IUCN Conservation Outlook Assessment 2014 **(archived)**
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# Swiss Alps Jungfrau-Aletsch

## SITE INFORMATION

Country:
Switzerland
Inscribed in: 2001
Criteria:
(vii) (viii) (ix)

Site description:
The extension of the natural World Heritage property of Jungfrau - Aletsch - Bietschhorn (first inscribed in 2001), expands the site to the east and west, bringing its surface area up to 82,400 ha., up from 53,900. The site provides an outstanding example of the formation of the High Alps, including the most glaciated part of the mountain range and the largest glacier in Eurasia. It features a wide diversity of ecosystems, including successional stages due particularly to the retreat of glaciers resulting from climate change. The site is of outstanding universal value both for its beauty and for the wealth of information it contains about the formation of mountains and glaciers, as well as ongoing climate change. It is also invaluable in terms of the ecological and biological processes it illustrates, notably through plan succession. Its impressive landscape has played an important role in European art, literature, mountaineering and alpine tourism. © UNESCO

## SUMMARY

## 2014 Conservation Outlook

**Good**

The WH values of the site are in good state and no negative trends can be identified at present. Threats to the values are limited (mainly climate change and tourism) and legal protection status currently effectively protects the site's values. The protection and management is highly effective and based on a complex participatory system with local, regional and national stakeholders being involved. The approach to monitoring is exemplary and is to be commended. The site presents various benefits for both the communities in and around the site as well as global benefits linked to climate change research.

## Current state and trend of VALUES

**Good**
**Trend: Stable**

The current state of the site's World Heritage values is good, the trend is stable. However, the ongoing glacial retreat on the one hand being essential element of the values (ongoing glaciological processes) is on the other hand deteriorating the landscape and aesthetics values associated.

## Overall THREATS

**Very Low Threat**

Both current and potential threats to the site are limited (climate change, sport and tourism in high mountain parts) and legal protection status currently effectively protects the site's values. In the future, potential pressure for use of renewable energies (hydro-power).

## Overall PROTECTION and MANAGEMENT

**Highly Effective**

The protection and management of the site is highly effective and is based on a complex system with local, regional and national stakeholders being involved. The management follows a participatory approach. The approach to monitoring is exemplary and is to be commended.

# FULL ASSESSMENT

## Description of values

### Values

#### World Heritage values

▶ **Impressive mountain landscape**
**Criterion:(vii)**

Impressive mountain landscape reflected by its important role in European art, literature, mountaineering and alpine tourism (R1). The impressive North Wall of the Jungfrau, Mönch and Eiger are celebrated in European literature, art and mountaineering (R5). Aletsch is the largest and longest alpine glacier.

▶ **Aesthetic values**
**Criterion:(vii)**

Aesthetic value of a spectacular mountain region with specific scenic features: impressive north wall of the High Alps, the Eiger, Mönch and Jungfrau peaks. The area is globally recognised as one of the most spectacular mountain regions to visit and its aesthetics have attracted an international following. (R1).

▶ **Superlative natural phenomena**
**Criterion:(viii)**

The impressive north wall of the High Alps, centred on the Eiger, Mönch and Jungfrau peaks, is a superlative scenic feature, complemented on the southern side of the Alpine divide by spectacular peaks and a valley system which supports the two longest glaciers in western Eurasia(R1)

### ▶ Geological processes

**Criterion:(viii)**

Geological formation: 400 million-year-old crystalline rocks thrust over younger carbonate rocks due to the northward drift of the African tectonic plate (R1)
Outstanding example of the formation of the High Alps resulting from uplift and compression which began 20-40 million years ago (R1)
Historical glacier study site for glaciations theory development during the 19th century.

