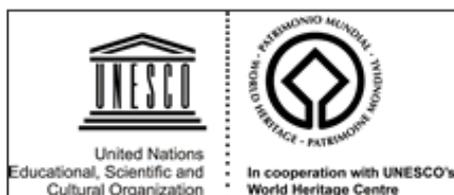


World Heritage Sites

Protected
Areas and
World
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HUANGLONG SCENIC & HISTORIC INTEREST AREA CHINA

Huanglong in northern Sichuan Province, has outstanding travertine formations, 3,300 cascading terraced pools, hot springs and waterfalls lying beneath snow-capped mountains which carry the easternmost Chinese glacier. The region is rich in forests and unspoiled habitats, rare plants and rare animals including the giant panda and the Sichuan golden snub-nosed monkey.

COUNTRY

China

NAME

Huanglong Scenic and Historic Interest Area

NATURAL WORLD HERITAGE SERIAL SITE

1992: Inscribed on the World Heritage List under Natural Criterion vii.

STATEMENT OF OUTSTANDING UNIVERSAL VALUE [pending]

INTERNATIONAL DESIGNATION

2000: Recognised as a Biosphere Reserve in the UNESCO Man and Biosphere Programme (138,000 ha).

IUCN MANAGEMENT CATEGORY

III Natural Monument

BIOGEOGRAPHICAL PROVINCE

Sichuan Highlands (2.39.12)

GEOGRAPHICAL LOCATION

In northern Sichuan Province, west-central China, in the southern part of the Min Shan Range about 230 km north of Chengdu. The Scenic Area is divided between two sites: Huanglong valley, 45 km northeast of Songpan town, which also includes the whole Fujiang river catchment above Shijiabao village; and the Muni valley, 15 km south-west of Songpan, which includes the catchments of the Zhaga travertine waterfall and the Erdaohai mineral lakes. Huanglong lies between 32° 37' to 32° 54'N and 103° 37' to 104° 08'E; Muni valley lies between 32° 30' to 32° 42'N and 103° 25' to 103° 32'E.

DATES AND HISTORY OF ESTABLISHMENT

For many centuries, even millennia, much of the area has been protected by being revered in Taoist and Lamaist religious traditions; also by its inaccessibility.

1982: The site was listed as a state scenic site;

1987: The entire site given legal protection by the Sichuan provincial government as a Nature Reserve;

2000: Designated a UNESCO Biosphere Reserve.

LAND TENURE

State, in Songpan county. Since 2001, within the jurisdiction of the Aba Tibetan and Qiang Autonomous Region. Managed by the Administrative Bureau of the Huanglong Nature Reserve (HAB).

AREA

70,000 ha: Huanglong, 60,000 ha, with a 58,000 ha buffer zone; Muni valley, 10,000 ha, plus a 6,000 ha buffer zone. There are two other major protected areas in the region: Jiuzhaigou Valley Scenic and Historic Interest Area (72,000 ha + 60,000 ha) to the north and Wanglang Nature Reserve (27,700 ha) to the northeast.

ALTITUDE

1,700m (Shanzidong, Fan Cave) to 5,588 m (Xuebaoding, Snow Treasure Peak).

PHYSICAL FEATURES

This is an outstanding karst landscape within the southern part of the Min Shan range which runs from the eastern Qinghai-Tibetan plateau down to the Sichuan basin. The Huanglong section of the reserve covers the catchment of 22 tributaries of the upper Fujiang River which has its source in Snow Mountain Ridge. The Huanglong valley itself is one of these tributaries. The slopes above the valleys are forested and steep, a spectacular example being the 15km long 700m deep Danyun Gorge of the Fujiang near Huanglong valley. Above the tree line the site is surrounded by mountains, their strata tilted into jagged peaks, three bearing glaciers, seven over 5000m high and all snow-covered for much of the year. The pyramidal summit of Xuebaoding (Snow-Treasure Peak) is permanently snow-covered and carries the easternmost glacier in China.

