World Heritage Sites

Protected Areas and World Heritage

United Nations Educational, Scientific and Cultural Organization

In cooperation with UNESCO's World Heritage Centre

YAKUSHIMA
JAPAN

Yakushima Island lies on the boundary between the Holoarctic and Palaeotropic bio-geographical regions. Over 200 plant species have their southernmost limit of natural distribution on the island. The altitudinal continuum of the forests across nearly 2,000m is considered to be not only the best in the Japanese archipelago, but the best remaining in East Asia.

COUNTRY
Japan

NAME
Yakushima

NATURAL WORLD HERITAGE SERIAL SITE
1993: Inscribed on the World Heritage List under Natural criteria vii and ix.

STATEMENT OF OUTSTANDING UNIVERSAL VALUE [pending]

INTERNATIONAL DESIGNATIONS
1980: Designated a Biosphere Reserve under the UNESCO Man & Biosphere Programme (19,000ha).
2005: Yakushima Nagata-hama designated a Wetland of International Importance under the Ramsar Convention (10ha).

IUCN MANAGEMENT CATEGORY
Kirishima-Yaku National Park: V National Park
Yakushima Wildlife Area: Ia Strict Nature Reserve

BIOGEOGRAPHICAL PROVINCE
Japanese Evergreen Forest (2.2.2)

GEOGRAPHICAL LOCATION
Yaku Island, at the northern end of the Ryukyu archipelago, is separated from the southernmost tip of Kyushu mainland by a 120m deep, 60km wide strait. The area has a complex boundary, which is less than 1km wide in some places. It lies in the centre of the island, with a main arm extending down to the coast to the west and sinuous arms stretching south and east. Located at 30°20'5"N by 130° 31'32"E.

DATES AND HISTORY OF ESTABLISHMENT
1922: Establishment of Academic Reference Forest Reserve within the national forest;

1924: Yakushima Old Growth Japanese Cedar Forest designated as a Natural Monument;

1954: The Forest designated as a Special Natural Monument (4,300ha) under the Law of Protection of Cultural Properties;

1964: Incorporated into Kirishima-Yaku National Park (54,833ha) newly established under the National Parks Law, comprising land on Yaku Island and Kirishima National Park on Kyushu mainland; the area of the Park was expanded in 1983;

1975: Yakushima Wildlife Area (1,219ha) designated under the Nature Conservation Law. This forms a small part of the central World Heritage Site;

1980: Parts of the island's southern and western coastal lowlands recognised as a UNESCO Biosphere Reserve;

1992: Establishment of Yakushima Forest Ecosystem Reserve (14,600ha), comprising the World Heritage site plus several adjacent blocks of land in the centre of the island;

2005: A turtle-nesting beach, Nagata-hama, near though outside the site, designated a Ramsar site.

LAND TENURE

State, in Kagoshima Prefecture. The state Forestry Agency owns 95.5% of the island. 4.5% is in private ownership (Anon, 1992).

AREA

The World Heritage Site area is 10,747 ha. This contains the Yakushima Wildlife Area. The site is contained within the Kirishima-Yaku National Park and Yakushima Forest Ecosystem Reserve.

ALTITUDE

Sea-level to 1,935m (Miyanoura-dake).

PHYSICAL FEATURES

Yakushima Island is 500 sq.km in area. Its central peak is 1,935m high and is the highest mountain in Kyushu. There are several peaks over 1,800m with mountain ridges and 40 peaks over 1,000m surrounding them. The topography from coastline to summits is extremely steep. The predominant bedrock is granite, but small areas of sandstone and shale occur at the foot of the central mountain (Anon., 1992; Numata, 1986).

CLIMATE

Varies with altitude from sub-tropical, warm temperate to cool temperate, tending to sub-alpine. Mean annual temperature is 19.1°C in coastal areas, decreasing to 15°C inland. Air temperature can fall below zero in the mountain summit area and snowfall is common in winter. Annual precipitation is the highest in Japan, varying with altitude and aspect, from 4,400mm along the coast to 10,000mm inland. Humidity is also very high, averaging 73-75%, and in the rainy season, June, exceeding 80%.

