World Heritage Sites

Protected Areas and World Heritage

LOS GLACIARES
ARGENTINA

Los Glaciares National Park is an area of exceptional natural beauty, with thirteen glaciers, towering jagged peaks and large glacial lakes into which the largest glaciers thunderously calve icebergs. It is part of the third largest glacial landmass in the world. The Park contains a good representative sample of Patagonian cold forests with small populations of mammals and birds of particular conservation concern.

COUNTRY
Argentina

NAME
Los Glaciares

NATURAL WORLD HERITAGE SITE
1981: Inscribed on the World Heritage List under Natural Criteria vii and viii.

STATEMENT OF OUTSTANDING UNIVERSAL VALUE [pending]

IUCN MANAGEMENT CATEGORY
II National Park

BIOGEOGRAPHICAL PROVINCE
Chilean Nothofagus / Southern Andean (8.11.2 / 8.37.12)

GEOGRAPHICAL LOCATION
In the southern Andes, southwest Santa Cruz Province, bordering Chile. El Calafate town is 40 km east. The Park lies at the head of Lakes Argentino and Viedma between 49°12'-50°52'S and 72°40'-73°37'W.

DATES AND HISTORY OF ESTABLISHMENT
1937: The area was first protected by Decree 105.433;

1945: The National Park was established by Decree 9.504 (539,302 ha);

1971: Boundaries and zonation of the Park were defined by Law 19.292;

1986: Over 100 ha were released to the new town of El Chaltèn, on Lake Viedma.

LAND TENURE
State. Managed by the Administración de Parques Nacionales.

AREA
445,900 ha. It is adjoined in Chile on the south by the Torres del Paine National Park (181,000 ha), a Biosphere Reserve, and on the west by the Bernardo O'Higgins National Park (3,525,901 ha).

ALTITUDE
200m to 3,375m (Cerro Fitz Roy)

PHYSICAL FEATURES
This Park is only 160 km from the Pacific Ocean, on the eastern edge of the 350 km-long South Patagonian Icefield in the southern Andean Cordillera, which has an area of 14,000 sq.km and is the Earth's largest ice field outside Antarctica. It occupies about a half of the Park which contains 13 of its 47 glaciers, two large lakes, L.Argentino (1,466 sq.km) and L.Viedma (1,100 sq.km), light blue with glacial waters, and the edge of arid steppe land to the east. The two largest glaciers are the 60 km-long Upsala (595 sq.km) and the Viedma (575 sq.km) which feed the two main lakes. The Upsala glacier is the largest in South America but is now retreating at the rate of 14m a year (Vidal,J. 2006). The most visited is the 30 km-long Perito Moreno Glacier (259 sq.km) which only began to retreat in 2006. Its dramatic calving front 5 km wide, 50-70m high and only 500m above sea level ends facing a forest. From 1947 to 1996 it oscillated between advance and retreat with a net gain of about 4 metres, and is now in equilibrium. It is 700m deep at its thickest, and dams an inflowing river which results in spectacular periodic ruptures of the glacier tongue into Lake Argentino, the most recent in 2003. Other large glaciers in the Park are the Spegazzini, Mayo, Agassiz, Onelli and Ameghino; there are also approximately 200 glaciers of less than 3 sq.km which are independent of the main ice field. Most Patagonian glaciers are receding relatively fast. It was reported that between 1975 and 2000 they contributed 10% of the global sea-level change from mountain glacier melt, at a rate which doubled in the last five years (Steitz *et al.,* 2003).

The two main lakes lie in the troughs of ancient glaciers; they cover a fifth of the Park's area and drain towards the Atlantic via the Santa Cruz River. The lakes and glaciers of the area provide essential fresh water reservoirs to a vast region. Descriptions of glaciers and glacial activity are given in Mermoz *et al*. (1993). The Park's highest peaks are on the Chilean border: Mt. Fitz Roy or Cerro Chaltèn (3,375m) and Cerro Torre (3,128m) which are sheer granite spikes carved by the ice. Soils above 1,100m are nutrient-poor, overlying a base rock of granite and schist. In less steep terrain, soil types typical of humid prairies are found. In forested sectors, the soils are characteristically brown and acidic. The pre-Andean zone which extends eastward to the middle of the Lake Argentino basin consists mainly of nutrient-poor clay soils (Mermoz *et al*., 1993).

