
WORLD HERITAGE NOMINATION - IUCN TECHNICAL EVALUATION

PYRÉNÉES - MONT PERDU (SPAIN/FRANCE)

1. DOCUMENTATION

(i) IUCN/WCMC Data Sheet (3 references)

(ii) Additional Literature Consulted: Trimestriel. **Bulletin Pyrénéen**, 1992. 170-71; Reynolds, K. 1994. **Mountains of Europe**; Stone, P. 1992. **State of the World's Mountains**; De Bellefon, P. 1985. **Pyrénées**; PNPO. 1974. **Travaux du Parc Nationale des Pyrénées Occidentales, (Bibliographique)**. 150p.; Huxley, A. ed. 1962. **Standard Encyclopaedia of the Worlds Mountains**; Davis, S. et. al. eds. 1994. **Centres of Plant Diversity**; Largier, G. 1994. **Le Patrimoine végétal**; PNPO document scientifique 29; Crampe J-P. 1990. **Le bouquetin iberique**; PNPO document scientific 24; Thorsell, J. 1996. Identifying the World's Most Outstanding Mountains. **Parks** 6 (1); Garcia-Ruiz, J.M. and T. Lasanla. 1993. Land-Use Conflicts in the Central Pyrenees. **Mountain Research and Development** 13 (3).

(iii) Consultations: 6 external reviewers, French and Spanish Government officials, Association for Mont Perdu World Heritage, local Mayors and University staff.

(iv) Field Visit: J. Thorsell, M. Price, July, 1996

2. SUMMARY OF NATURAL VALUES

The area jointly nominated by the Governments of France and Spain is in the Pyrénées mountains on the border of the two countries. Two-thirds of the site is contained within the Ordessa and part of the Pyrénées National Parks while three Wildlife Sanctuaries and one "Site Classé" make up the total area of 30,639ha. The site is centred around the peak of Mont Perdu, a calcareous massif that rises to 3,352 metres. It includes two of Europe's largest and deepest canyons on the Spanish side and three major cirque walls on the more abrupt northern slopes within France. There is a humid maritime climate on the northern slopes and a drier Mediterranean climate on the southern aspects. Six vegetation zones occur from Mediterranean evergreen forests at the lower elevations to rock and scree communities at the summits. 3,500 vascular plant species have been recorded, 200 of them endemic. Wildlife is typical of the region and, while no threatened species exist, there is a particularly rich insect fauna. The area has a rich human history and the interplay of cultural and landscape factors is of particular note.

The site has been put forward on the basis of natural criteria i, iii, and iv as well as a cultural landscape.

3. COMPARISON WITH OTHER AREAS

In relation to other mountain ranges of the world, the Pyrénées do not rate high in terms of their area, their height or the extent of glaciation. They cover an area 400km long and 80km wide. The highest massifs reach a moderate 3,400 metres and there are only a few glaciers and snowfields and these are shrinking. Within Europe, the Pyrénées are a secondary range after the Caucasus and the Alps.

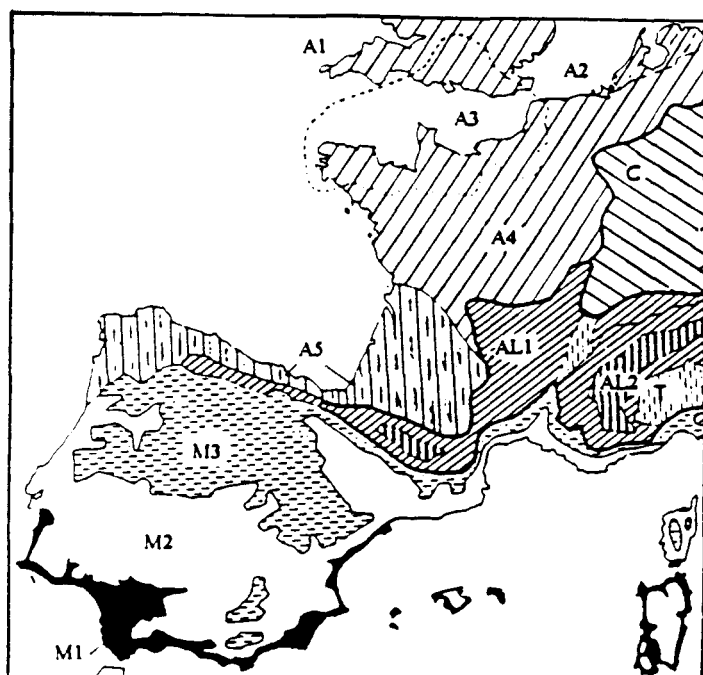
Mountains are the most represented biome on the World Heritage List. Of 107 natural sites 40 are mountain areas and another five are under consideration in 1997. Mountains, like oceanic islands, all present some distinctive features. The Pyrénées have a number of specific natural attributes that set them apart from other mountain areas:

- Geologically the area is distinctive being at the tectonic collision point of the Iberian and west European plates. The most outstanding portion of the Pyrénées mountain chain (the area that is contained in the nomination) has a geological unity as a calcareous massif centred on Mont Perdu. The resultant landscape is dramatically different on the north (France) and south (Spain) sides. To the south, Mont Perdu (or Peridido as it is know there) has three radiating spurs with deep canyons and a gradual slope to the Iberian piedmont. The northern side is much more abrupt with three major cirques. This type of formation is similar to several other areas such as the great valleys of the Atlas in Morocco, in Kurdistan and in Afghanistan. The north/south contrasts in all these areas are equally dramatic in the Pyrénées.
- This north/south contrast in topography also affects climate in the Pyrénées which is humid in France while dry in Spain. Climate varies also from the west where there is a strong maritime influence to the east which enjoys a coastal Mediterranean climate. Climatic variation on opposing sides of all mountain ranges is a standard condition and the Pyrénées cannot be considered particularly unique on this score.
- The location of the Pyrénées between two seas, their geological structure and the East-West/North-South climatic asymmetries result in a rich mosaic of vegetation types. In this one small area, all the phytogeographical elements of western Europe can be found. Once again as in most mountain areas, the Pyrénées function as a refuge for many species, a biological island distinct from the human-dominated surrounding lowlands. The area is a rich centre of plant diversity (3,500 species and sub species) and endemism (5%) as well as rare plants. Many European mountain taxa reach the westernmost limits of their distribution in the Pyrénées. The attached map shows the phytogeographical context of the Pyrénées in Europe.
- Wildlife is not particularly notable in the region but insect life (particularly butterflies) is diverse as is the avifauna. A few remaining European brown bears are found in the Pyrénées but not in the nominated area.

The most comparable area to the Pyrénées is the Alps. The Alps are much higher, more extensive and spectacular but the Pyrénées are a more formidable barrier and more difficult to cross. They have been less impacted and subjected to less human habitation than the Alps. Although they share many species and display many of the same ecological processes, the Alps have an even richer flora (5,500 species) and endemism (7%). The Caucasus are even richer with 6,000 vascular plant species with 20% endemism.

The Iberian Highlands Biogeographical Province has more than 50 protected areas. No existing natural World Heritage site is found in the Province. Only four of the protected areas are National Parks. Certainly the two National Parks in the nomination cover the most outstanding part of the Pyrénées, although Aigues Tortes in the eastern Pyrénées is botanically important and the new Picos de Europa National Park is perhaps even more biodiverse and much larger.

In conclusion, as has been shown, the Pyrénées are a secondary mountain range within Europe and do not display alpine features or contain as great a diversity as do the Alps or Caucasus. On the other hand, within the Biogeographic Province, the nominated area clearly is the centrepiece of the Pyrénées and has a range of important geological, scenic and botanical values. Despite the fact that the Pyrénées are an alpine area of the second order, the nominated area, with its many lakes, canyons, cirques and distinctive alpine flora still has



Carte 2 : Les Pyrénées, situation dans le contexte phytogéographique européen occidental.

Echelle approximative : 1/19.500.000°
(D'après Ozenda, 1994, modifié)

Domaine atlantique

A1- secteur anglo-irlandais

A2- secteur est - Mer du Nord

A3- secteur des hêtraies de la Manche

A4- secteur ligéro-séquanien

A5- secteur thermo-atlantique

Domaine centre-européen (C)

Domaine thermomémoral (T)

Domaine méditerranéen

M1- ceinture thermoméditerranéenne

M2- ceinture mésoméditerranéenne

M3- ceinture supraméditerranéenne et végétation de montagne

Domaine alpin

AL1- moyenne montagne à Hêtre (et ± Sapin et Epicéa)

AL2- haute montagne et zones internes des chaînes

Source: Largien, G., 1994. Le Patrimoine végétal - documents scientifiques du parc national des Pyrénées 29.

a special flavour and is important in its own right. The nominated site combines in one small area a blend of features which make it one of the most important alpine parks in Europe.

