

Yakushima

2025 Conservation Outlook Assessment

SITE INFORMATION

Country: Japan

Inscribed in: 1993

Criteria: (vii) (ix)



Located in the interior of Yaku Island, at the meeting-point of the palaearctic and oriental biotic regions, Yakushima exhibits a rich flora, with some 1,900 species and subspecies, including ancient specimens of the sugi (Japanese cedar). It also contains a remnant of a warm-temperate ancient forest that is unique in this region. © UNESCO

SUMMARY

2025 Conservation Outlook

Finalised on 11 Oct 2025

GOOD WITH SOME CONCERNS

Overall, the conservation outlook for the site remains positive, but there remain some concerns for the visitor management and longer-term monitoring for the deer population, exotic species and climate change impacts. The 1993 IUCN recommendation for the extension of the boundary and more integrated management system are not implemented yet, but these recommendations are vital even now to increase the effectiveness and the efficiency of the management system. The current limited boundary is not reasonable and the site is highly vulnerable to external threats from activities in surrounding areas.

FULL ASSESSMENT

Description of values

Values

World Heritage values

► Forests of outstanding natural beauty

Criterion:(vii)

An outstanding feature of Yakushima World Heritage site is the remnant old-growth forests of often very large and aesthetically impressive conifers, in particular the Japanese Cedar, some of which are thousands of years old. This is a now rare and outstanding example of the original primeval cedar forests that were once extensive in Japan (World Heritage Committee, 2013). The very high rainfall results in a mantle of mosses through the forests, enhancing their natural beauty; the very wet conditions mean that the forests are often shrouded in mist, adding to the romance for the visitor to these ancient forests. The numerous large cedar trees, the largest of which are known as 'Yakusugi', are revered by the Japanese community and are sought out as special attractions by visitors, probably representing the main attractions for the many tourists that visit the site. The lowland evergreen broadleaved forest (dominated by evergreen oaks, Lauraceae and *Distylium racemosum*) is also visually distinct and readily viewed from the road.

► Outstanding scenic beauty

Criterion:(vii)

Yakushima World Heritage site embraces some of the more spectacular mountainous landscape that dominates this small island, the central peak rising to almost 2,000 metres from the surrounding sea. The multiple rocky peaks and sculpted granite outcrops are subtended by fast running streams created by the abundant rainfall, cutting deep rocky gorges down to the sea. The largely treeless summits, often blanketed in snow during winter, provide for extensive views across the whole of the forested island to the sea beyond.

► An island ecosystem with an unbroken sequence of old-growth forests from subtropical to cool-temperate climate

Criterion:(ix)

Yakushima is an island ecosystem with high mountains--a characteristic rare in the region at around 30 degrees north latitude. It contains a unique remnant of a warm-temperate primeval forest which has been much reduced elsewhere in the region (World Heritage Committee, 2013). The insular nature combined with the very rugged terrain has ensured survival of a full sequence of vegetation from the alpine vegetation of the summits down to warm temperate rainforest that extends down to sea level. Much of the conservation value of the site is reflected in the 200 plant species that have the southern limit of their natural distribution on the island (UNEP-WCMC, 1993).

The property is very important for scientific studies on evolutionary biology, biogeography, vegetation succession, interaction of lowland and upland systems, hydrology, and warm-temperate ecosystem processes (World Heritage Committee, 2013).

► A diverse biota exhibiting significant endemism

Criterion:(ix)

Yakushima is an island ecosystem that supports a comparatively diverse biota, comprising some 1,900 species and subspecies of flora (94 of which are endemic), 16 mammal species (including three endemic subspecies) and 150 bird species and more than 1900 species of insect. Of the plants, there are more than 600 species of moss recorded, testament to the wet forest environment. The biota demonstrates a significant degree of endemism, evidence of on-going evolution during relatively long-term isolation from other landmasses (UNEP-WCMC, 1993; World Heritage Committee, 2013).

Assessment information

Threats

Current Threats

Low Threat

Tourism visitation is creating certain impacts on vulnerable parts of the natural environment, and the management is not fully meeting the challenge of the visitor impacts. As of 2023, excessive visitation is observed around 5 days a year. According to the management agency, effective countermeasures will be implemented as part of future plans. Once the visitor control system is established, the threats will be significantly reduced. Another threat is the population level of the deer. It is threatening important plants, although remedial action is now being taken, and a significant decrease has been observed in the past 10 years. Progress needs to be closely monitored. Typhoons and landslides should be closely monitored to avoid exacerbating their impact. The threat of air pollution and invasive species seems to have certain impacts but not yet adequately surveyed.