CLIMATE
This is a cool temperate climate, with an annual mean temperature at El Calafate of 7.5°C. Average minimum and maximum temperatures are 3.3°C and 12.0°C, respectively. The Park lies in the rain shadow of the Andes which creates a precipitation gradient from 900mm in the Cordillera to 250mm at El Calafate to the east. The mean precipitation is 809mm and falls mainly in April and May. Snowfall during winter is common, and strong persistent westerly windstorms usually occur during late spring and summer when the climate does not encourage tourism. Global warming is accelerating the retreat of the Patagonian glaciers and this in time may threaten the region's water supplies.

VEGETATION
The Park covers two well delineated phytogeographical formations. Subantarctic or Magellanic forest dominated by the cold-hardy southern beech, *Nothofagus* spp. grows between 800 and 1,200m; semi-arid Patagonian steppe lies to the east under 400m. Between them is a transitional pre-Andean zone of woodland and scrub. Above them is the level of subantarctic xerophytic cushion grasses edging the high desert of snow-covered mountains and glaciers. The principal forest trees include lenga beech *Nothofagus pumilio* which is the most abundant species although slowly retreating due to grazing, ñire *N. antarctica*, Magellanes beech *N. betuloides* at its southernmost limit, and coihűe beech *N. dombeyi* which replaces *N. betuloides* from 48° south. Other typical species are the trees Guaytecas Islands

cypress *Pilgerodendron uviferum* (VU) and Winter's bark *Drimys winteri* and the shrubs Magellan barberry or calafate *Berberis buxifolia*, *Fuchsia magellanica*, *Ribes magellanicus*, prickly heath *Gaultheria mucronata* and *Philesia buxifolia*. The Patagonian steppe is covered with a xerophyllous vegetation of tussock grasslandsdominated by *Stipa* spp.,*Poa* spp and *Festuca argentina*, interspersed with bushes of *Mulinum spinosum* and calafate *Berberis buxifolia*.

FAUNA

Relatively little is yet known about vertebrates in the Park apart from birds. Among mammals, the rarest large animal is an isolated highland population of Patagonian huemul deer *Hippocamelus bisulcus* (EN). There are said to be only 350-600 of these animals left anywhere in the Andes. Other mammals include olive grass mouse *Abrothrix olivaceus*, pygmy armadillo *Zaedyus pichiy*, European hare *Lepus capensis,* mountain viscacha *Lagidium wolffsohni* (unconfirmed but probably present), Andean fox *Pseudalopex culpaeus,* South American grey fox *P. griseus,* puma *Puma concolor*, Patagonian wild cat *Leopardus guigna* (VU), Patagonian hog-nosed skunk *Conepatus humboldtii,* the tiny southern pudu deer *Pudu puda* (VU), and guanaco *Lama guanicoe*. There are few amphibians and reptiles recorded except for the frogs *Pleuroderna bufonina* and *Bufo variegates* and the lizards *Diplolaemus bibrioni* and *Liolaemus magellanicus-lineomaculatus* which may be present (losglaciares.com, n.d.). Fish species include *Galaxias maculatus, G. platei, Percichthys vincguerrae, Aploochiton zebra* and *A. taeniatus.* Two salmonids, rainbow trout *Onchorhynchus mikiss* and lake trout *Christivomer namaycush* have been introduced into Lakes Argentino and Viedma.