Geologically, the Huanglong site is within the Qinling-Kunlun tectonic zone and the Snow Mountain Great Fault. The Muni valley site incorporates the Minjiang River Fault and the Zhaga Mountain Fault. Earthquakes are fairly frequent. The tilted rock strata are comprised of largely carbonate Palaeozoic deposits over 4,000m thick, Mesozoic deposits at least 1,000m thick with a variety of sedimentary rocks in a cataclastic sedimentation; and recent Cenozoic deposits of glacial moraines, alluvial gravels and carbonate sediments.

Scenically the major attraction is the 3.6 km-long travertine formations of Huanglong Gou: Valley of the Yellow Dragon. These consist of clusters of over 3,300 brightly coloured pools cascading over travertine terraces, travertine shoals, rapids and waterfalls. Caves also extend beneath the valley. The intense colours of the pools which vary between blue, green, yellow and milky are caused by the high calcium bicarbonate content of the water. This is precipitated biologically through the presence of great numbers of microscopic mosses which under certain conditions of temperature and turbulence attract the precipitation of calcite in underwater sills which grow upwards to form natural weirs (HNNCAA, 2001). But the biggest formation in the valley is Jinsha Pudi (Golden Sand Beach), an extensive sloping shoal of yellowish tufa (porous calcium carbonate) 1.3 km long and 125m at its widest which is the site of active limestone deposition under a thin layer of flowing water. This long uninterrupted limestone slope is thought to be the largest such formation in the world, and its colour gave rise to the name Yellow Dragon.

Beside a temple in upper Huanglonggou surrounded by a cluster of 660 colourful pools, a large karst cave extends under the valley. The cave is about 70m long, 30m wide and up to 15m high. Five smaller caves are known from the valley, some containing attractive calcite deposits, but most are filled with water. Several warm geothermal mineral springs emerge at 3,650m above sea level directly above the temple at a temperature of 6°C and an average annual air temperature of 3°C which feed the travertine system of Huanglonggou. The stream flow varies through the year, with peak flows during and shortly after the monsoon from July to September. Most of the soils on site are derived from limestone and are neutral to slightly alkaline. The mountain soils are skeletal.

The Muni valley site consists of two small parallel valleys, Zhaga and Erdaohai, which drain to the Minjiang river. There are two important areas of warm mineral springs here: Feicui Kuangquan (Jadeite Mineral Spring) with a discharge of 0.58 lit/sec at a temperature of 9.5-9.8°C; and the Zhuzhuhu springs (Pearl Boiling Lake) at 21°C which bubble into a 400 sq.m pool. The waters of both springs have a high mineral content and are said to have important medicinal properties. Erdaohai also contains a number of very attractive mineral lakes. The main attraction of Zhaga is the travertine waterfall. This is 93m high, 35m wide and is stepped, with a series of semicircular travertine pools at its base.

CLIMATE

Conditions are cool-temperate: damp and cold in the high mountains, and cool and dry in the river valleys. Winters are cold, dry and sunny, summers warm and wet with over 70% of the precipitation

falling between May and September; autumns are wet and cloudy. The mean annual temperature at Fuyan Bridge at the mouth of Huanglonggou (3,160m asl.), is 4°C, ranging from -24.7°C to 30.6°C. Annual precipitation at this site is 717.4mm, but for the whole area it is given as 758.9mm.

VEGETATION

Huanglong lies close to the intersection of four floristic regions: Eastern Asia, Himalaya, and the subtropical and tropical zones of the Palaearctic. It is situated at the transition between the eastern damp forest and the zone of mountainous coniferous woods with meadow grassland and shrubs of Qingzang Plateau. More than 1500 higher plants are recorded for the site. About 65.8% of the site is forest covered, with much of the remainder being above the tree line. Part of the area is used for agriculture by the local people, mainly pasture with a few fields, although the extent is uncertain.

