

UNION INTERNATIONALE POUR LA CONSERVATION DE LA NATURE ET DE SES RESSOURCES  
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES

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En répondant, veuillez rappeler:

IUCN REVIEW

World Heritage Nomination

1. NAME: Sagarmatha National Park (Mt. Everest) (120).
2. LOCATION: North-east Nepal, 28°N 84° 30' W
3. NOMINATED BY: Biswa Nath Upreti  
Chief, National Parks and Wildlife Conservation  
Office
4. DOCUMENTATION:
  - i) Comprehensive nomination form, based on technical assistance mission, received May 15, 1979.
  - ii) Conservation in Khumbu, the proposed Mt. Everest National Park, (1973).
  - iii) Draft management plan by Gerry E. Rushton, February 1979, (IUCN documentation).
5. BACKGROUND and SUMMARY DESCRIPTION:

The 124,400 hectare Sagarmatha National Park was established on July 19, 1976, under the National Parks and Wildlife Conservation Act and is managed by the National Park and Wildlife Conservation Office, Forest Dept, Ministry of Forests, Kathmandu. The northern boundary of the Park is the international boundary with the Republic of China, other boundaries are also physical divisions encompassing a discrete physical entity in the Khumbu region. The range of elevation is 6,000 m. with the peak of Sagarmatha at 8,848 m. There are seven other peaks over 7,000 m.

Extensive research and descriptive work has been done on the natural resources of the region. There are six altitudinal vegetation classes from oak forests at the lowest elevations to lichens and mosses at the highest elevations. The Himalayan zone provides the barrier between the Palearctic realm and the Indomalayan realm.

There are approximately 2,500 Sherpa people living within the park. The people are primarily Tibetan Buddhists. Their activities are primarily agricultural or trade based. Their properties have been excluded from the park by legal definition. There is and will continue to be an influence on the people by the park and vice versa.

On May 29, 1953, Tenzing Norkay and Edmund Hillary were the first to stand on the highest peak in the world - "We climbed because nobody climbed it before -- it was a mountain to climb". (Hillary).

JUSTIFICATION:

The area has been evaluated against the operational guidelines of the World Heritage Convention as amended by the Second Session of the Parties.

Without question Sagarmatha National Park fills the requirements of C(10) iii) "a superlative natural phenomena of exceptional natural beauty".

"As the highest point of earth's surface, Mt. Everest (Sagarmatha) and its surroundings are of major significance not only to Nepal, but to the whole world".

John Blower (FAO) 1971

It also satisfies the criteria where natural and cultural elements are found in exceptional combinations.

"The area is of major religious and cultural significance in Nepal since it abounds in holy places like the Thyangboche and also is the homeland of the Sherpas whose way of life is unique, compared to other high altitude dwellers".

John Blower (1971)

INTEGRITY:

The area is under the professional management of the National Park and Wildlife Conservation staff. A draft management plan has been prepared with the technical assistance of the Government of New Zealand. The implementation of the master plan is underway.

Difficult problems remain to be resolved, excessive forest cutting, and tourist integration with social, economic and environmental circumstances of considerable complexity.

RECOMMENDATION:

That Sagarmatha National Park be placed on the World Heritage Convention.

International Union for Conservation of Nature and Natural Resources



## NEPAL-Sagarmatha National Park

NEPAL

NAME Sagarmatha National Park

IUCN MANAGEMENT CATEGORY II (National Park)  
X (World Heritage Site; Criteria: i, ii, iii  
plus  
cultural)

BIOGEOGRAPHICAL PROVINCE 2.38.12 (Himalayan Highlands)

GEOGRAPHICAL LOCATION Lies in the Solu-Khumbu District of the north-eastern region of Nepal. The park encompasses the upper catchment of the Dudh Kosi River system, which is fan-shaped and forms a distinct geographical unit enclosed on all sides by high mountain ranges. The northern boundary is defined by the main divide of the Great Himalayan Range, which follows the international border with the Tibetan Autonomous region of China. In the south, the boundary extends almost as far as Monjo on the Dudh Kosi. The 63 settlements within the park are technically excluded as enclaves. 27°45'-28°07'N, 86°28'-87°07'E

DATE AND HISTORY OF ESTABLISHMENT Created a national park on 19 July 1976 and inscribed on the World Heritage List in 1979.