► Recreational Activities

High Threat

(Impacts from tourism/visitor use)

Inside site, scattered(5-15%)

There is an ongoing problem with managing the concentrated impact of a large number of visitors to the area (Periodic Report 2003, Forbes 2011). Visitor numbers have declined from a peak in 2008, but a more recent report shows that the excessive number of visitors are still reported 5 days a year (Ministry of the Environment 2023). The threat is estimated to decrease after the implementation of the planned legal visitor control scheme (IUCN Consultation, 2025).

► Geological Events

Low Threat

(Landslides)

Inside site, localised(<5%)

Landslides are relatively common on steep terrain but can be regarded as a largely natural process. Roads may aggravate the impact (Yukiyoshi Teramoto and Etsuro Shimokawa 2009, Yakumonkey Guidebook).

► Air-borne Pollutants

Low Threat

(Air pollution (international))

Inside site, extent of threat not known

Research has detected fall out from air pollution allegedly derived from China (Fackler 2013). There is debate about the role of the air pollution on the threatened Yakushima white pine (*Pinus amamiana*) - an endangered species - that are dying. Studies show some evidence of aerosol and dust impact on Yakushima but do not suggest it as the cause of death of *P. amamiana* trees (Nakano et al, 2017).

► Problematic Native Species

Low Threat

(Deer population over-abundance)

Inside site, throughout(>50%)

Other invasive species names

Outside site

Cervus nippon yakushimae

The deer population, in the opinion of some, is over-abundant and damaging natural values. The biological balance of Yakushima Island is currently being compromised by overpopulation of sika deer (Fujimaki et al., 2016). Culling of deer is now being undertaken (Japan Forestry Agency in Fackler 2013; Stakeholder consultation 2017). The latest monitoring survey shows that the deer population significantly decreased in most areas in the past 10 years (Ministry of the Environment 2024).

Potential Threats

Low Threat

The ecosystem of Yakushima is shaped by periodic intervention by typhoons, but the mega typhoons enhanced by climate change can be a potential threat in the near future. In 2024, Typhoon Shanshan hit Yakushima and caused huge damages to tourism infrastructure and forests. The famous 3000-yr-old Yayoi-sugi cedar tree fell down due to the strong wind caused by the typhoon. Also, the 'octopus' shaped

narrow WHS property is very vulnerable to the impacts of threats emanating from adjacent lands. Extension of the WH boundaries was recommended in 1993 but its importance remains the same as of today. For example, the logging activity in surrounding areas could severely damage the habitats of rare mycoheterotrophic plants. In 2024, the Forestry Agency designated “Yakushima Mycoheterotrophic Plants Rare Population Protected Forest” with the implementation of conservation measures such as regulations of logging to conserve these rare mycoheterotrophic plants.

► **Logging, Harvesting & Controlling Trees**

Low Threat

(Forestry in adjoining lands)

Inside site, scattered(5-15%)

Other targeted species names

Lacanorchis tabugawaensis, Gastrodia uraiensis, Sciaphila yakushimensis

There are significant areas of cedar plantations established that may attract future logging operations when plantations are mature (Forbes 2011, Google Earth imagery 2014). Several new localities and new species of mycoheterotrophic plants have been discovered where logging activities are undergoing (Suetsugu, 2015; Suetsugu, 2016a; 2016b; Suetsugu et al., 2018). The logging activity could severely damage the habitats of rare mycoheterotrophic plants (Ecological Society of Japan 2020). In 2024, the Forestry Agency designated “Yakushima Mycoheterotrophic Plants Rare Population Protected Forest” with the implementation of conservation measures such as regulations of logging to conserve the rare mycoheterotrophic plants (IUCN Consultation, 2024).

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

Data Deficient

(Non-native species)

Inside site, throughout(>50%)

Invasive/problematic species

Nyctereutes procyonoides

Japalura polygonata

The raccoon dog (*Nyctereutes procyonoides*) is now well established on the island. Although the nature of its ecological impact is not clear, control measures have been implemented by the Ministry of the Environment to identify and reduce impacts on sea turtles (Ministry of the Environment 2016). An invasive arboreal lizard (*Japalura polygonata*) is now distributed in the eastern part of the island (Yamadashima 2014). It may potentially affect endemic insects and other invertebrates, but the impact remains unknown.

► **Geological Events**

Low Threat

(Earthquakes)

Inside site, localised(<5%)

Although Yakushima appears to be geologically stable, surrounding regions are prone to volcanism and earthquakes which can impact on Yakushima and create landslides on the steep topography (Google Earth earthquake data base 2017).