4. INTEGRITY

Three issues relating to the conditions of integrity for natural properties (Operational Guidelines paragraph 44b): boundaries, human impact and management.

4.1 Boundaries

As the site map indicates there is a complex system of administrative units that make up the nominated area. These are shown in Box 1 which follows:

Box 1. Administrative Units of Pyrénées - Mont Perdu

Spain:	Ordessa National Park	15,608ha
	Vignemale Wildlife Sanctuary	3,200ha
	Periphery Protection Area	1,326ha
	Total Spain	20,134ha
France:	Pyrenées National Park (part)	7,451ha
	Site Classé Gedre Gavarnie	3,054ha
	Total France	10,505ha
	Total	30,639ha

The proposed World Heritage boundary does not coincide with the designated UNESCO Biosphere Reserve on the Spanish side nor does it coincide with the western portion of the French Pyrénées National Park. The result is a multiple configuration that does not conform to current political and administrative boundaries. It does, however, conform closely to the scientific boundary, i.e. The landscape unit that has Mount Perdu as its calcareous centrepiece. Nonetheless, this overlay of World Heritage Site boundary that is different from the existing protected area matrix may present some challenges in terms of management and presentation of the site. IUCN was also not fully convinced that the legal basis of a "Site Classé" and a "Periphery Protection Area" were sufficient for long-term protection.

4.2 Human Impact

The Pyrenées, of course, are part of the long and intensively settled European continent where few areas still maintain their **natural integrity**. Among the many changes experienced over the past several thousand years of human settlement in and around the Pyrenées are:

- extirpation and/or reduction of large predators and carnivore species;
- reintroduction of some species (e.g. Marmots) has been necessary;
- extensive livestock grazing over much of the area (though no longer permitted in the Ordessa National Park);
- original forest removed by cutting or burning and though recovering it is not a primary forest;

- the nominated area itself often abuts directly on villages, powerlines, downhill ski areas and major highways. Beginning in the 19th century the area was transformed into a tourist destination that now attracts 700,000 visitors to Ordesa alone and even more to the French side.

Despite the presence of several abandoned villages and three small commercial hotel sites much of the area, especially on the Spanish side, is free from development. Some practical pastoral activity and some extractive forestry, however, is still carried out on the French side. The centuries-old transhumant system of grazing continues within the area, with frequent movement of herds across the French-Spanish border. This shows the strong unity of the nominated area, which is clearly separated from the surrounding plains through this system of land use. Many development proposals (railway, power lines, ski areas) have been disallowed over the past 25 years and hunting was banned in 1973.

One historic route accessible on foot connects the two sides and was a branch of the original route of Santiago de Compostela. It was also used by Napoleon's army and during more recent wars.

In summary the Pyrenées, *sensu strictu*, are not a natural landscape as they have been substantially modified by humans over the centuries. Much is being done to restore natural systems but interplay between humans and the natural environment in the Pyrenées is evident everywhere in the landscape. Development has, however, not affected the geology of the site or the landforms, only the living environment. This transformation has, for the most part, been a harmonious one and this is the basis for its consideration as a cultural landscape as well (separate report from ICOMOS).

4.3 Management

The current management of the two national parks that make up 70% of the nominated area is of a high standard. The other three protected units that make up the nomination are less intensively managed but no serious threats were noted during the IUCN field evaluation. Management on the Spanish side of the Ordesa National Park was particularly impressive in terms of the existence of an up-to-date management plan (none exists for the French side), an excellent visitor centre, and progressive plans to reduce tourism impacts.

In terms of addressing the multiple boundary issue and the need for a transfrontier cooperation, the park authorities from the two countries have set out an arrangement and structure to facilitate this. A "Mont Perdu Management Charter" has been signed, a constitution for a joint management committee and special protection regulations for the proposed site have been drawn up. These documents represent a model in border park cooperation and are consistent with IUCN's Guidelines on Transfrontier Park Cooperation.

