World Heritage Sites

Protected Areas and World Heritage

SAGARMATHA NATIONAL PARK
NEPAL

This majestically scenic mountain park of snow-covered peaks, gorges and glaciers dominated by the highest mountain on Earth is geologically interesting and its wilderness values are outstanding. The Dudh Kosi valley is home to the unique culture of the Sherpas and is an ecological unit of biological, socio-economic and religious importance. Rare animals such as snow leopard and red panda live in the Park. However, degradation from the increasing pressures of tourism and mountaineering is of growing concern.

COUNTRY
Nepal

NAME
Sagarmatha National Park

STATEMENT OF OUTSTANDING UNIVERSAL VALUE [pending]

NATURAL WORLD HERITAGE SITE
1979: Inscribed on the World Heritage List under Natural Criterion vii.

INTERNATIONAL DESIGNATION
2007: Gokyo and Associated Lakes designated a Wetland of International Importance under the Ramsar Convention (7,770 ha).

IUCN MANAGEMENT CATEGORY
II National Park

BIOGEOGRAPHICAL PROVINCE
Himalayan Highlands (2.38.12)

GEOGRAPHICAL LOCATION
In the Himalayan Mountains on the border with the Tibetan Autonomous Region of China in the upper catchment of the Dudh Kosi river 140 km east of Kathmandu, centred on 27°57'55"N by 86°54'47"E.

DATES AND HISTORY OF ESTABLISHMENT
1976: Created a National Park;

2002: Buffer zone added (27,500 ha);

2007: Gokyo lakes designated a Ramsar site.

LAND TENURE
State. Many of the resident Sherpas have legal title to houses, agricultural land and summer grazing lands (Jefferies, 1984). The Park is administered by the Sagarmarha National Park Authority of the Department of National Parks & Wildlife Conservation (DNPWC).

AREA
114,800 ha. The Park adjoins Makalu-Barun National Park and Conservation Area (233,000ha) in Nepal and Qomolangma Biosphere Reserve in the Tibetan Autonomous Region of China (1,823,591ha).

ALTITUDE
Ranges from 2,845m at Mondzo to 8,848m (Mt Everest / Sagarmatha).

PHYSICAL FEATURES
The Park's core area covers the upper headwaters of the Bhote Kosi, Dudh Kosi and Imja Khola rivers which fan out under the crest of the Himalaya Mountains on the Tibetan border and meet near the area's main settlement, Namche Bazar. The buffer area reaches down the Dodh Kosi valley to Lukla 18 km south of Namche. The Park is enclosed by high mountain ranges and lies over extremely rugged terrain, deeply incised valleys and glaciers culminating in Sagarmatha / Mt.Everest, the world's highest mountain. The catchments are ringed by 25 or more peaks over 6,000m, and seven - Baruntse, Lhotse, Nuptse, Pumo Ri, Guachung Kang, Cho-Oyu, and Nangpai Gosum - over 7,000m high. The rivers are fed by the long glaciers at the head of each valley: Nangpa Glacier on the Bhote Kosi, Ngozumpa Glacier on the Dodh Kosi, Khumbu Glacier on the Lobuje Khola and the Imja Glacier, one of eight which feed the Imja Khola under Sagarmatha. The Ngozumpa Glacier, 20 km long, is bordered on the west by the four Gokyo lakes impounded behind its lateral moraine. All the glaciers show signs of retreat and several glacial lakes have formed in recent decades; one, Imja Dzo which started to form in the 1970s, is now 1,200 ha in area and 45m deep. The upper valleys are U-shaped but below about 3,000m the rivers cut steep ravines through the sedimentary rocks and underlying granites. Near Namche Bazar they join the Dodh Kosi which drains eventually into the Ganges. Except for some alluvial and colluvial deposits at lower levels, the soils are skeletal.