### ▶ Abundance and diversity of geomorphological features

**Criterion:(viii)**

Great abundance and diversity of geomorphological features such as U-shaped glacial valleys, cirques, horn peaks, valley glaciers and moraines (R1)

### ▶ The largest and the longest glacier in Europe

**Criterion:(viii)**

Aletsch glacier, the largest (128km2) and longest (23km) in Europe, is of significant scientific interest in the context of glacial history and ongoing processes, particularly related to climate change (R1). The Fiesch glacier is the third largest and second in length in Europe. (R3)

### ▶ Habitat variety

**Criterion:(ix)**

Within its altitudinal range and its dry southern/wet northern exposures, the property provides a wide range of alpine and sub-alpine habitats. (R1)

### ▶ Variety of undisturbed ecosystems

**Criterion:(ix)**

On the two main substrates of crystalline and carbonate rocks, a variety of ecosystems have evolved without significant human intervention. (R1)

### ► Ecological processes (plant succession and colonization)

**Criterion:(ix)**

Superb examples of plant succession including the distinctive upper and lower tree-line of the Aletsch forest (R1).
Examples of plant colonization on emerging new substrates due to varying rates of glacial retreat (Example for processes driven by climate change) (R1)

## Other important biodiversity values

### ► Characteristic Alpine fauna

The fauna of the site is predominantly of species adapted to subalpine and alpine conditions. 1,250 species have been confirmed, including 271 vertebrates: 42 mammals, 99 birds, 8 reptiles, 4 amphibians, 7 fish, 97 molluscs plus 979 insects (R5).
Fauna is typical of the Alps, with a wide variety of species including ibex, lynx, and red deer (all reintroduced), roe deer, chamois and marmot as well as several reptiles and amphibians (e.g. the Alpine salamander). A representative range of Alpine birds also occur, including Golden Eagle, Kestrel, Chough, Ptarmigan, Black Grouse, Snow Finch, Wallcreeper, Lammergeier, Pygmy Owl and various woodpecker species. (R4)
A unique glacier species is the glacier flea Isotoma saltans, a species of springtail whose optimum temperature is barely above freezing (R5).

### ► Alpine vegetation

The distribution and diversity of the vegetation is strongly influenced by altitude, aspect, climate and the diverse geology. Most species are calcicole or calcifuge, though they may be mixed. Within the nominated area there are 1,800 species of vascular plants and 700 mosses. The growing period decreases with altitude, but there are 529 species of phanerogams and pterydophytes above the tree line (R5).

# Assessment information

## Threats

### Current Threats

**Very Low Threat**

Current threats to the values of the site are very limited and only result from climate change and tourism. Climate change is certainly affecting the property, as shown by the retreat of the glaciers. However, this – and its ecological consequences – represents ongoing glaciological / geomorphological and ecological processes of which the property provides an outstanding example. The tourism impact is currently limited and mostly visual.

#### ▶ Temperature changes

**Very Low Threat**
**Inside site**
**Outside site**

Global climate change and warming are significant threats to the glaciers, resulting in marked glacial retreat and increased slope instability. Studies undertaken and oscillations observed between 1850 and 1973 indicate that only three-quarters of the 1973 glacier area currently remain. (R5)Climate change is certainly affecting the property, as shown by the retreat of the glaciers. However, this – and its ecological consequences – represents ongoing glaciological / geomorphological and ecological processes of which the property provides an outstanding example. (R3).

### Potential Threats

**Very Low Threat**

Potential threats may result from increased tourism development or expansion of hydropower. However, these threats are strictly controlled by existing protection status. Depending on the future status of the Federal Inventory of

Landscapes and Natural Monuments of National Importance, which is under discussion now, the protection status might be weakened, above all when it comes to renewable energy production.

### ▶ Renewable Energy

**Very Low Threat**
**Inside site**
**Outside site**

Large parts of the site fall under different protection programmes, namely Federal Inventory of Landscapes and Natural Monuments of National Importance (Bundesinventar der Landschaften und Naturdenkmäler von nationaler Bedeutung – BLN) and Compensation of losses in hydropower use (VAEW).
A considerable part of the commune of Gutannen falling within a BLN site was not included in the extension of the property in 2007 because of extensive hydropower infrastructure (R3).
However, further expansion of hydropower production is currently prevented by existing protection regimes.