VEGETATION

The vegetation is significantly different from that on the mainland and the flora, where Holarctic and Palaeotropical species overlap, is very rich. Warm temperate broad-leaved forest previously covered much of southern Japan. This has largely been removed, due to high human population pressure, and the warm temperate forest trees in Yakushima are thus some of the few remaining in Japan. The 2000 metre altitudinal forest continuum is the best example in the country. The flora is very diverse for such a small island, comprising more than 1,900 species and subspecies. Of these, 94 are endemic, mostly concentrated in the central high mountains. More than 200 species are at the southern limit of their natural distribution and a number occur at their northern limit. A distinctive characteristic of the vegetation is the exuberance of epiphytes, the presence of rare lichens and 300 species of pteridophytes, particularly at higher elevations (UNESCO, 1997).

The vertical distribution of the vegetation is distinct, with sub-tropical vegetation near the coastline such as the banyan tree *Ficus superba var. japonica* and Chinese banyan *Ficus microcarpa* near the seashore, and sub-tropical/ warm temperate plants, such as *Machilus thunbergii*, chinquapin *Castanopsis cuspidata* and evergreen oaks further inland. The vegetation becomes temperate, cool

temperate and sub-alpine as altitude increases. Cool temperate zone coniferous forest is characterised by Japanese fir *Abies firma*, southern Japanese hemlock *Tsuga sieboldii*, Sargent's juniper *Juniperus sargentii* and the indigenous Japanese cedar *Cryptomeria japonica*, with wheel tree *Trochodendron aralioides*, camellia *Camellia sasanqua*, *Chloranthus glaber*, and coralberry *Ardisia crenata*. There are also unusual patches of sphagnum bog. The subalpine zone has *Gentiana yukushimensis*, the dwarf rhododendron *Rhododendron degronianum* ssp.*yakushimanum* and a dwarf bamboo *Pseudosasa owatarii* grassland around the peaks. The presence of the indigenous cedar, known colloquially as *sugi*, is of great significance to the area. These are the dominant trees of the mixed forest between 700m and 1,700m. In the humid climate of the island these can grow to more than a thousand years old on stable sites: specimens younger than 1,000 years are known as *kosugi*; older specimens, which may reach 3000 years, are known as *yakusugi* (Numata, 1986). The oldest is the Jomon Cedar, popularly believed to be 7,200 years old and has a circumference of 16.4 meters. These are the oldest, finest and best example of Japanese cedar forests in Japan.

FAUNA

The fauna of the island is diverse, with sixteen mammal species. Four mammalian sub-species, including the Yakushima macaque *Macaca fuscata yakui* (3,200-4,600 animals) and the Yakushima sika deer *Cervus nippon yakushimae* (2,300-3,000), are endemic to the island. The population of both species is approximately 3,000. A further four sub-species are endemic to both Yaku Island and the neighbouring island of Tanegashima, including the large Japanese fieldmouse *Apodemus speciosus dorsalis*. Amongst the 150 bird species four, Izu thrush *Turdus celaenops* (VU), Izu leaf-warbler *Phylloscopus ijimae*, Ryukyu robin *Erithacus komadori* and Japanese wood pigeon *Columba janthina* have been designated Natural Monuments. Yakushima is also home to sub-endemic birds like the Japanese robin *Erithacus akahige tanensis*. There are also 15 species of reptile, including nesting loggerhead turtle *Caretta caretta* (EN) and green turtle *Chelonia mydas* (EN) which aggregate on a beach in the northwest of the island, eight species of amphibians and about 1,900 species of insects.

CONSERVATION VALUE

Yakushima lies in a strategic situation on the boundary between Holoarctic and Palaeotropic biogeographical regions. Much of its conservation value is reflected in the 200 plant species which have the southern limit of their natural distribution on the island. The altitudinal continuum of the forests across nearly 2,000m is considered to be not only the best in the Japanese archipelago, but the best remaining in East Asia. Ancient *yakusugi* trees are of prime conservation value to the island. Individual trees are known by name, and details of height and age are given in Anon (1992). The site is designated a WWF Global 200 Marine Eco-system and a Ramsar Wetland.