This is an area of geologically very young mountains. The tectonic convergence of India and Asia since their collision about 50 million years ago resulted in horizontal shortening, crustal thickening and regional metamorphism in the Himalaya and beneath southern Tibet. Under the massive heat and pressure caused by the collision, the rocks changed repeatedly. The lowest level so produced is schist. Above the schist is a large outcropping of light-coloured granite, and above this a belt of shale, limestone, marble and sandstone (the Yellow Band) formed when ocean floor sediments were compressed by the collision. The mountains owe their height to two phases of uplift, the main thrust of which occurred only some 500,000-800,000 years ago. Two faults cut the Everest massif: the earlier Lhotse detachment, which has been locally folded, and the upper Qomolangma detachment which is exposed in the summit pyramid of Everest and dips north. The granite of the Everest-Lhotse-Nuptse massif consists of a massive ballooning sill of light-colored garnet/muscovite/tourmaline leucogranite up to 3,000m thick, which reaches 7,800m on the Kangshung face of Everest and on the south face of Nuptse, and is the main reason for the great height of both mountains. The summit of Everest itself is a gray sandy limestone which was deep seabed of the Tethys Ocean some 325 million years ago (Searle *et al.*, 2003). India continues to push north and to slide under Asia so the uplift slowly continues, counteracted by erosion. As a result, the Himalayas are still growing at a rate of a 4mm a year and Mount Everest itself is moving about 3-6mm millimetres northeastward every year (Swiss Foundation for Alpine Research, 1999). Because of this movement, tremendous stresses build in the Earth's crust, which are periodically relieved by earthquakes throughout the region.

CLIMATE
The climate of Namche Bazar is semi arid subtropical, with seasonal monsoon rains during some 56% of past years, and a temperate dry season which has occurred twice yearly for 35% of past years (Joshi, 1982). On average, 80% of the annual precipitation falls during the monsoon between June and September; the remainder of the year is fairly dry, the clearest weeks being in early May and late September. Fires are a hazard in spring. Precipitation is low as the Park is in the rain shadow of the Karyalung-Kangtega ranges to the south. Garratt in 1981 quoted figures for three nearby locations: 733mm in Khumjung, 984mm in Namche Bazar, and 1043mm in Thyangboche; but the Chinese side of the mountains in the rain shadow of the crest, is almost a desert. Winters are cold: the mean temperature of the coldest month, January, is minus 0.4°C and there are occasional heavy snowfalls.

However, since the mid-1970s, the average air temperature has risen by 1°C in the Himalayas - almost twice as fast as the global average warming of 0.6°C reported by the IPCC (UNESCO/WHC, 2007). Climate warming is reducing the glaciers, especially those not insulated by debris and 12 new glacier-foot lakes have formed in the region. There is high potential for lake outburst floods triggered by falling ice blocks: three such floods have already occurred since 1977 (Byers, 2007). The loss of snow will diminish the scenery and yield drastically less water to populations in India, though during the monsoon, together with rapid glacial melt, catastrophic floods will also occur downstream. And higher temperatures will alter the growth of vegetation and may induce invasion by alien pests and diseases (UNESCO/WHC, 2007).

VEGETATION

69 percent of the Park is barren land above 5,000m, 28% is grazing land and nearly 3% is forested (Sherpa, 1985). Six vegetation zones as described for the Nepal Himalaya by Dobremez (1975) exist in the Park: lower subalpine, above 3,000m, with forests of blue pine *Pinus wallichiana*, east Himalayan fir *Abies spectabilis* and drooping juniper *Juniperus recurva;* upper subalpine above 3,600m, with birch-rhododendron forest of Himalayan birch *Betula utilis*, *Rhododendron campanulatum* and *R. campylocarpum*; lower alpine, above the timber-line at 3,800-4,000m, with scrub of *Juniperus* species, *Rhododendron anthopogon* and *R. lepidotum;* upper alpine, above 4,500m, with grassland and dwarf shrubs; and sub-nival zone with cushion plants from about 5,750-6,000m. Above this conditions are arctic. In the upper montane zone the oak *Quercus semecarpifolia* used to be the dominant species but former stands of this species and *Abies spectabilis* have been colonised by pines. *Rhododendron arboreum*, *R. triflorum*, and Himalayan yew *Taxus wallichiana* are associated with pine at lower altitudes with the shrubs *Pieris formosa*, *Cotoneaster microphyllus* and *R. lepidotum*. The vines Virginia creeper *Parthenocissus himalayana* and *Clematis montana* are also common. Other low altitude trees include the 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. Black juniper *Juniperus indica* occurs above 4,000m, where conditions are drier, along with dwarf rhododendrons and cotoneasters, shrubby cinquefoil *Potentilla fruticosa* var.*rigida*, Sikkim willow *Salix sikkimensis* and *Cassiope fastigiata*. In association with these shrubs is a variety of herbs: *Gentiana prolata*, *G. stellata*, edelweiss *Leontopodium stracheyi*, *Codonopsis thalictrifolia*, *Thalictrum chelidonii*, the 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 cool, and above 5,000m *R. nivale* is the sole rhododendron. Other dwarf shrubs in the dry valley uplands include buckthorn *Hippophae tibetana*, horsetail *Ephedra gerardiana*, black juniper and cinquefoil *Potentilla fruticosa*. Associated herbs are gentians, *Gentiana ornata* and *G. algida* 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, sedges and alpines such as *Arenaria polytrichoides* and *Tanacetum gossypinum* (Garratt, 1981).

