms4560