From 1,700m to 2,300m, there is a belt of mixed forest with Chinese hemlock *Tsuga chinensis*, pines *Pinus tabulaeformis* and *P. armandii*, three species of maple *Acer yui*, *A. erianthum* and *A. davidii* with *Alnus nepalensis*, *Juglans sigillata* and *Betula alnoides* and an understorey of arrow bamboo. Between 2,300m and 3,600m, the forest is largely coniferous and subalpine in character, dominated by spruces *Picea asperata*, *P. purpurea* and *P. wilsonii*; firs, *Abies recurvata* and *A. faxoniana*; spruce *Picea asperata*, pine *Pinus armandii*, larch *Larix potaninii* and birches *Betula platyphylla* and *B. utilis*. Between 3,600m and 3,900m, the forest gives way to a dense layer of *Rhododendron* species and mountain shrubs eg: *Sibiraea* spp., *Lonicera hispida*, *Salix* spp., *Festuca ovina*, *Polygonum* spp., *Kobresia macracantha*, *Anaphalis lactea* and *Leontopodium dedekensii* mixed above 3,800m with alpine meadows which are dominated by the sedge *Kobresia macracantha* and form the only vegetation above 3,900m. From 4,200m to 4,800m, vegetation consists of high-alpine species e.g: *Saussurea medusa*, *Rhodiola* spp., *Soroseris gillii* and *Saxifraga tangutica* in drift stone formations. Above 4,800m, there is permanent snow and ice.

Orchids are prominent features of the herbaceous flora of Huanglong. In the warm temperate zone members of the genera *Cymbidium*, *Calanthe* and *Bletilla* are not uncommon. In higher regions several species of genera such as *Amitostigma*, *Calypso*, *Cypripedium*, *Epipactis*, *Galearis*, *Goodyera*, *Habenaria*, *Herminium*, *Listera*, *Malaxis*, *Neottia*, *Neottianthe*, *Oreorchis*, *Platanthera*, *Poneorchis* and *Tipularia* are abundant, with some slipper orchid species: *Cypripedium flavum*, *C. tibeticum* and *C. bardolphianum* forming vast populations of several thousand specimens in the Huanglong valley. 15 orchid taxa were first described in science from the Huanglong valley (HAB *in litt.*, 2002).

Apart from the characteristic species mentioned above, MoC (1991) contains a list of 101 higher plant species of interest for their rarity, endemism, and ornamental and medicinal value. These include a number of species that are internationally threatened: *Picea brachtyla* (VU), *Larix mastersiana* (VU), *Pterostylax psilophylla* (VU), *Tsuga chinensis*, *Eucommia ulmoides*, *Pteroceltis tagarinowii*, *Euptelea pleiospermum*, *Dipteronia sinensis*, *Kingdonia uniflora* and *Magnolia officinalis* (WCMC, 1991). The list includes 16 species of rhododendron. The panda's habitat, which includes two food plants important to it, *Fargesia denudata* and *F. scabrida*, supports very high levels of biodiversity.

FAUNA

Diversity is high due to the site's location within four floristic regions, its wide altitudinal range, and the extensive undisturbed forests. MoC (1991) records 59 mammals in six orders and 18 families; 155 birds in 12 orders and 29 families; five reptiles in two orders and three families; five amphibians in two orders and four families and two fish species. A large number of the species listed are threatened at the national and several at the international level (IUCN, 1990). Mammals include such notable species as giant panda *Ailuropoda melanoleuca* (EN), lesser panda *Ailurus fulgens* (VU), golden snub-nosed monkey *Rhinopithecus roxellana* (EN), Himalayan black bear *Ursus thibetanus* (VU), brown bear *Ursus arctos*, Asiatic wild dog *Cuon alpinus* (EN), leopard *Panthera pardus fusca*, lynx *Lynx lynx*, Pallas's cat *Otocolobus manul*, Sichuan takin *Budorcas taxicolor thibetana* (VU), serow *Capricornis sumatraensis* (VU), Chinese goral *Naemorhedus griseus*, argali sheep *Ovis ammon* and three species of deer, white-lipped deer *Przewalskium albirostris* (VU), forest musk deer *Moschus berezovskii* (EN) and possibly Chinese water deer *Hydropotes inermis* (VU). The area's Information Center site also lists clouded leopard, *Neofelis nebulosa* (VU) (HNNCAA, 2001). A preliminary list of birds is given in MoC (1991) which includes Pallas's fish-eagle *Haliaeetus leucoryphus* (VU), five species of pheasant, notably Chinese monal *Lophophorus lhuysii* (VU), rufus-headed robin *Luscinia ruficeps* (VU), snowy-cheeked laughing thrush *Garrulax sukatschewi* (VU) and a number of waterfowl species.