### ▶ Tourism/ visitors/ recreation

**Low Threat**
**Inside site**
**Outside site**

Main potential threat is the potential expansion of heli-skiing (increased landings, increase of heli-pads).
There are seven helicopter landing pads and 3-4,000 overflights a year (R5).
A federal review of the use of the area for helicopter skiing is currently underway, which might limit the number of landing sites and flights. (R3) At present no indication was found that this limitation has been realized.
Threats to the site may also come from the expansion of tourism developments. Part of the site directly borders existing winter sport areas at Kleine Scheidegg, Eiger Gletscher, Belalp (R5).
The upper parts of the mountain are largely used for tourism /recreation (mountaineering); there is a dense network of large mountain huts. Within the site, certain intensification of tourism use, making the high mountains increasingly accessible to people (heli-skiing, suspension bridges, cable cars,

etc.). This is a threat to the sensitive natural environment. (R7)

### ▶ Roads/ Railroads

**Very Low Threat**
**Outside site**

Within the World Heritage site, there are vast, barely fragmented habitats because there is hardly any infrastructure. In the peripheral regions around the WH Site, however, fragmentation is on the increase (R7)

## Protection and management

## Assessing Protection and Management

### ▶ Relationships with local people

**Highly Effective**

Management plan/strategy was developed in participatory process (R1).
The land ownership of the property reflects a strong link to communities: The territory of the property is mainly owned by 26 local communes and their associated authorities. There are also some private landowners, mostly on the edge of the site. The largest private owners are the nature protection organisation Pro Natura at Alpes Understeinberg and Breitlauenen in the Hinteres Lauterbrunnental (500 ha), and the electric utility Kraftwerken Oberhasli (~ 8,500 ha) including the Lower and Upper Aar, Lauteraar and Finsteraar glaciers and the Bächli valley. (R5)
Following extensive participatory processes, a highly democratic institutional structure has been implemented through the Jungfrau-Aletsch-Bietschhorn (JAB) World Heritage Association, registered in May 2002 under Swiss law (R3).

### ▶ Legal framework and enforcement

**Mostly Effective**

Almost all of the property is under some form of legal protection (R1). The legal basis for the region is a heterogeneous mix of designations from all three levels of government. The end result of these various overlapping legal mechanisms is that the site has a range of measures that have kept it as an

intact natural area to date. However, these various designations are complex and the site could benefit from a more coordinated approach. Nonetheless, the existing legal basis is adequate to ensure that the site will not be affected by any activity inconsistent with its World Heritage status. (R4) 94% of the area added as extension to the site in 2007 (77,400 ha) is protected within two sites of the Federal Inventory of Landscapes and Natural Monuments of National Importance (BLN)(R3). In addition, 41% of the area has additional protection status. This includes five biotopes of national importance (1,150 ha, 1.4%), six federal hunting reserves (9,000 ha, 11%), four landscapes protected under the Ordinance Concerning Compensation for Losses in Hydropower Generation (16,000 ha, 19%) – these designations are more strictly protected than BLN; as well as 29 cantonal nature protection areas (13,110 ha, 16%). Many of these designations overlap (R3).

### ► Integration into regional and national planning systems

**Mostly Effective**

There is a continuing need to ensure effective coordination of management responsibility between federal, cantonal and communal levels of government. (R1)

### ► Management system

**Highly Effective**

The property is well managed, with a management strategy and plan in place, which have been developed through an exemplary participatory process. (R1)

### ► Management effectiveness

**Highly Effective**

The property is well managed (R1).

### ► Implementation of Committee decisions and recommendations

**Highly Effective**

The only recommendation from 2007 (Decision 31.COM.8B.18, R1) to change the name of the site was immediately implemented (see Decision

32.COM.8B.4, R13)

### ▶ Boundaries

**Highly Effective**

In 2001 IUCN noted deficiencies in the boundary delineation (“While encompassing the main features of this portion of the high Alps, several adjoining areas of high associated natural values were not included”, R4, R5). These deficiencies were addressed in the 2007 extension of the site (“The new boundaries for the proposed extensions were again intensively negotiated from 2001 to 2004, this time with 26 communes and other stakeholders. Overall, the extended boundaries significantly increased the values for which the property has been inscribed.” (R3).
The 2007 evaluation noted potential further extensions which could further enhance the values and integrity of the site (R3).