► **Severe Weather Events**

Low Threat

(Typhoons)

Inside site, extent of threat not known
Outside site

Yakushima is within the northern hemisphere typhoon zone and is occasionally hit by typhoons that bring strong winds and cause landslips (Witham 2014) and damage to trees (Bellingham et al., 1996; Takashima et al., 2009), which can be regarded as a largely natural process (which is nevertheless likely to become more intensive and more frequent with the onset of climate change). In 2024, Typhoon Shanshan hit Yakushima and caused the severe damages to infrastructure and the famous cedar trees. The famous Yayoi-sugi cedar tree (est. 3000 years) fell down by the strong wind. Although typhoon is a natural phenomenon prone to Yakushima, increased intensity and frequency of typhoons enhanced by climate change will be a concern and potential threat in the future.

Overall assessment of threats

Low Threat

The biggest threat so far is the visitor impacts, which are not properly managed under the current systems. Another threat stems from the overpopulation of deer (Yaku sika), however remedial action has led to a significant decrease in deer population over the past 10 years. Other identified and potential threats are largely from the natural processes (earthquake, typhoon, landslides). Further research is required to assess the impacts from invasive species (e.g. raccoon dog), air pollution, and climate change on the key attributes of the site.

Protection and management

Assessing Protection and Management

- **Involvement of stakeholders and rightsholders, including indigenous peoples and local communities, in decision-making processes** Some Concern

Various stakeholders and rightsholders are included in the decision-making and/or information sharing processes in various ways, for example through the Yakushima WHS Coordinating Council and the Yakushima Association for the Promotion of Ecotourism. Although there are a variety of ways for participation, native islanders generally do not actively participate in the processes or forum. More active outreach and consultations are necessary.

- **Legal framework** Some Concern

The combination of multiple legislative mechanisms is implemented. Relevant designations under pieces of legislation include: Yakushima Wilderness Area (Ministry of the Environment - designated under the Nature Conservation Law in 1975) forms a small part of the centre of the recommended area, Yakushima National Park (Ministry of the Environment - gazetted in 1964 under the National Parks Law), Special Natural Monument (Cultural Agency - under the Law of Protection of Cultural Properties, 4,300ha was established as a Special Natural Monument Area), Yakushima Forest Ecosystem Reserve (Forestry Agency - established in 1992, comprising the property and various adjacent blocks of land), and Wildlife Reserve (Kagoshima Prefecture) (State Party of Japan, 2023).

These different legal frameworks from different agencies are mostly physically overlapping and create inefficiency among them. The National Park is usually the main and most robust conservation measure in Yakushima and in Japan.

- **Governance arrangements** Some Concern

Yakushima WHS is managed jointly by the Ministry of the Environment, the Forestry Agency, Kagoshima Prefecture, Kagoshima Prefecture Education Board and Yakushima Town. There exists the coordinating body called Yakushima WHS Coordinating Council, however, this is only organized once/twice a year and the decision-making process is complex and overlapping, sometimes fragmented. High transaction costs for decisions/implementation and ineffectiveness are evident (Tanaka et al. 2023). This complexity arises from the complex land tenure as well. Although the management is largely initiated by the Ministry of the Environment, the landowner is the Forestry Agency. Similarly, the trails are managed by different organizations with the least coordination. Thus, the visitor management, for example, fall under the different government bodies and lacks overall efficiency and effectiveness. The responsible body for Yakushima WHS is vague and should be better integrated.

- **Integration into local, regional and national planning systems (including sea/landscape connectivity)** Mostly Effective

The Yakushima WHS Management Plan amended in 2012 and 2024 integrates local, regional and national plans concerning Yakushima. The Plan is agreed on by the Ministry of the Environment, Forestry Agency, Cultural Agency, Kagoshima Prefecture and Yakushima Town. The Plan is rather the

enumeration of various facts related to Yakushima WHS but is considered as the basis of integration.

► **Boundaries**

Some Concern

It is likely that if Yakushima was nominated in the present, the current boundaries would be rejected as inappropriate. The boundary appears mostly illogical when related to the landscape, topography, conservation attributes and manageability. It also fails to include some attributes that would make a valuable contribution to the integrity of the site. The need for extension of the boundary was noted at the time of original listing (IUCN Evaluation 1993) but no improvements have been achieved in the past 30 years. Also, several endangered species outside the World Heritage site have been recorded e.g. *Sciaphila yakushimensis*, *Oxygyne yamashitae*, *Lecanorchis tabugawaensis*, for which the current boundary remains of serious concerns due to lack of ability to effectively conserve those endangered species.

► **Overlapping international designations**

Mostly Effective

The core area of the Biosphere Reserves completely overlaps with the WHS. If we include the Buffer and Transition areas of BR, the whole island is covered by the BR. Ramsar site does not overlap with the WHS per se, it is neighboring the site property. If the WHS is extended as recommended by the World Heritage Committee (1993), the overlap will be significantly more.