According to a recent estimate about two giant dozen pandas live within the site. In 1989 MoF/WWF (1989) included a distribution map which showed that pandas were then found at four to five distinct locations within the site. Such a population is not especially large, but it is important, not least because of its close proximity to other more important areas, notably Wanglang Nature Reserve which directly borders Huanglong on the northeast and Jiuzhaigou reserve. The existence of large, interconnected reserves is also of great importance for the continued survival of the golden snub-nosed monkey, which also requires large areas with an undisturbed environment (MacKinnon, 1986).

CONSERVATION VALUE

The site has outstanding travertine formations, the most notable being the over 3,300 travertine pools and limestone shoals of Huanglong valley which lies high within a forested snow-capped mountain region rich in rare plants, animals and unspoiled habitats, all of international importance. The Park lies within a Conservation International-designated Conservation Hotspot, in a WWF Global 200 Freshwater Eco-region, a WWF/IUCN Centre of Plant Diversity and is in one of the world's Endemic Bird Areas. It also forms part of a UNESCO Biosphere Reserve.

CULTURAL HERITAGE

Much of the landscape, especially Xuebaoding peak and the Huanglong valley, is important in local Tibetan religion, culture and folklore in which the valley is known as Se'erzuo, the Golden Lake. Close to the top of the valley there is a Ming dynasty Taoist temple, usually referred to as the Huanglong temple, probably a place of worship since pre-Taoist times. The legendary DaYu, king of Shu - ancient Sichuan the historical existence of which is confirmed by many artefacts - who according to legend created the first flood control and irrigation systems on the Chengdu plateau, is said to have found illumination in the cave above which the temple was later erected. Nearby are the ruins of a much older temple, and a smaller Buddhist temple lies some hundred meters lower down the valley. A pair of small stone pagodas is found in the Wucai Zhi (colourful pools) behind the Huanglong temple. These are said to date from the Ming dynasty (1368-1644 AD) and to mark the burial place of Cheng Shichang, grandson of the founder of the Tang Dynasty, Cheng Yaoji.

In front of the current temple an annual fair is held by all the local ethnic groups to worship Dayu, the patron saint of Huanglong. Many legends and stories are associated with the various natural physical features of the area, like the Body-rinsing cave, a small depression in one of the travertine waterfalls. Its water is said to have healing properties and the ability to cure infertility. The Fujiang valley below Huanglonggou was called Donglougou (east road valley) in earlier times because an important trade road from east to west passed through it (HAB *in litt.*, 2002).

LOCAL HUMAN POPULATION

The human population of the site numbers approximately 600 in the villages of Zhangjiagou some 3 km below the mouth of Huanglonggou and Huanglong village, which lies close to the centre of this part of the reserve. The main ethnic groups in these villages are Han and Hui. From spring to autumn most of the 200 staff members of the reserve live in the administrative centre in the main valley close to the mouth of Huanglonggou. The local Tibetan people graze their livestock during summer in high pastures within the reserve. The old walled town of Songpan lies between the main Huanglong section and the Muni valley section of the reserve. This ancient walled town is the seat of the county government but since 2001, the reserve is administratively responsible to the Aba Tibetan Qiang Autonomous Region. The countryside around Songpan is good agricultural land, with Tibetan villages and much new building evident (Thorsell & Lucas, *in litt.*, 1992). In contrast, the areas to the north and east of the Huanglong section, including the panda reserves, are places of lower human populations and more pristine landscape (HAB *in litt.*, 2002).