FAUNA

As in other parts of the Nepal Himalaya, the Park has a comparatively low number of mammals, probably due in part to the geologically recent origin of the range. There are 28 species. Their low density is almost certainly the result of human activity. Larger mammals include northern plains grey langur *Semnopithecus entellus*, jackal *Canis aureus*, grey wolf *Canis lupus* (but not seen since 1980), Himalayan black bear *Ursus thibetanus* (VU), red panda *Ailurus fulgens* (VU), yellow-throated marten *Martes flavigula*, Siberian weasel *Mustela sibirica*, snow leopard *Panthera uncia* (EN), masked palm civet *Paguma larvata*, sambar *Rusa unicolor* (VU), Himalayan musk deer *Moschus leucogaste*r (EN), southern red muntjac *Muntiacus muntjak*, Sumatran serow *Capricornis sumatraensis* (VU), Himalayan tahr *Hemitragus jemlahicus* (300) and Himalayan goral *Naemorhedus goral* (Jefferies & Clarbrough, 1986; Lovari, 1990). Results from recent surveys suggest that populations of both tahr and musk deer have increased substantially since the Park was gazetted and has led to a recovery of the snow leopard population. 4 animals and later, 73 signs of leopards were seen in the Namche, Phortse and Gokyo valleys by a survey team in 2004 (Som *et al.*, 2007). Smaller mammals include web-footed water shrew *Nectogale elegans*, Himalayan water shrew *Chimarrogale himalayica*, short-tailed mole *Talpa micrura,*

woolly hare *Lepus oiostolus,* bobak marmot *Marmota bobak*, Royle's pika *Ochotona roylei*, rat *Rattus* sp. and house mouse *Mus musculus* (Garratt, 1981).

Inskipp (1989) lists 152 species of birds, 36 of which are breeding species of which Nepal may hold internationally significant populations. The Park is important for a number of high altitude breeding species, 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 staging points for migrants and at least 19 water bird species have been recorded including ferruginous duck *Aythya nyroca*, and demoiselle crane *Grus virgo*, also wood snipe *Gallinago nemoricola* (VU) (Inskipp, 1989; Scott, 1989). Bar-headed geese *Anser indicus* fly over the mountain, and the yellow-billed chough *Pyrrhocorax graculus* has been seen as high as the South Col (7,920m) (Hunt, 1953). A total of six amphibians and seven reptiles occur or probably occur in the park. Documentation of the invertebrate fauna is limited, though *Euophrys omnisuperstes*, a minute black jumping spider has been found in crevices at 6,700 metres (Wanless, 1975), and 30 butterfly species have been seen, among them the orange and silver mountain hopper *Carterocephalus avanti*, which is not recorded elsewhere in Nepal, and the rare red apollo *Parnassius epaphus* (Jefferies & Clarbrough, 1986).

CONSERVATION VALUE

This dramatically scenic mountain park of snow-covered peaks, gorges and glaciers dominated by the highest mountain on Earth is geologically interesting and its wilderness values are outstanding. The Dudh Kosi catchment is home of the Sherpa, and an ecological unit of biological, socio-economic, cultural and religious importance. Some rare animals such as the snow leopard occur in the Park. It lies within a Conservation International designated Conservation Hotspot, a WWF Global 200 Eco-region, and contains a Ramsar wetland site.