AREA 114,800ha. The park lies adjacent to the proposed Makalu-Barun National Park and Conservation Area (233,000ha).

LAND TENURE State. Many of the resident Sherpas have legal title to houses, agricultural land and summer grazing lands (Jefferies, 1984).

ALTITUDE Ranges in altitude from 2,845m at Jorsalle to 8,848m, at the top of Mt Everest (Sagarmatha), the world's highest mountain.

PHYSICAL FEATURES This is a dramatic area of high, geologically young mountains and glaciers. The deeply-incised valleys cut through sedimentary rocks and underlying granites to drain southwards into the Dudh Kosi and its tributaries, which form part of the Ganges River system. The upper catchments of these rivers are fed by glaciers at the head of four main valleys, Chhukhung, Khumbu, Gokyo and Nangpa La. Lakes occur in the upper reaches, notably in the Gokyo Valley, where a number are impounded by the lateral moraine of the Ngozumpa Glacier (at 20km the longest glacier in the park). There are seven peaks over 7,000m. The mountains have a granite core flanked by metamorphosed sediments and owe their dominating height to two consecutive phases of upthrust. The main uplift occurred during human history, some 500,000-800,000 years ago. Evidence indicates that the uplift is still continuing at a slower rate, but natural erosion processes counteract this to an unknown degree (Garratt, 1981).

CLIMATE On average, 80% of the annual precipitation occurs in the monsoon season from June to September and the remainder of the year is fairly dry.

Infobase produced by WCMC, January 1992

Precipitation is low as the park is in the rain shadow of the Karyalung-Kangtega range to the south. Annual precipitation is 984mm in Namche Bazar, 733mm in Khumjung and 1043mm in Tengboche (Garratt, 1981). The climate of Namche Bazar can be classified as humid and tropical, based on the seasonal occurrence of rains, range in annual precipitation, number of rainy days per year and the length of the dry season (Joshi, 1982). The mean temperature of the coldest month, January, is  $-0.4^{\circ}\text{C}$ . Some 56% of years experience a tropical regime (summer rain), 35% are bixeric (two dry periods) and 1% are trixeric (three dry periods) or irregular.

**VEGETATION** Most of the park (69%) comprises barren land above 5,000m, 28% is grazing land and nearly 3% is forested (Sherpa, 1985). Six of the 11 vegetation zones described by Dobremez (1975) for the Nepal Himalaya are represented in the park: lower subalpine, above 3,000m, with forests of blue pine *Pinus wallichiana*, fir *Abies spectabilis* and fir-juniper *Juniperus recurva*; upper subalpine, above 3,600m, with birch-rhododendron forest (*Betula utilis*, *Rhododendron campanulatum* and *R. campylocarpum*); lower alpine, above the timber-line at 3,800-4,000m, with scrub (*Juniperus* spp., *Rhododendron anthopogon* and *R. lepidotum*); upper alpine, above 4,500m, with grassland and dwarf shrubs; and sub-nival zone with cushion plants from 5,500m to 6,000m. Oak *Quercus semecarpifolia* used to be the dominant species in the upper montane zone but former stands of this species and *Abies spectabilis* have been colonised by *Pinus* sp. *Rhododendron arboreum*, *R. triflorum*, and yew *Taxus baccata wallichiana* are associated with pine at lower altitudes and shrubs include *Pieris formosa*, *Cotoneaster microphyllus* and *R. lepidotum*. Vine *Parthenocissus himalayana* and clematis *Clematis montana* are also common and other low altitude trees include maple *Acer campbellii* and whitebeam *Sorbus cuspidata*. *Abies spectabilis* occupies medium to good sites above 3,000m and forms stands with *Rhododendron campanulatum* or *Betula utilis*. Towards the tree line, *R. campanulatum* is generally dominant. *Juniperus indica* occurs above 4,000m, where conditions are drier, along with dwarf rhododendrons and cotoneasters, shrubby cinquefoil *Potentilla fruticosa* var. *rigida*, willow *Salix sikkimensis* and *Cassiope fastigiata*. In association with the shrub complex are a variety of herbs such as *Gentiana prolata*, *G. stellata*, edelweiss *Leontopodium stracheyi*, *Codonopsis thalictrifolia*, *Thalictrum chelidonii*, lilies *Lilium nepalense* and *Notholirion macrophyllum*, *Fritillaria cirrhosa* and primroses, *Primula denticulata*, *P. atrodentata*, *P. wollastonii* and *P. sikkimensis*. The shrub layer diminishes as conditions become cooler and above 5,000m *Rhododendron nivale* is the sole representative of its genus. Other dwarf shrubs in the dry valley uplands include buckthorn *Hippophae tibetana*, horsetail *Ephedra gerardiana*, juniper *J. indica* and cinquefoil *Potentilla fruticosa*. Associated herbs are gentians, *Gentiana ornata* and *G. alida* var. *przewalskii*, edelweiss *Leontopodium jacotianum* and Himalayan blue poppy *Meconopsis horridula*. Above this and up to the permanent snow line at about 5,750m, plant life is restricted to lichens, mosses, dwarf grasses and sedges and alpine, such as *Arenaria polytrichoides* and *Tanacetum gossypinum* (Garratt, 1981).