► **Implementation of World Heritage Committee decisions and recommendations**

Some Concern

The original evaluation recommended "Suggestions for improvements to the boundaries and strengthening the management of the site should be sent to the Japanese authorities along with noting concern over the impacts on the site from tourism." (IUCN Evaluation, 1993). No improvements in the boundaries have been implemented. Expansion of the World Heritage site and/or greater integration of ecological and visitor/tourism management could be beneficial for the island ecosystem as a whole.

► **Climate action**

Mostly Effective

Yakushima Town's electricity is supplied by almost 100% renewable energy (hydro-power). Yakushima Town declared the Zero Carbon Island in 2023 and the action is supported by many hotels and shops in the island. Although there does not exist any specific action for the WHS, the area is regarded sustainable and environmentally friendly.

► **Management plan and overall management system**

Some Concern

The Yakushima WHS Management Plan was amended in 2012 and 2024 by the Ministry of the Environment, Forestry Agency, Cultural Agency, Kagoshima Prefecture and Yakushima Town. The management plan is not very detailed, but rather the enumeration of various facts related to Yakushima WHS. Since many governmental organizations are involved in the management and are sharing roles, the explanation is lengthy, but not necessarily essential. There exist many Councils on certain policy topics e.g. the population control of Yaku deer, mountain trail management, and donation system. Based on the World Heritage Area Management Plan, adaptive management is applied by the PDCA cycle, such as formulating an annual project plan and reporting to the Scientific Council, and evaluating the project results of previous year. In addition to the Management Plan, implementation plans for specific projects have been formulated, and various measures are being conducted (State Party of Japan, 2023). High transaction costs for decision-making and implementation are pointed in Tanaka et al. (2023). Integration of the various governmental bodies relating to WHS management is recommended to strengthen the management system overall.

► **Law enforcement**

Mostly Effective

There are at least three rangers and three assistant rangers working for the management authority under the Ministry of the Environment. In addition, several foresters are stationed nearby. Both the Ministry of the Environment and the Forestry Agency conduct law enforcement activities as well as monitoring (IUCN Consultation, 2024).

► **Sustainable finance**

Some Concern

Funding for management is dependent upon separate funding of the various participating agencies rather than an allocation direct to the property. A donation system has been initiated since 2017 (IUCN consultation, 2017), however, misappropriation has occurred in 2018 (IUCN Consultation, 2020). Currently, the sustainable financing system is under discussion including the taxation to the visitors.

► **Staff capacity, training and development**

Some Concern

Full-time equivalent staff numbers allocated to Yakushima National Park is estimated around 8-10. Similar numbers are allocated to the Forestry Agency's local office. These numbers are not sufficient for monitoring, patrolling, and/or controlling the visitor numbers. Enhancement of the budget and the staff capacity is necessary (Yomiuri Newspaper 16/12/2023).

► **Education and interpretation programmes**

Mostly Effective

Two major visitor centres exist on the island. There does not exist any interpretation tour implemented by the park rangers. Interpretation programmes are offered by private eco-tour companies. To enhance the quality of the tour-guides, an official certificated guide system was launched by Yakushima Town in 2016 and an official manual was compiled in 2018 to ensure the strong and consistent messaging to visitors about the site and local culture (IUCN Consultation, 2020). The Academic Society of Yakushimaology was launched in 2014 and continues to hold annual meetings. The number of members are more or less 100, of which half are island residents and half outside researchers. The annual meetings have provided deeper understanding of the island, both in nature and in humanities, to consider the future and recent issues (IUCN Consultation, 2020)

► **Tourism and visitation management**

Some Concern

Tourism and visitation management is being a central issue in Yakushima World Heritage Site since its early times, especially on the mountain trails towards Jomon-cedar tree. Trampling of vegetation, crowding on trails and similar issues have been documented by both State Party and in published papers and online visitor reviews. Recent documentation suggests the issue is on-going (5 days are overcrowded in 2023). There exists good scheme for controlling the cars, and visitors should take the shuttle buses to the trail head. However, there does not exist caps for the visitor numbers and the bus company simply increases the number of buses in busy season, which makes the overtourism in the pristine core areas. Further consultation between the responsible agency and the bus company is required. The Ministry of the Environment formulated "Mountain Area Proper Utilisation Vision in the Yakushima Natural World Heritage Site and National Park" in 2022, which summarizes the direction and efforts for the conservation and high quality use experience of Yakushima mountain area. Furthermore a General Plan for Promotion of Ecotourism on Yakushima Town" was published in 2023, which summarizes the concept of ecotourism on whole Yakushima Island (IUCN Consultation, 2024).