CULTURAL HERITAGE

The Sherpas are an unusual culture. They originated in Salmo Gang in the eastern Tibetan province of Kham, some 2,000 km from their present homeland and probably left it in the late 1400s or early 1500s to escape political and military pressures. They crossed the Nangpa La into Nepal in the early 1530s, separating into two groups, some settling in Khumbu and others further south in Solu. The two northern clans Minyagpa and Thimmi are divided into 12 subclans. The high-altitude Sherpas lived mainly on barley until about 1850 when the potato was introduced to Khumbu, revolutionising their economy. Both the population and the monasteries took a dramatic upturn soon after. Another influence on Sherpa life has been the mountaineering expeditions which have been a constant feature of life in the Khumbu since the area 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 Thyangboche rebuilt after burning down in 1989. With the onslaught of western influences, some younger people are beginning to lose hold on their traditions. However, the Sherpas' social integrity appears greater than that of most other tribal groups and may survive as in their traditional *shingo ngawa* system of forest guardianship of the use of forest resources (Garratt, 1981). More information on the culture is given by Fürer-Haimendorf (1975, 1985; Jefferies & Clarbrough, 1986; Brower & Brower, 1991; Byers, 2007).

LOCAL HUMAN POPULATION

In 2004 there were an estimated 3,500 Sherpas in the Park with over 3,000 head of livestock (Som *et al*., 2007) who live in 63 settlements, mainly in the south (Milne, 1997). The traditional economy is subsistence agro-pastoralism, supplemented by barter trading with people of the middle hills of Nepal and of Tibet up the Bhote Kosi valley and over the Nangpa La pass. The main activities are potato and buckwheat farming 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 from 1957 to 1978 but the numbers of sheep and goats increased from very few to 641 (Bjoness, 1979); the goats have since been removed from the Park. More recently the local economy has become dependent upon

tourism, and activities such as the provision of guides, porters, lodges and trekking services provide employment (Garratt, 1981; Jeffries, 1982, 1984; Sherpa, 1985, 1987; Milne, 1997).

VISITORS AND VISITOR FACILITIES

Since the first scaling of the mountain in 1953, the number of visitors has increased greatly: from about 1,400 in 1972-3, 7,492 in 1989 and 25,925 in 2000-1, to 14,000 in 2002 after the civil conflict (DNPWC, 2003) and to more than 20,000 in 2004 (Som *et al.*, 2007). Entry fees range from US$1,500-10,000. The summer monsoon makes travel difficult and the winters are cold. The clearest weeks to visit are in late September and early May – important for mountaineers who rely on calm breaks in the uncertain mountain weather. The traffic in climbing groups is heavy, but many tourists also come to trek. The trail up the Khumbu valley to Kala Pattar peak is popular for its views of Everest. The Everest View Hotel and associated Shyangboche airstrip above Namche Bazar are sophisticated but do not provide for many visitors. A lodge has been built at Thyangboche providing beds with detached kitchens and toilets, as well as basic food and drinks. There were in 2002 some 380 lodges and Sherpa village inns, especially in Namche, and most villagers take in guests (DNPWC, 2003; Nepal, 2005). By 2008 the Kongde View Resort had also become operational. At Namche there are a visitor centre with information and interpretative services and a Sherpa cultural museum. A handbook has been produced for the Park (Jefferies & Clarbrough, 1986). There is an airstrip at Lukla, south of the Park, which has a regular air service from Kathmandu and provides the most popular means of access.