A total of 100 bird species has been recorded. Noteworthy species include lesser rhea *Rhea pennata*, the near-threatened Andean condor *Vultur gryphus*, buff-necked ibis *Theristicus caudatus,* torrent duck *Merganetta armata*, blackchested buzzard-eagle *Geranoaetus melanoleucas,* white-throated caracara *Phalcoboenus albogularis,* austral rail *Rallus antarcticus*,(VU), fuegian snipe *Gallinago stricklandii* , Magellan oystercatcher *Haemotopus leucopodus,* upland goose *Chloephaga picta,* austral pygmy owl *Glaucidium nanum*, magellanic woodpecker *Campephilus magallenicus*, spectacled tyrant *Hymenops perspicillatus,* many-colored rush tyrant *Tachurus rubigastra,* yellow-winged blackbird *Agelasticus thilius,* black-throated finch *Melanodera melanodera*, yellow-bridled finch *M. xanthogramma* and others (Mermoz *et al*.,1993). Estancia La Querencia, an estate which borders both Lago Argentino and Los Glaciares National Park, supports a broad spectrum of Patagonia's regional wildlife. Most notable is the region's largest known population of nesting Andean condors in nesting and roosting colonies called *condoreras*, One of the three most important populations of the austral rail (VU), unrecorded in any other protected area in Argentina, is found in an area of pristine wetland which also attracts the Chilean flamingo *Phoenicopterus chilensis* (FFI, n.d.).

CONSERVATION VALUE

This is an area of exceptional natural beauty, which contains a good representative sample of Patagonian cold forests with small populations of mammals and birds of particular conservation concern. Its lakes and glaciers are reservoirs of fresh water very important to the hydrology of a vast region. The Park lies within a WWF Global 200 Eco-region and a BirdLife-designated Endemic Bird Area.

CULTURAL HERITAGE

Prehistoric inhabitants of the area 3,000 years ago were hunter-gatherers who relied upon the guanaco for their subsistence. These were followed by the Tehuelches (the original *Patagones* or big-footed people), and there are at least 14 sites of archaeological interest related to these cultures, including petroglyphs; but the Tehuelche Indians themselves were almost exterminated during the European colonisation. The Perito Moreno glacier is named after the 19th century scientist who explored the area and delineated the border with Chile. El Cheltèn in Tehuelche means 'smoking cloud' from its frequent banner of cloud. Fitzroy commemorates the captain of the Beagle, Darwin's ship; Viedma was an early coloniser of the south.

LOCAL HUMAN POPULATION

Except for El Chaltèn and four very small tourism-related settlements, no-one else lives in the Park. El Chaltèn is a recent village of some 400 people within its northern edge. It was established in 1986 near Mount Fitzroy to serve the growing interest in the area from climbers and hikers and is almost deserted in winter. It is 220 km by road from the small town of El Calafate on the southern shore of Lake Argentino, 40 km east of the Park, which was established in 1927 as a centre for the Park and the region. Its seasonal population has recently grown fast since an airfield was built and in 2007 was estimated at 20,000.

VISITORS AND VISITOR FACILITIES

Worldwide interest in Patagonia and its spectacularly sheer granite peaks during the decades since its designation as a World Heritage site has brought many mountaineers and tourists to the Park; the north face of Fitzroy has become an iconic climb. Owing to harsh winter weather, tourism is concentrated in the summer months of November through March. The average annual number of visitors during the period 1990-1995 was 78,000, most coming from Europe and Japan. Since then visitation has increased by 9% a year, and the numbers predicted for 2003 were 167,364 (Martin & Chehabarf, 2001). Visitor facilities include hotels, serviced camping and picnic areas. Trails and lodges have been constructed to take the burgeoning tourism. Twelve estancias are located near the lakes. Tours are organised to the main sites of Lake Argentino and the Moreno and Upsala Glaciers. An airport was built at El Calafate in 1993 and there are adequate tracks around the area

SCIENTIFIC RESEARCH AND FACILITIES

Partial inventories of the flora and fauna (mainly birds) exist. Archaeological sites have been surveyed; meteorological and atmospheric pollution surveys have been conducted and glacier dynamics are the subject of continual studies. The rate of global warming can be gauged by the rate of glacial retreat which becomes clear in satellite images. There are no research facilities in the Park.