### ▶ Sustainable finance

**Mostly Effective**

Funding is based on public-private partnerships. General costs such as for monitoring and maintenance are already funded by individual Cantons through their annual budgets, each putting in CHF 75,000 a year, secure until 2012 for Berne, approved annually by Valais. Federal funds restricted to specific projects amount to CHF400,000-500,000 (US$367,000) a year. Pro Natura invests in the protected areas of Hinteres Lauterbrunnental and finances monitoring of the Aletsch Forest. A typical overall budget of CHF 2.84 million (US$2,330,000) per annum was estimated to be necessary for 2006-7, distributed under the programs for: increasing the visible profile of the site (31%), site management & promotion of sustainable development (29%), regulation of perimeter use (13.8%) knowledge management service (13.7%) education & excursions (7.5%), monitoring & controlling (5%) (R5).

### ▶ Staff training and development

**Data Deficient**

Exact details of the staffing levels of the site are not available. All the employees, working at district or national level to protect the site are also engaged in other management activities. Employees responsible for the protection of nature and landscape in cantonal offices have academic and

vocational training and university degrees, usually in biology or geography (R5).

### ► Sustainable use

**Highly Effective**

Sustainable use is an integral point of the Management plan (R2).

### ► Education and interpretation programs

**Mostly Effective**

Various educational programs and interpretation exist (R6)

### ► Tourism and interpretation

**Highly Effective**

The site plays an important role as a tourist attraction and recreational space (R2). The area has been a popular tourist destination since the 19th century. At first it received mostly summer tourists, but in the 1930s skiing became popular. Due to the steep slopes, visitors are only able to visit the site via the Jungfrau railway and the Trümmelbach funicular unless they are climbers. So the site is both exceptionally accessible to large nearby populations and rather inaccessible in itself. The Jungfrau railway was built between 1870 and 1912, taking visitors from Kleine Scheidegg (2,061m) to Jungfraujoch (3,454m) where the station has a restaurant. There is a well-developed network of foot-paths on the margins of the site, but most of it is inaccessible to walkers. The site is popular with experienced mountaineers and there is a series of 37 shelters and five mountain refuges with a total of 1,582 beds. The Management Centre serves as a visitors' centre at present and the Aletsch Ecological Centre in Riederalp run by Pro Natura, has a similar function. This villa has an alpine garden and Pro Natura organizes exhibitions, walks, classes and seminars and training on environmental issues. Its visitor numbers are not fully known but the Aletsch Forest receives 50,000 to 70,000 visitors a year. There are seven helicopter landing pads and 3-4,000 overflights a year (R5).

### ► Monitoring

**Highly Effective**

A first inclusive monitoring report along seven indicators (3 covers the values under the WH criteria and 4 different aspects of use) has been published in 2011 (R7). This monitoring will be further developed.

### ► Research

**Highly Effective**

Research is conducted in cooperation with various Swiss universities and schools of applied sciences. The Management association has established a monitoring/research program covering ten themes (R6).
Nearly all the glaciers of the area have been measured, some continuously since the late 19th century. The high altitude research centre at Jungfraujoch, stands at 3,500m, a height for a research station unique in Europe. It is permanently accessible by the Jungfrau railway, and well placed for the study of the physical environment, the atmosphere and astronomy. Research areas that are particularly strong include geology, glaciology, geomorphology, botany, zoology and tourism. The site is inventoried and monitored as a global benchmark case study area as part of the National Centre of Competence in Research (NCCR) North-South (R5)

## Overall assessment of protection and management

**Highly Effective**

The protection and management of the site is highly effective and is based on a complex system with local, regional and national stakeholders being involved. The management follows a participatory approach. The approach to monitoring is exemplary and is to be commended.

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

**Data Deficient**

Effectiveness cannot be evaluated on the basis of existing material.

### ► Best practice examples

The approach to monitoring (R7) is exemplary: indicators have been defined covering values and measuring threats to the values.

The participatory management system is an excellent example and well structured.