SCIENTIFIC RESEARCH AND FACILITIES

Research in various fields has been undertaken for many years and the Park may prove an excellent site to study the changing climate and ways to control the hazard of outburst floods as was done in 2002 for the Tsho Rolpa lake in the western range (UNESCO/WHC, 2007). The Sherpa culture and the changes that have occurred during the late 20th century 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 was assessed (Bjonness, 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 was carried out in the Park (Kattel, 1987). A proposal made for forest research and management focused primarily on the protection of representative samples of ecosystems, reforestation and the introduction of alternative energy sources to minimise human impact on natural forests (Sherpa, 1987). And the Himalayas are one of the best places to study mountain building processes. In 1991, the Royal Nepal Academy of Sciences & Technology established a high altitude research station at Lobuje. Guard posts submit daily log records and the main monitoring indicators used are: habitat, endangered species, conservation education, buffer zone management, tourist arrivals and peak royalties. The UNESCO Kathmandu office, WWF, the Department of Hydrology and Meteorology and Tribhuvan University are trying to measure the impact that climate change is having on the diurnal variation in water flows, the snow type and melting rate of the glaciers (IUCN, 2008).

MANAGEMENT

The National Parks and Wildlife Conservation Act (1973), the Himalayan National Park Regulations (1979) and the Buffer Zone Management guidelines (1996, 1999) provide the legal basis for the protection of the flora and fauna. Creation of a National Park was proposed by the FAO Wildlife Management Adviser in 1971 and approved in principle by the Government in 1972. Funds for its development were given by the Government of New Zealand for a five year period, from 1975 to 1980 (Lucas, 1977; FAO, 1980; Jefferies, 1984). Two strict nature protection areas were established in the south of the Park, to be managed free from human interference (Hinrichsen *et al.*, 1983). Laws were enforced with the assistance of the army and a strategy for achieving self-sufficiency in resources and conserving nature was developed (Milne, 1997). In 2002, to promote the biodiversity of the region, the DNPWC proposed seven ecological corridors linking Makalu Barun National Park and Kanchenjunga Conservation Area in the east with Rolwaling in the west and Qomolangma Nature Preserve in the Tibetan Autonomous Region to the north (DNPWC, 2003).

The Park is managed by the Sagarmarha National Park Authority of the Department of National Parks & Wildlife Conservation. The adoption of western management methods initially failed to address the

actual environmental problems, and undermined existing indigenous resource management practices (Brower, 1991). The main objectives of the management plan are to ensure the protection of the Park's wildlife, water and soil resources because of their national and international importance; but also to safeguard the interests of the Sherpa residents and the many others downstream in Nepal and India affected by the condition of the Dudh Kosi catchment. The Sherpas are encouraged to follow their lifestyle, culture and religious heritage with protection from the disrupting impacts of development. Normally accepted criteria for management of national parks were modified to reconcile their requirements with conservation and the increasing demands of tourism and mountaineering. Park regulations therefore do not apply to the 63 settlements within the Park which are legally part of the buffer zone. By 2008 the latest draft management plan had been endorsed by the government.

After the period when it was rejected, the Sherpa's traditional system of responsibilty for controlling the use of forest resources was reinstated. A Park Advisory Committee of local leaders, village elders, head lamas and Park Authority representatives, re-established in 1987, improved cooperation and support for the Park (Sherpa, 1985). The importance of tourism in the local economy also encouraged Sherpas to help to protect the area (Milne, 1997). Men elected by village committees assumed the duties of co-ordinating the seasonal migration of livestock, preventing green wood cutting, protecting plantations and reporting poaching. They 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). In 2004 the UNDP, the SNV Netherlands Development Organisation and the U.K. DFID established the Tourism for Rural Poverty Alleviation Programme to address various aspects of the Park and the management of tourism and to provide benefits to local communities.

Indigenous plant nurseries have been established at Namche Bazar and Trashinga: 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 afforestation projects as well as several school, hospital and bridge projects (Ledgard, 2002). In 1982 the Trust bought and removed 400 goats to protect the mountain vegetation (Jeffries & Clarbrough, 1986) and goats were banned from the Park the following year (Sherpa, 1985). Help in meeting the energy needs of the increasing numbers of tourists include firewood collection regulations, reafforestation and increased use of kerosene. The Namche Hydroelectric scheme provides 27 kilowatts of electricity to local houses and lodges, has proved cost effective and is useful in reducing the need for scarce firewood (Coburn, 1985).