► **Sustainable use**

Some Concern

Forestry is not ongoing in the WHS. The major concern is the tourism. As of 2024, the Ecotourism Comprehensive Plan is being discussed among stakeholders to implement the effective management. This will be the basis for proper regulation and management in near future.

► **Monitoring**

Mostly Effective

Yakushima Scientific Council of the World Heritage Site has made plans to monitor the conditions of the vegetation, deer population, trails and wetlands in high altitude, as well as visitor numbers, and reported annually (IUCN Consultation, 2020). Key monitoring indicators include a focus on the impact on attributes of OUV (Area and species composition of Japanese cedar natural forest, number of branches and leaf volume of well-known individual tree of "Yakusugi", which is Japanese cedar with over 1,000 years in age, number of plant species which form the vertical vegetation distribution, number of habitats and individuals of threatened endemic plant species) and the impact of visitors (Number of hikers Condition of degradation and vegetation change around the mountain) (State Party of Japan, 2023).

► Research

Mostly Effective

Variety of researchers implement research projects in Yakushima. The Academic Society of Yakushimaology was launched in 2014 and has continued to hold annual meetings since then. The number of members are more than 200, of which half are island residents and half outside researchers.

► Effectiveness of management system and governance in addressing threats outside the site

Some Concern

The combination of multiple legislative mechanisms, a complex composite management agency, a management plan that provides only limited and outdated guidance, unnecessarily complicated sub-tenures, an overly complicated zoning plan and multiple agency field operations in a relatively small site appears inefficient and cumbersome. It is apparent that the management system has failed to anticipate and be innovative in responding to various issues including the visitor pressures and the deer population.

► Effectiveness of management system and governance in addressing threats inside the site

Some Concern

Yakushima WHS is managed jointly by the Ministry of the Environment, the Forestry Agency, Kagoshima Prefecture, Kagoshima Prefecture Education Board and Yakushima Town. There exists the coordinating body called Yakushima WHS Coordinating Council, however, this is only organized once/twice a year and the decision-making process is complex and overlapping, sometimes fragmented. High transaction costs for decisions/implementation and ineffectiveness is evident (Tanaka et al. 2023).

Overall assessment of protection and management

Some Concern

For such a small site, the overall protection and management systems in place appear unnecessarily complex (tenure, management plan, zoning, management agency) and in the 30+ years since listing, only relatively minor improvements have been made, mostly adding to the bureaucratic complexity rather than simplifying. The question arises as to whether these components of protection and management deliver a high order of protection and management. Whilst there is a reasonable level of protection for the OUV of the site, there are on-going issues relating to visitor management and management of the deer population. An extension to the WH boundary as recommended by IUCN in 1993 could serve to enhance the conservation from the external threats. As of 2024, the Ecotourism Comprehensive Plan is being discussed among stakeholders to implement the effective management. This will be the basis for proper regulation and management in near future. Currently, the management complexity among various bodies is problematic since it incurs high transaction costs for decision making and management. An integrated management body that is fully responsible the WHS is required. The enhancement of administrative resources (human resources, budget, expertise) is also needed for the effective management.

► Good practice examples

The Academic Society of Yakushimaology was launched in 2014 and has continued to hold annual meetings since then. The number of members are more than 200, of which half are island residents and half outside researchers. The annual meetings have provided deeper understanding of the island, both in nature and in humanities, to consider the future and recent issues (IUCN Consultation, 2020).

State and trend of values

Assessing the current state and trend of values

World Heritage values

► **Forests of outstanding natural beauty**

Low Concern
Trend:Stable

For the majority of visitors to the site, the primary attraction is the aesthetics of the old-growth forests and especially large individual trees ('Yakusugi'). Whilst the forests and individual Yakusugi are much as at the time of listing, the visitor experience appears to have deteriorated somewhat as a result of crowding and associated impacts on the forest environment.

Whilst the old-growth Yakushima white pine (*Pinus amamiana*) have not featured much in the visitor mind, this rare local endemic tree is subject to significant dieback and the cause is not certain though the latest research suggests nematodes rather than air pollution (Nakano et al, 2012).

► **Outstanding scenic beauty**

Low Concern
Trend:Stable

For visitors to the site, the spectacular landscape would be little changed from the time of listing. The macro landscape is comparatively stable apart from the impacts of natural processes, especially landslides. At the local or micro level, there are localised and concerning changes associated with impacts from visitors, deer and typhoons, particularly in the high mountain section where there are reports of trampling, track erosion and changed drainage. The strong typhoon in 2024 (Shanshan) caused severe damage to the tourism infrastructure and various cedar forests including 3000-yrs-old Cedar tree.