## State and trend of values

### Assessing the current state and trend of values

#### World Heritage values

▶ **Impressive mountain landscape**

**Good**
**Trend:Stable**

The mountain landscape values of the site are well preserved and are not susceptible to change.

▶ **Aesthetic values**

**Low Concern**
**Trend:Stable**

Inside the site’s perimeter, shrinking glaciers could compromise the aesthetics of the area Outside the perimeter, other factors, such as urban sprawl, influence landscape aesthetics (R7). Tourism flow and infrastructures have limited visual impact.

▶ **Superlative natural phenomena**

**Low Concern**
**Trend:Deteriorating**

Global climate change and warming are significant threats to the glaciers, resulting in marked glacial retreat and increased slope instability. Studies undertaken and oscillations observed between 1850 and 1973 indicate that only three-quarters of the 1973 glacier area currently remains. (R5)

▶ **Geological processes**

**Good**
**Trend:Stable**

The site’s geology is unlikely to be altered by external threats.

### ► Abundance and diversity of geomorphological features

**Good**
**Trend:Stable**

The site’s geomorphological features are well preserved.

### ► The largest and the longest glacier in Europe

**Low Concern**
**Trend:Deteriorating**

Climate change is certainly affecting the property, as shown by the retreat of the glaciers. However, this – and its ecological consequences – should be recognized as ongoing glaciological / geomorphological and ecological processes of which the property provides an outstanding example (R3, R5, R7).

### ► Habitat variety

**Data Deficient**
**Trend:Data Deficient**

To assess the state of this value, especially on the scale of single species, more information is required (R7).

### ► Variety of undisturbed ecosystems

**Good**
**Trend:Stable**

The site includes vast, barely fragmented, undisturbed habitats because there is hardly any infrastructure. (R7)

### ► Ecological processes (plant succession and colonization)

**Low Concern**
**Trend:Stable**

Ecological succession and habitats adapt as a result of climate change and shifts in human use (tourism, agriculture, etc.). However, more information is needed to assess these changes, especially outside of the property. (R7).

### Other important biodiversity values

#### ► Characteristic Alpine fauna

The fauna of the site is predominantly of species adapted to subalpine and alpine conditions. 1,250 species have been confirmed, including 271 vertebrates: 42 mammals, 99 birds, 8 reptiles, 4 amphibians, 7 fish, 97 molluscs plus 979 insects (R5).
Fauna is typical of the Alps, with a wide variety of species including ibex, lynx, and red deer (all reintroduced), roe deer, chamois and marmot as well as several reptiles and amphibians (e.g. the Alpine salamander). A representative range of Alpine birds also occur, including Golden Eagle, Kestrel, Chough, Ptarmigan, Black Grouse, Snow Finch, Wallcreeper, Lammergeier, Pygmy Owl and various woodpecker species. (R4)
A unique glacier species is the glacier flea Isotoma saltans, a species of springtail whose optimum temperature is barely above freezing (R5).

#### ► Alpine vegetation

The distribution and diversity of the vegetation is strongly influenced by altitude, aspect, climate and the diverse geology. Most species are calcicole or calcifuge, though they may be mixed. Within the nominated area there are 1,800 species of vascular plants and 700 mosses. The growing period decreases with altitude, but there are 529 species of phanerogams and pterydophytes above the tree line (R5).

## Summary of the Values

#### ► Assessment of the current state and trend of World Heritage values

**Good**

**Trend: Stable**

The current state of the site’s World Heritage values is good, the trend is stable. However, the ongoing glacial retreat on the one hand being essential element of the values (ongoing glaciological processes) is on the other hand deteriorating the landscape and aesthetics values associated.

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

**Data Deficient**

**Trend: Data Deficient**

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## Additional information

### Key conservation issues

▶ **Impact from tourism (mainly heli-skiing)**

**Local**

Limiting the use of helicopters for skiing
Assessment of the impact of large flow of tourist (skiing / mountaineering) on Aletsch glacier is needed.