**FAUNA** In common with the rest of the Nepal Himalaya, the park has a comparatively low number (28) of mammalian species, apparently due to the geologically recent origin of the Himalaya and other evolutionary factors.

The low density of mammal populations is almost certainly the result of human activities. Larger mammals include common langur Presbytis entellus, jackal Canis aureus, a small number of wolf Canis lupus (V), Himalayan black bear Selenarctos thibetanus (V), red panda Ailurus fulgens (K), yellow-throated marten Martes flavigula, Himalayan weasel Mustela sibirica, masked palm civet Paguma larvata, snow leopard Panthera uncia (E), Himalayan musk deer Moschus chrysogaster, Indian muntjac Muntiacus muntjak, serow Capricornis sumatraensis, Himalayan tahr Hemitragus jemlahicus and goral Nemorhaedus goral (Garratt, 1981; Jefferies and Clarbrough, 1986). Sambar Cervus unicolor has also been recorded. The tahr population is estimated to total at least 300 individuals. Both goral and serow appear to be uncommon (Lovari, 1990). Results from recent surveys suggest that populations of both tahr and musk deer have increased substantially since the park was gazetted and could lead to a recovery in the snow leopard population, probable signs of which were seen in the Gokyo Valley by Jackson (1987). Smaller mammals include short-tailed mole Talpa micrura, Tibetan water shrew Nectogale elegans, Himalayan water shrew Chimarrogale himalayica, bobak marmot Marmota bobak, Royle's pika Ochotona roylei, woolly hare Lepus oiostolus, rat Rattus sp. and house mouse Mus musculus (Garratt, 1981).

Inskipp (1989) lists 152 species of birds, 36 of which are breeding species for which Nepal may hold internationally significant populations. The park is important for a number of species breeding at high altitudes, such as blood pheasant Ithaginis cruentus, robin accentor Prunella rubeculoides, white-throated redstart Phoenicurus schisticeps, grandala Grandala coelicolor and several rosefinches. The park's small lakes, especially those at Gokyo, are used as staging points for migrants and at least 19 water bird species have been recorded (Inskipp, 1989; Scott, 1989).

A total of six amphibians and seven reptiles occur or probably occur in the park. Documentation of the invertebrate fauna is limited to common species of butterfly. Of the 30 species recorded, orange and silver mountain hopper Carterocephalus avanti has not been recorded elsewhere in Nepal, and the common red apollo Parnassius epaphus is rare (Jefferies and Clarbrough, 1986).

**CULTURAL HERITAGE** The Sherpas are of great cultural interest, having originated from Salmo Gang in the eastern Tibetan province of Kham, some 2,000km from their present homeland. They probably left their original home in the late 1400s or early 1500s, to escape political and military pressures, and later crossed the Nangpa La into Nepal in the early 1530s. They separated into two groups, some settling in Khumbu and others proceeding to Solu. The two clans (Minyagpa and Thimmi) remaining in Khumbu are divided into 12 subclans. The introduction of the potato to Khumbu in about 1850 revolutionised the economic life of the Sherpas. Until then, the high-altitude Sherpas had lived mainly on barley. Both the population and the growth of the monasteries took a dramatic upturn soon after that time. Another significant influence on Sherpa life has been mountaineering expeditions, which have been a feature of life in the Khumbu since the area was first opened to westerners in 1950. The Sherpas belong to the Nyingmapa sect of Tibetan Buddhism, which was founded by the revered

Guru Rimpoche who was legendarily born of a lotus in the middle of a lake. It is to him that the ever-present prayers and mani wall inscriptions are addressed: "Om mani padme hum" - "hail to the jewel of the lotus" (Garratt, 1981). There are several monasteries in the park, the most important being Tengpoche. However, on 19 January 1989 the main building and courtyard of Tengpoche was burned to the ground (Sassoon, 1989). A Reconstruction Committee has been formed and it is planned to commence reconstruction work in 1990 (B.N. Upreti, pers. comm., 1989). Further details about the Sherpa culture are given by Fürer-Haimendorf (1975, 1985), and Jefferies and Clarbrough (1986).