► **An island ecosystem with an unbroken sequence of old-growth forests from subtropical to cool-temperate climate**

Good
Trend:Stable

The site continues to exhibit its overlapping biotas from the Palearctic (mostly) and Oriental (some elements) realms, a rather robust value that would only be threatened by longer-term changes such as climate change or threats from invasive species or severe pollution. Overabundance of deer represents a threat.

► **A diverse biota exhibiting significant endemism**

Low Concern
Trend:Stable

As an island ecosystem, Yaku Island (Yaku-shima) is vulnerable to threats from invasive species. Typically many islands in the world have had their ecosystems and biota seriously impacted by introduction/arrival of exotic species, in particular invasive species and Yakushima is unlikely to be an exception. Introduction of the predatory Raccoon Dog (*Nyctereutes procyonoides*) surely represents a serious threat to the biota of the island given the large biodiversity, including many local endemic taxa. Over-abundance of the Yakushima Sika deer (*Cervus nippon yakushimae*) and its impact on the biota has been challenge in the island, but the number has significantly decreased over the past 10 years.

Summary of the Values

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

Low Concern
Trend: Stable

Overall, the values of the site appear stable, although various threats are evident. At the local or micro level, there are localised and concerning changes associated with impacts from visitors, deer and typhoons, particularly in the high mountain section where there are reports of trampling, track erosion and changed drainage. The existence of invasive species e.g. the Raccoon Dog (*Nyctereutes procyonoides*) on the island and the effect of climate change should be carefully monitored for the long term. The abundance of deer (a local endemic subspecies) has significantly reduced in the past 10 years and the concerns for the values has reduced.

Additional information

Benefits

Understanding Benefits

► Outdoor recreation and tourism

Yaku Island has become an increasingly attractive destination for tourists, both domestic and international. The Yakushima World Heritage Site is an important component of that tourism. The numerous walking trails on the island, including in the site, provide an abundance of opportunities for health related exercise.

The tourism clearly makes an important economic contribution to the local island population and extending to Kagoshima on the mainland.

Factors negatively affecting provision of this benefit :

- Overexploitation Impact level - Moderate
- Habitat change Impact level - Moderate

► Wilderness and iconic features

The larger cedar trees, those considered to be over 1,000 years old, called "Yakusugi", are greatly revered and regarded as sacred by Japanese people. One consequence is that this generates substantial national tourism to the site, generating economic benefits to the island community through employment and provision of services. On the negative side, it places too much emphasis on access to these ancient trees and requires 'site hardening' to minimise impact of concentrated visitation.

Factors negatively affecting provision of this benefit :

- Overexploitation Impact level - Moderate
- Habitat change Impact level - Moderate

There appears to be an on-going resentment in the island community about 'sharing' their cultural and spiritual attachment to the forest with visitors (Makoto Hagino 2016).

In the absence of data, it is difficult to establish the quality of tour guiding and whether this adequately represents the traditional culture of the island.

► Contribution to education

Several large and impressive visitor centres have been established on the island and are visited by most tourists to the island and the World Heritage Site. Emphasis is on education with a strong focus on the cedar forests, the WH site in particular. These facilities are also utilized for school education. These centres are an important complement to the WH site and provide great educational benefit to the wider population.

Factors negatively affecting provision of this benefit :

- Habitat change Impact level - Low

The several visitor centres on the island make a valuable contribution to education, especially education about the natural history of the island. The quality of education imparted by tour guides is unknown (data deficient).

► Cultural identity and sense of belonging

Local pride, sense of place, place attachment are increasing. Some decades ago, the islanders tend to hide their birthplace but currently they are proud to say that they are from Yakushima.

Summary of benefits

By far the main source of benefits to the community is from tourism visitation to the site, tourism being driven by a combination of the 'Yakusugi' cedar trees and the spectacular mountain scenery. Benefits flowing to the Yaku Island community is primarily economic through the provision of services to visitors. Educational benefits are significant and closely associated with tourism to the site.

Projects

Compilation of active conservation projects

No	Organization	Brief description of Active Projects	Website
1	Kagoshima Prefecture has formulated “Type II Specified Wildlife (Yaku-sika) Control Plan” covering the whole Yakushima Island in 2017 based on the Wildlife Protection, Control and Hunting Management Act.	A scientific panel to monitor and advise the Scientific Council on management of the Yaku-sika (deer)	https://www.env.go.jp/park/yakushima/ywhcc/kaigi/yakusikaWG.html
2	Kyoto University	This project aims to identify the population history of the Yakushima Japanese macaques and genetic and morphological consequences of population bottlenecks	https://kaken.nii.ac.jp/en/grant/KAKENHI-PROJECT-23K05905/
3	Kyushu University	This project aims to investigate the evolutionary basis of parallel evolution of Dwarf plants in the alpine region of Yakushima Island, Japan	https://kaken.nii.ac.jp/grant/KAKENHI-PROJECT-23K14246/