VISITORS AND VISITOR FACILITIES

The Aba Autonomous region gives high priority to tourism, most of which is domestic with only a few foreign visitors owing to its remoteness. The access road to Chengdu is being upgraded and this has reduced coach travel time from 12 to ten hours. In spite of the distance, tourist numbers visiting Huanglonggou have increased dramatically, from 50,000 in 1989, 70,000 in 1990 and 260,000 in 1998 to 823,254 in 2001. In recent years several hotels were constructed in Songpan and Chuanzhousi, 42 km west of Huanglong. In the Huanglong reserve two hotels within the administrative area in the Fujiang valley offer tourist accommodation. Most visitors come in coach tours which last up to a week and also include a visit to Jiuzhaigou Scenic Area (Thorsell & Lucas, *in litt.*, 1992). From November to March during the snowy winters the Huanglonggou is closed to mass tourism. In the valley a loop trail

with wooden planks and gravelled paths allows visitors to climb the 500 meters between the entrance and the Huanglong temple without harming the still pristine environment. In total 10 km of trails and plank ways have been built in the valley for tourists, along with facilities such as an information centre, wooden pavilions, dry toilets and litter bins (HAB *in litt.*, 2002). A cable car is planned (HAB, 2003)

SCIENTIFIC RESEARCH AND FACILITIES

New administrative buildings in the Fujiang valley include an analytic laboratory for monitoring the water quality in Huanglong valley. The travertine formations of the valley have been studied by the University of Newcastle, Australia, and some work has been undertaken on landslides, forest resources and ecology in the nearby panda reserves (MoF/WWF, 1989). Since 2001 with the support of the German Ministry of Technical Cooperation (GTZ/CIM) two German specialists, one of whom is an ecologist, work temporarily as senior advisors for the Huanglong administration (HAB *in litt.*, 2002). Weather and water quality are regularly monitored.

MANAGEMENT

The Sichuan Provincial Commission for Construction assumes overall responsibility for the supervision and guidance of the preservation, development and management of the Reserve. The management and administrative work is carried out by the Huanglong administration, which ranks as a county administration in the Aba Autonomous region. This administration has nine departments covering general administration, finance, scenery protection, fire prevention, construction and planning, staff education and training, scientific work, tourism and public relations. A squad of armed police has also been posted in the area to enhance security.

A general plan for the Huanglong Scenic Area has been drawn up, based on the principle of 'Preservation First', with restrictions on the nature and extent of construction, conversion of forest to agriculture and mining: all are forbidden without permission. MoC (1991) lists a number of other prohibitions, restrictions and proposals, including measures to control tourist and pilgrim numbers during peak periods and to improve staff training and take on better qualified personnel. A protection zone covers most of the area in both sections of the reserve, where stricter regulations are enforced. Currently an application has been made to the National Forest Department for the reserve to receive the rank of a National Nature Reserve.

In 1998 an IUCN mission team urged the Chinese authorities to implement the recommendation of the Committee, made in 1992, to link Huanglong and Jiuzhaigou World Heritage sites into a single Minshan Mountain World Heritage Area together with some of the other reserves set aside for the protection of the giant panda in Sichuan. The authorities expressed an interest in implementing this recommendation (UNESCO, 1998).

MANAGEMENT CONSTRAINTS

Problems include fire, pollution, and forest clearance for agriculture and for firewood. As tourist numbers increase, threats from pollution, possibly from erosion and the development of infrastructural facilities will increase. The management plan includes provisions to deal with these problems, and existing developments in Huanglonggou are well designed to control visitor use. For advanced tourism management, especially concerning environmentally friendly procedures, Huanglong follows the standards of Green Globe 21 (HAB *in litt.*, 2002). However, poaching for fur is common. In 1999 and 2000 12 snow leopard pelts were seen for sale at Songpan, others were seen at Munigou, and tiger and bear parts find a ready sale (WWF, 2001a, b).

STAFF

200 full-time staff (including 30 university educated and 7 scientists) and 160 part-time, plus ten road maintenance staff; this is still considered inadequate (HAB, 2003).

BUDGET

Annual funding averages RMB70 million (US\$8.5 million) from entrance fees, including construction, maintenance and salaries (HAB, 2003).

LOCAL ADDRESSES

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The Director, Huanglong Administrative Bureau, Huanglonggou-Se'erzuozhai, Songpan County, Sichuan 623300, China.

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