CULTURAL HERITAGE

Traditionally the island mountains have been considered to have a spiritual value and the *yakusugi* were revered as sacred trees.

LOCAL HUMAN POPULATION

The population of Yaku island was 14,000 in 1994. No-one lives in the nominated area. Impacts of the creation of the National Forest on traditional forest users were mitigated by allowing a common use of the forest edge. Impacts of the World Heritage designation include both some prosperity, reversing previous out-migration, and some resentment of the outsiders, as well as degradation by tourist over-use (Hoshikawa, 2005).

VISITORS AND VISITOR FACILITIES

The site is spectacular as well as semi-sacred. More than 200,000 visit the island annually and some 40,000 walk the trails of the area. 7,000 visitors also visit the nearby turtle beaches each year. A limited number of viewing platforms, shelter pavilions, two huts, lavatories and hikers' paths are maintained, but no other man-made constructions exist. A World Heritage Centre was set up in 1996 and there is a Nature Museum focussed on the cedar, the *Yakusugi* Museum. There is a good hotel on the island but

most of the accommodation is simple. The island is accessible by air, by a four-hour ferry or 90 minute hydrofoil trip from Kagushima.

SCIENTIFIC RESEARCH AND FACILITIES

The Yakushima forests are important for studies on evolutionary biology, biogeography, vegetation succession, interaction between lowland and upland systems, hydrology and warm-temperate ecosysytems. They have been the subject of detailed ecological studies since the area was selected as a Biosphere Reserve in 1980 (Tagawa & Yoda, 1985). A databank for the island has been established and benefits from a regular monitoring program. The visitors' centre has facilities for scientists. An ecological study of Japanese macaque in the site has been carried out since 1975 by members of Kyoto University.

MANAGEMENT

A management plan for the World Heritage Area was prepared in 1995. Management of the site is the responsibility of the Environment Agency, the Forestry Agency, the Agency for Cultural Affairs and Kagoshima Prefecture. To provide more effective cooperation and collaboration between these agencies, the Yakushima World Heritage Area Liaison Committee was established. Local people also became involved in the implementation of management objectives in 1989. By 2005, the Kirishima-Yaku National Park area management plan, drawn up in 2002 had been implemented.

Management priorities are to strictly conserve the area so as to prevent the loss of its World Heritage values. Activities which may threaten the integrity of the site, such as building, felling trees or bamboo, collecting animals and plants, collecting soil, stones, rocks fallen leaves and branches, and building fires are prohibited within the Wilderness Area and only allowed only under permit in the Special Protection zone of the National Park and Preservation zone of the National Forest. A total banning on cutting of *yakusugi* now exists. The only utilisation of *yakasugi* permitted today is unearthing of buried timber and stumps (Anon., 1992). Restoration of eroded and deforested areas is practised. There is regular monitoring of rainfall, stream quality, the state of the landscape and mountain trekkers.

MANAGEMENT CONSTRAINTS

High precipitation and the susceptibility of sandy soils to water erosion places constraints on trail construction and maintenance. The high number of hikers and camping congestion causes erosion of paths and problems of waste control which are not made easier by the variety of agencies responsible for the area's protection (Yasushi & Kazushige, 2004). The main threat to the area is the proposals to widen the Seibu-Rindoh road, which would damage the surrounding forest and could also cause landslides.

STAFF

Three permanent rangers. Forestry and environment agency staff regularly visit the area on foot but the staffing level is not adequate. There are volunteer nature guides and forest patrols (MoE, 2003a)

BUDGET

No formal budget is allocated to the site but funding is reported to be inadequate (MoE, 2003a).

LOCAL ADDRESSES

Aso-Kuju National Park Office, 1180 Kurokawa, Aso-cho, Aso County, Kumamoto Prefecture, Kyushu.

Kumamoto Regional Forest Office, 2-7 Honcho, Kyomachi, Kumamoto-shi, Kyushu, Japan.

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DATE

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