REFERENCES

Nº References

- 1 Alternative Tourism (2014) Yakushima Island: http://www.alternative-tourism.com/Japan/Tourism/Natural_pl...
- 2 Asahi Shimbun (2021) Yakushika deer: Harvesting and damage decreased, natural decrease observed in some areas. <https://www.asahi.com/articles/ASP7273VHP71TLTB00L.html>
- 3 Atsushi Kume, Osamu Nagafuchi, Suguru Akune, Nobutake Nakatani, Masaaki Chiwa, Kenshi Tetsuka, Environmental factors influencing the load of long-range transported air pollutants on *Pinus amamiana* in Yakushima Island, Japan, *Ecological Research*, Vol.25, No.1, pp.233-243, 2010.01
- 4 Atsushi Takashima, Atsushi Kume, Shigejiro Yoshida, Takuhiko Murakami, Tsuyoshi Kajisa, Nobuya Mizoue Discontinuous DBH-height relationship of *Cryptomeria japonica* on Yakushima Island: effect of frequent typhoons on the maximum height. *Ecological Research* September 2009, Volume 24, Issue 5, pp 1003-1011
- 5 Bellingham, P.J., Kohyama, T. & Aiba, S. (1996) The effects of a typhoon on Japanese warm temperate rainforests. *Ecological Research* 11: 229-247.
- 6 David A. Hill (1999) Seasonal variation in the feeding behavior and diet of Japanese macaques (*Macaca fuscata yakui*) in lowland forest of Yakushima American Journal of Primatology Volume 43, Issue 4, pages 305–320, 1997 Article first published online: 6 Jan 1999
- 7 Ecological Society of Japan (2020) <https://www.esj.ne.jp/esj/Activity/2020Yakushima.html>
- 8 Fackler, Martin (2013) Scientist Says Pollution From China Is Killing a Japanese Island’s Trees. *Yakushima Journal*
- 9 Forbes, Glenn (2011) Yakushima: Balancing long-term Environmental Sustainability and Economic Opportunity <http://www.k-junshin.ac.jp/juntan/libhome/bulletin/No42/for...>
- 10 Fujimaki A, Shioya K, Tagawa S, Matsuda H (2016) A theoretical approach for zone-based management of the sika deer population on Yakushima Island. *Population Ecology* 58:315-327.
- 11 GEO 121 Wiki (2013) Yakushima, Japan <https://sites.google.com/a/miamioh.edu/geo121f13/home/d2-ya...>
- 12 IUCN Consultation (2024). Confidential consultation for the Outlook Conservation Assessment of Yakushima World Heritage site.
- 13 Invasive Species of Japan (2014) - Raccoon Dog *Nyctereutes procyonoides* National Institute for Environmental Studies <http://www.nies.go.jp/biodiversity/invasive/DB/detail/10310...>
- 14 Kenji Suetsugu and Hirokazu Fukunaga (2016) *Lecanorchis tabuawaensis* (Orchidaceae) a new mycoheterotrophic plant from Yakushima Island, Japan *PhytoKeys*. 2016; (73): 125–135. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5109904/>
- 15 Kenji Suetsugua,*, Hirokazu Tsukayab and Hiroyoshi Ohashi (2016) *Sciaphila yakushimensis* (Triuridaceae), a New Mycoheterotrophic Plant from Yakushima Island, Japan. *Journal Japan Botany*. 91: 1–6 (2016)
- 16 Mahoney, Paul (2013) The Anbo Forestry Railway 1923: A Cultural Heritage Values Assessment. Unpublished report.
- 17 Makoto Hagino (2016) The legal concept of ‘heritage’ in the world heritage convention: The case of Yakushima, Island. *Journal of Marine and Island Cultures* www.sciencedirect.com