MANAGEMENT CONSTRAINTS

Degradation from the increasing pressure of tourism and mountaineering is a major concern. Although the loss of the region's forest cover began some 500 years ago with the arrival of the first settlers, destruction rapidly accelerated following the inflow of Tibetan refugees from 1959 to 1961 and the large-scale growth of trekking and mountaineering from 1963 onwards. Increased affluence and heavy pressure from tourism also resulted in increased ecological degradation from erosion, wastes and deforestation. Mountaineering expeditions have made large demands on natural resources and produced severe litter disposal problems on Everest itself: 759 tons of garbage left by mountaineers were removed from the mountain between 1994 and 1998 (DNPWC, 2003). It is customary for Sherpa families who acquire wealth to invest it in livestock which has led to overgrazing of high mountain pastures around villages. Another result of visitor pressure, the demand for firewood and construction timber for the growing number of inns, has thinned the forests and depleted the scrubland alarmingly (Stevens, 2003). The consequent soil erosion has made reafforestation difficult, and floods have been accelerated downstream in India. Lower altitude pastures are also being overgrazed and already in the 1970s water was becoming unfit to drink (Garratt, 1981; Jefferies, 1981, 1982; Luhan, 1989).

An assessment of landscape change using repeat photography however (Byers, 1987), indicated that most forests in the Namche-Kunde-Khumjung region appeared relatively unchanged, although juniper woodlands were thinned between 1962 and 1984. Sherpas and military personnel are encouraged to use kerosene for fuel rather than wood, though lack of funds for buying it has limited its use. (Milne, 1997). The erosion of habitats has adversely affected some of the wildlife, and limited poaching of musk deer persists (M.N. Sherpa, pers. comm., 1987). The traditional Sherpa culture is being diluted by foreign influences. Popular accounts of some of the environmental issues in the Park are given by Coburn (1983), Bishop (1988), Brook (1988) and Kohl (1988).

Researches indicate that alpine ecosystems (4,000–5,200m) within the Imja and Gokyo valleys have been noticeably degraded since the 1960s as a result of poor controls on tourism. Impacts include the overharvesting of fragile alpine shrubs and plants for expedition and tourist lodge fuel, overgrazing, accelerated erosion, and uncontrolled lodge building and high numbers of migrant porters. Similar changes in the alpine zone are occurring elsewhere around Everest as the result of adventure tourism. This zone is a comparatively neglected landscape that needs greater protection, conservation and restoration. This would involve integrated applied research into problems, the design of remedies, and the monitoring of impacts (Byers, 2005). A Sherpa-led project: 'Community-based Conservation and Restoration of the Everest Alpine Zone', established in May 2004, is an example of how the results of research are currently being used by local communities (Byers, 2005). By 2008 a new development, the Kongde View Resort, became operational and was challenging the DNPWC in the courts for the right to run an access trail through one of the core wildlife habitats of the Park (IUCN, 2008).

STAFF

The staff totals 38: a chief warden, two assistant wardens, one veterinary surgeon, three rangers, seven senior game scouts, 24 game scouts. The office staff and training need to be strengthened (DNPWC, 2003). One company of 250 Royal Nepal Army soldiers is on protective guard in 9 posts.

BUDGET

In 1989/1990 expenditure was US$ 66,793 and income US$ 75,402. Government funding for 1999-2000 was approximately US$ 228,051 (83% from the army, 17% from DNPWC). 40% of the revenue from fees of US$1,500-10,000 per person goes towards environmental conservation. The Buffer Zone Management Committee receives 30-50% of the revenue to implement 5-year conservation/ development programs in that zone. Major foreign grants have come from the governments of New Zealand, the UK, Holland, the Asian Development Bank, WWF, (approx. US$165,000 from 1981 to 1999), IUCN, Eco Himal (Austria) and the Himalayan Trust. Between 2002 and 2007 UNDP funded a US$1,240,000 poverty alleviation project and tourism plan. However, the funding was considered inadequate for effective monitoring and communication facilities (DNPWC, 2003). In 2008 it was noted that US$71,995 was provided from international sources for technical cooperation.

LOCAL ADDRESSES

Warden, Sagarmatha National Park Headquarters, Namche Bazar, Solu-Khumbu District, Nepal.

Department of National Parks & Wildlife Conservation, Babar Mahal, GPO Box 860, Kathmandu, Nepal.

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