▶ **Energy production**

**National**

Potential for use of newly appeared streams (result of glacier melting) and need for increasing the retention capacity of existing dams

### Benefits

### Understanding Benefits

▶ **Outdoor recreation and tourism**

Close cooperation with local, regional and national tourism organisations; marketing together with other Swiss WH in a joint programme and via Internetplatform (R6). Tourism is the major connecting element; it is important in all WH communes (R7).

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

The site cooperates with various Swiss enterprises (R11, R6); the site has a strategic framework to work with business partners (R6)

**► Importance for research**

Important climate change research (R3, R4), the Aletsch Campus is being built in Naters as a research, education and communication center (R6, R11). Historical research site for building the glaciations theory in the 19th century

**► Contribution to education**

Educational material (R11, Klimaguide Jungfrau) (R6)

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

The WH inscription has triggered a process to enhance cooperation between traditional agriculture and tourism

**► Sacred natural sites or landscapes**

The impressive North Wall of the Jungfrau, Mönch and Eiger are celebrated in European mountaineering, literature and art (R5).

**► Traditional agriculture**

The differences in agricultural use between the northern and southern parts of the region are of special interest and value. The continuing abandonment of agricultural land is a major threat to the traditional cultural landscape. (R7)

**► History and tradition**

Research on the evolution of vegetation reveals that human intervention in the landscape began approximately 3,400 years ago. There is archeological evidence that the area was once inhabited by Celts, Romans and Alemans. There are remains of an elaborate canal irrigation system dating from the Middle Ages or possibly from Roman times, the canals obtaining their water

from glacial rivers. (R5)

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

The site is valued for nature conservation (R5).

## Summary of benefits

The WH site has triggered various benefits going far beyond the long-standing natural values/iconic mountain wilderness values (for which the site was valued already before inscription): Tourism, education and awareness building, cooperation with regional and national business/enterprises and an enhanced cooperation between tourism and traditional agriculture can be highlighted here.

## Projects

### Compilation of active conservation projects

| № | Organization/ individuals | Project duration | Brief description of Active Projects |
|---|---|---|---|
| 1 | Foundation WH JAB Swiss Alps | | Research on various topics |
| 2 | Foundation WH JAB Swiss Alps | | Info system The Project Portal System makes the World Heritage visible and lively. The uniqueness and the diversity of the natural and cultural landscape are conveyed and a dialogue over the World Heritage Region’s future is proposed. The visitors and the local population shall be sensitized to the World Heritage and its values. |
| 3 | Foundation WH JAB Swiss Alps | | Monitoring |

| № | Organization/ individuals | Project duration | Brief description of Active Projects |
|---|---|---|---|
| 4 | Foundation WH JAB Swiss Alps | | Species and Habitat preservation (projects on four main species have started) |
| 5 | Foundation WH JAB Swiss Alps | | Development of educational materials, educational excursion etc. |

# REFERENCES


| № | References |
|---|---|
| 1 | Decision 32.COM.8B.4 |
| 2 | Gasser, G. & Wiesmann, U. (2010): The state of this World Heritage region as a starting point for regional monitoring. Eco.mont – Volume 3, Number 2, December 2010 ISSN 2073-106X print version, ISSN 2073-1558 online version: http://epub.oeaw.ac.at/eco.mont |
| 3 | IUCN Evaluation 2001 |
| 4 | IUCN Evaluation 2007 |
| 5 | Internet site: http://www.jungfraualetsch.ch |
| 6 | Jahresbericht 2009 |
| 7 | Management Plan 2005 (Short English Summary) |
| 8 | Nomination Dossier 2001 |
| 9 | Nomination Dossier 2007 |
| 10 | Statement of OUV, 2007 (Decision 31.COM8B) |
| 11 | UNEP-WCMC data Sheet, 2011 |
| 12 | Wallner, et al. (2008): The Case of the Jungfrau- Aletsch-Bietschhorn World Heritage Site in Switzerland. In: Galvin M, Haller T, editors. 2008. People, Protected Areas and Global Change: Participatory Conservation in Latin America, Africa, Asia and Europe. Perspectives of the Swiss National Centre of Competence in Research (NCCR) North-South, University of Bern, Vol. 3. Bern: Geogra- phica Bernensia. |