Nº References

- 18 Ministry of the Environment (2016). Report on the results of the survey on predation damage to sea turtle eggs and hatchlings by raccoon dogs, cats, and other predators and the study of control measures at Nagata Beach in FY 2015 (a project by the Ministry of the Environment). Available at: <https://www.env.go.jp/park/yakushima/ywhcc/common/data/kaig...> (Meeting Material of Nagata Sea Turtle Liaison Council)
- 19 Ministry of the Environment (2024) Population of Yaku deer (Monitoring result ID9 related). <https://www.rinya.maff.go.jp/kyusyu/fukyu/shika/attach/pdf/...> (retrieved from the website of the Forestry Agency, the secretariat of the Yaku deer working group in Yakushima WHS Scientific Committee)
- 20 Ministry of the Environment (2024) Survey Results of the Use of Mountain Areas in Yakushima. accessed on February 18, 2025. <https://www.env.go.jp/park/yakushima/ywhcc/common/data/np/2...>
- 21 National Institute for Environmental Studies (NIES). Invasive Species of Japan (2014) <http://www.nies.go.jp/biodiversity/invasive/DB/detail/10310...>
- 22 State Party of Japan (2023). Periodic Reporting Cycle 3, Section II: Yakushima. Available at: <https://whc.unesco.org/en/list/662/documents/>
- 23 Suetsugu K, Fukunaga H (2016) *Lecanorchis tabugawaensis* (Orchidaceae, Vanilloideae), a new mycoheterotrophic plant from Yakushima Island, Japan. *Phyto Keys* 73: 125-135.
- 24 Suetsugu K, Hsu TC, Kaneko S (2018) New natural hybrid in the genus *Gastrodia*: *Gastrodia* × *nippo-uraiensis* (Orchidaceae) from Yakushima Island, Japan. *Taiwania* 63:220-226.
- 25 Suetsugu K (2015) First record of the mycoheterotrophic orchid *Gastrodia uraiensis* (Orchidaceae) from Yakushima Island, Japan. *Acta Phytotaxonomica et Geobotanica* 66: 193-196.
- 26 Suetsugu K, Tsukaya H, Ohashi H (2016) *Sciaphila yakushimensis* (Triuridaceae) , a new mycoheterotrophic plant from Yakushima Island, Japan. *Journal of Japanese Botany* 91: 1-6.
- 27 TOKUMARU, Hisae (2003) Nature Conservation on Yakushima Island : Kagoshima Prefecture's Efforts. Nature Conservation Division, Kagoshima Prefectural Government Kagoshima
- 28 Takahiro Okano a*, Hiroyuki Matsuda (2013) Biocultural diversity of Yakushima Island: Mountains, beaches, and sea. *Journal of Marine and Island Cultures*. Volume 2, Issue 2, December 2013, Pages 69-77
- 29 Takanori Nakano, Yoriko Yokoo, Masao Okumura, Seo-Ryong Jean,4and Kenichi Satake (2012) Evaluation of the Impacts of Marine Salts and Asian Dust on the Forested Yakushima Island Ecosystem, a World Natural Heritage Site in Japan. *Water Air Soil Pollut.* 2012 Nov; 223(9): 5575-5597
- 30 Tanaka T, Takashina N (2023) Governance paradox: implications from Japan's national parks for managing complex protected areas. *Sustainability Science* 18, 1995-2007.
- 31 The Gymnosperm Database (2014) *Pinus amamiana* Yakushima white pine http://www.conifers.org/pi/Pinus_amamiana.php
- 32 Toshihiko Yonezawa1*, Akihiko Shinomiya2 and Hiroyuki Motomura3 (2010) Freshwater fishes of Yakushima Island, Kagoshima Prefecture, southern Japan. National Museum of Nature and Science, Tokyo
- 33 UNESCO World Heritage Centre (2014) Yakushima <http://whc.unesco.org/en/list/662/>
- 34 Witham, Clive (2014) Yakushima: A Yakumonkey Guide. Siesta Press
- 35 YAKUSHIMA - WORLD HERITAGE (includes annotated Google Earth image) Japan Ministry of Environment. <https://www.env.go.jp/nature/isan/worldheritage/en/yakushim...>
- 36 Yakushima World Heritage Area Management Plan (1995)

No References

- 37 Yakushima World Heritage Area Management Plan (2012).
<https://www.env.go.jp/en/nature/wh/yakushima/index.html>

- 38 Yakushima World Heritage Site Area Management Plan (2024) accessed on 18 Feb 2025.
<https://www.env.go.jp/park/yakushima/ywhcc/common/data/wh/k...>

- 39 Yamadashima, T (2014) The report of Japalura polygonata polygonata in Yakushima Island. Report of the Kagoshima Prefecture Museum 33: 59-60.

- 40 Yomiuri Newspaper (2023) Government and University are collaborating for the conservation of the World Natural Heritage Site. Human Resources and the budget are the issues (not on the website, 16/12/2023)

- 41 Yuki Yoshi Teramoto and Etsuro Shimokawa 田口 義典 (2009)(Journal of the Japanese Society of Coastal Forest) 8(2):92-97, 2009 Characteristics of slope failure and the effect of deforestation in a granite basin on Yakushima [http://jscf.jp/Journal_PDF/JSCF08\(2\)/JSCF8\(2\)92-97E.pdf](http://jscf.jp/Journal_PDF/JSCF08(2)/JSCF8(2)92-97E.pdf)