LOCAL HUMAN POPULATION There were approximately 3,000 Sherpas residing in the park in 1987, mainly in the south and distributed among 63 settlements. However, there has not been an accurate census since the park was established. The traditional economy is subsistence agro-pastoralism, supplemented by barter trading with Tibet and the middle hills of Nepal. The main activities include potato and buckwheat cultivation, and raising yaks for wool, meat, manure and transport. Cattle and yaks are also hybridised locally for trading purposes. Cattle numbers remained constant at about 2,900 between 1957 and 1978 but the numbers of sheep and goats increased from very few to 641 (Bjorness, 1979). Goats have since been removed from the park. More recently tourism has become an integral part of the local economy, including activities such as provision of guides, porters, lodges and trekking services (Garratt, 1981; Jeffries, 1982, 1984; Sherpa, 1985, 1987).

VISITORS AND VISITOR FACILITIES The number of visitors has increased from about 1,400 in 1972/1973 (Jefferies, 1984) to 7,492 in 1989. There is an airstrip at Lukla, south of the park boundary, which has a regular air service from Kathmandu, and is the most popular means of access to the park. Everest View Hotel and associated Shyangboche airstrip above Namche Bazar are the most sophisticated tourist facilities developed in the park but they do not account for a high proportion of visitor use. A national park lodge has been built at Tengpoche providing sleeping accommodation, with detached cooking and toilet facilities, as well as basic food and drinks. Other accommodation is available in 'Sherpa hotels' and some villagers take in guests. An imposing visitor centre, providing information and interpretative services, has been constructed on the hill adjoining Namche Bazar. Further facilities, by way of park accommodation and campsites, are planned. A handbook has been produced for the park (Jefferies and Clarbrough, 1986).

SCIENTIFIC RESEARCH AND FACILITIES Considerable research in various fields has been undertaken over many years. The Sherpa culture and changes that have taken place over the last decade or more have been extensively documented (Fürer-Haimendorf, 1964, 1975, 1985). Under the HMG/Government of New Zealand Cooperation Project, the impact of pastoralism and tourism on the natural resource base has been assessed (Bjorness, 1979, 1980a, 1980b, 1983). Research into alternative sources of energy has focused on hydropower, solar heating and developing more efficient methods of cooking (Coburn, 1982). A WWF-funded study of the ecology of Himalayan musk deer has been carried out in the park (Kattel, 1987). A proposal has been made

for forest research and management, focused primarily on protection of representative samples of ecosystems, reforestation and introduction of alternative energy sources to minimise human impact on natural forests (Sherpa, 1987).

**CONSERVATION VALUE** Sagarmatha ('Mother of the Universe'), as the highest point of the Earth's surface, and its surroundings are of international importance, representing a major stage of the Earth's evolutionary history and one of the most geologically interesting regions in the world. Its scenic and wilderness values are outstanding. As an ecological unit, the Dudh Kosi catchment is of biological and socio-economic importance, as well as being of major cultural and religious significance (Blower, 1972).

**CONSERVATION MANAGEMENT** Creation of a national park in the Sagarmatha area was proposed by the FAO Wildlife Management Adviser in March 1971 and approved in principle by His Majesty's Government in January 1972. Funds for its development were made available by the Government of New Zealand over a five year period, commencing in May 1975 (Lucas, 1977; FAO, 1980; Jefferies, 1984). Normally accepted criteria for management of national parks have been substantially modified in the case of Sagarmatha in order to reconcile the requirements of the resident Sherpa population with those of conservation objectives and to accommodate special demands made on the area by tourism and mountaineering. Objectives outlined in the management plan (Garratt, 1981) seek to ensure the protection of wildlife, water and soil resources, not only because of the park's national and international significance but also to safeguard the interests of the resident Sherpa population, as well as the many other people in Nepal and India whose welfare is affected by the condition of the Dudh Kosi catchment. At the same time, every effort is required to enable the Sherpas to determine their own lifestyle and progress, while insulating their cultural and religious heritage from the adverse impacts of tourism and mountaineering. Park regulations do not apply to the 63 settlements within the park.