MANAGEMENT

A management plan of the Park is available (Mermoz *et al.*, 1993). Livestock have been removed from threatened areas and vulnerable species such as Guaytecas Island cypress have recovered in consequence. The adjoining Estancia La Querencia has been recognized as an Important Bird Area by BirdLife International, and is implementing a conservation management plan for the estate to be managed as a buffer zone for the Park. It is supported by the Arcadia Fund, FFI and an Argentinean NGO, *la Fundación de la Conservación de la Condor de la Patagonia.* The initiative should provide a model of best practice for biodiversity-friendly sustainable management of key species and natural resources across the region (FFI, n.d.). Regulated sport fishing of salmonids occurs. Access routes are controlled by Park wardens.

MANAGEMENT CONSTRAINTS

Pressures from tourism can be quite high: the region is subject to a significant recent rapid growth in tourism fuelled by the expansion of the airport at El Calafate; also to poor land management and illegal hunting. Guanaco poaching, once a problem, has been curbed. Some areas though untouched by man, have been grazed by feral cattle; others, including those around Mt. Fitz Roy, have been heavily overgrazed, especially by sheep (J. Bertolotti, pers. comm., 1995). Large areas have been burnt by uncontrolled forest fires and uneven regeneration of the forest renders the Park particularly susceptible to any disturbance. *Nothofagus* forest in the south has been completely destroyed by fire (Erize *et al.*, 1993). Underfunding has resulted in insufficient wardening.

STAFF

A total of 28 staff in 1994, including one director, one Head of Department of Protection, one ranger in charge of fire control, one in charge of environmental education, 10 field workers, and 13 in charge of administrative and maintenance tasks. Seasonal workers are temporarily contracted in the summer (Administración de Parques Nacionales, pers. comm., 1995).

BUDGET
US$1,090,000 in 1994 (Administración de Parques Nacionales, pers. comm., 1995).

LOCAL ADDRESSES
Intendencia, Parque Nacional Los Glaciares, Avda. del Libertador 1302, El Calafate (9405) Provincia de Santa Cruz, Agentina.

Administración de Parques Nacionales, Santa Fe 690 (1059), Capital Federal, Buenos Aires.

REFERENCES
The principal source for the above information was the original nomination for World Heritage status.

Anon. (2006). *Los Glaciares National Park.* www.losglaciares.com/en/parque.html.

Erize, F.,Canevari, M., Canevari, P.,Costa, G. y Rumboll, M. (1993). *Los Parques Nacionales de la Argentina y otras de sus Areas Protegidas.* INCAFO, Madrid, Spain. 238 pp.

Fauna & Flora International (n.d.). *Americas Programme. Andean Condors in Patagonia. http://www.fauna-flora.org/americas/condor.html.*

IUCN (2007). *The Red List of Threatened Species.* IUCN, Gland, Switzerland / Cambridge,U.K..

Losglaciares.com (n.d.). Los Glaciares National Park.

Martin, C. & Chehebarf, C (2001). The national parks of Argentinian Patagonia – management policies for conservation, public use, rural settlements, and indigenous communities. *Journal of The Royal Society of New- Zealand V (4): 845-864.*

Mermoz, M., Ramilo, E., Chehebar, C. y Martin, C. (1993). *Plan General de Manejo Parque Nacional Los Glaciares*. Administracion de Parques Nacionales. Mimeogr.

Rott, H. (2004). Recent fluctuations and damming of glacier Perito Moreno, Patagonia, observed by means of ERS and ENVISAT imagery. *earth.esa.int/workshops/ salzburg04/papers*. European Space Agency.

Steitz,C.,Buis, A. & Adirasola, C. (2003). South American glaciers melting faster, changing sea level. *NASA News*, October.

Skvarca, P. & Naruse, R. (1997). Dynamic behaviour of glacier Perito Moreno, southern Patagonia. *Annals of Glaciology* 24: 268-271.

Tafuri, V. (1983). Estación básica de medida de la contaminación de la atmósfera en la República Argentina. Informe inédito

Vidal,J. (2006). Cities in peril as Andean glaciers melt. *The Guardian, August 29.*

DATE
June 1981. Updated 5-1990, 7-1995, 4-2007, May 2011.