Two strict nature protection areas have been identified in the south of the park, to be managed as undisturbed areas free from human interference (Hinrichsen *et al.*, 1983). An integrated strategy for achieving self-sufficiency in resources and nature conservation has been developed (Sherpa, 1985). Various recommendations are being implemented. A Park Advisory Committee, consisting of local leaders, village elders, head lamas and park authority representatives, was re-established in 1987 and has been instrumental in achieving more cooperation and support for the park (Sherpa, 1985). Shinga nawa - a system of forest guardians traditionally responsible for controlling use of forest resources - has been reinstated. Duties of the nawas include prevention of greenwood cutting, protection of plantations and reporting of wildlife poaching. Nawas are authorised to prosecute and collect limited penalties from violators of the forest protection rules, and to use the fines for community purposes (Sherpa, 1987). Indigenous plant nurseries have been established at Namche Bazar and Tharinga: seedlings are used to re-establish forest on hill slopes near Namche Bazar, Phortse and Khumjung (Garratt, 1981).

The Himalayan Trust, established by Sir Edmund Hillary, has sponsored several school, hospital and bridge construction projects. In 1982 the Trust purchased and removed the 400 goats in the park in an effort to protect the mountain vegetation (Jeffries and Clarbrough, 1986). Goats were banned from the park the following year (Sherpa, 1985). Several steps have been taken to help meet the energy needs of increasing numbers of tourists, including regulations regarding firewood collection, reafforestation and increased use of kerosene. The Namche Hydroelectric scheme provides 27kW of electricity to local houses and lodges, and has proven to be cost effective and useful in reducing firewood scarcity (Coburn, 1985).

MANAGEMENT CONSTRAINTS The loss of forest cover in the region began some 500 years ago, with the arrival of the first settlers. Destruction rapidly accelerated following the influx of Tibetan refugees during 1959-1961 and the large-scale growth of trekking and mountaineering from 1963 onwards. Increased affluence from tourism has also resulted in greater ecological degradation. In line with the custom of many ethnic Nepalese groups, acquired wealth in a Sherpa family is generally invested in additional livestock which consequently leads to overgrazing of high mountain pastures around villages. Heavy pressure from tourism and mountaineering expeditions has placed large demands on natural resources and introduced problems with waste disposal. Demand for construction timber and firewood, another result of visitor pressure, has impoverished the forests to an alarming degree; consequent soil erosion has made reafforestation difficult, pastures at lower altitudes are being overgrazed and water is becoming unfit for drinking (Garratt, 1981; Jefferies, 1981, 1982; Luhan, 1989). An assessment of landscape change using repeat photography (Byers, 1987), however, indicates that most forests in the Namche-Kunde-Khumjung region appear to be relatively unchanged, although juniper woodlands have been thinned in the period 1962-1984. Diminishing habitat is adversely affecting some species of wildlife. The traditional culture of the Sherpas is being changed due to foreign influences, but perhaps with better social integrity than nearly any other tribal group known to the modern world (Garratt, 1981). Limited poaching of musk deer persists (Mingma Norbu Sherpa, pers. comm., 1987). Popular accounts of some of the environmental issues in the park are given by Coburn (1983), Bishop (1988), Brook (1988) and Kohl (1988).

STAFF One chief warden, two assistant wardens, one veterinary surgeon, seven rangers, seven senior game scouts, 25 game scouts and 14 office staff (1989). One company of the Royal Nepal Army is deployed for protection purposes.

BUDGET In 1989/1990 expenditure was NRs 2,003,800 (US\$ 66,793) and income NRs 2,262,050 (US\$ 75,402). The budget for 1990/1991 is NRs 1,982,000 (US\$ 66,067).

LOCAL ADDRESSES Warden, Sagarmatha National Park Headquarters, Namche Bazar, Solu-Khumbu District, Sagarmatha Zone

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MAPS

Infobase produced by WCMC, January 1992

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DATE March 1983, reviewed October 1985, updated April 1991

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