Both parks face a range of management issues common to European parks today but none would be of a level to affect the conditions of integrity which IUCN agrees are sufficiently met. Several "inconsistent" activities noted during the IUCN field inspection have already been removed in France's Pyrénées National Park. These include the closing of road access between the cols of Tentes and Bouchuro, the relocation of a parking lot in the cirque of Tromouse, and the relocation of a festival site from the La Prade area of Gavarnie.

5. ADDITIONAL COMMENTS

The authorities should be commended for a particularly well-documented nomination as well as for the innovative means (though a specially formed Association) by which it was produced.

The eastern Pyrenées are particularly noted for having some outstanding caves. These are not adjacent to the nominated area but are another natural attraction of the Pyrenées.

In the course of this evaluation IUCN received three different nomination dossiers, each with different boundaries and recently adding the cultural landscape dimension. This report is based on the most recent document provided to IUCN on 10 March, 1997.

A minor issue is the name of the site which needs to be clarified.

6. APPLICABILITY OF WORLD HERITAGE NATURAL CRITERIA

As discussed in section 3. above, the Pyrenées are of lesser importance as a mountainous system in Europe when compared with the Alps and the Caucasus. On the other hand, the area nominated is of very high interest to science (there has been a very productive record of research) and to conservation. Although its natural attributes are evident in many other mountain regions, the central portion of the Pyrenées has a combination of dramatic alpine natural phenomena. The east/west and north/south climatic gradients also result in a unique biological setting. As a landscape unit, the calcareous massif of Mont Perdu displays in a classic way a number of geological landforms such as the deeply-incised canyons and spectacular cirque-walls (criterion i). It also is an outstanding scenic landscape with meadows, lakes, caves, mountains and forest (criterion iii). It is also important on a regional basis for its species diversity but IUCN feels criterion iv is not justified here.

As the human historical dimension and cultural aspects that permeate in the area are of particular interest, a final statement on the World Heritage values of the Pyrénées cannot be made without reference to the relevant cultural criteria.

7. RECOMMENDATIONS

The Bureau recommended that the site be inscribed under natural criterion i and iii. ICOMOS was asked to undertake an evaluation to consider if the site would also qualify under cultural criteria.

MONT PERDU PATRIMOINE MONDIAL

Site proposé et statuts de protection existants

FRANCE

Aragnouet

Gèdre

Gavarnie

Monte Perdido

Torla

Bielsa







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




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LEGENDE

	Site MPPM proposé	30 639 ha
	Parc National d'Ordessa-Mont Perdu	15 608 ha
	1-2 Zone périphérique de protection PNOMP Réserve de biosphère MAB Réserve Nationale de chasse du Vignemale	3 200 ha
	3 Zone périphérique de protection	1 326 ha
	Parc National des Pyrénées - PNP et site classé	7 451 ha
	Site classé de Gavarnie-Gèdre	3 054 ha

Statuts de protection des sites voisins

	4 Réserve Nationale de chasse du Vignemale Réserve de Biosphère MAB
	5,6,7 Zone périphérique de protection PNOMP
	8,9 Réserve Nationale de Chasse de Los Circos
	Parc National des Pyrénées, PNP et site classé
	Réserve Naturelle du Néouvielle
	Zone d'influence du PNOMP et zone périphérique du PNP



0 5 10 km

COUNTRY France/Spain

NAME Massif Mont Perdu-Tres Serols (French proposal, 1995); Monte Perdido: Circos y Cañones (Spanish proposal, 1997); Mont Perdu/Gavarnie (management charter, including in the Spanish proposal); Pyrenees-Mont Perdu (IUCN 1997)

IUCN MANAGEMENT CATEGORY II

Parc National des Pyrénées Occidentales: II

Parque Nacional de Ordesa y Monte Perdido: II

BIOGEOGRAPHICAL PROVINCE 2.16.6 (Iberian Highlands)

GEOGRAPHICAL LOCATION Situated in the Central Pyrénées mountain range on the international boundary between France and Spain. 42°38'N, 0°10'W. In France, to the North, it is located in the Hautes-Pyrénées Department in the Midi-Pyrénées Region. The southern part of it, in Spain, includes the municipalities of Torla, Fanlo, Tella-Sin, Puértolas, Bielsa y Broto in the Huesca Province of the Autonomous Community of Aragón

DATE AND HISTORY OF ESTABLISHMENT The nominated site includes two bordering national parks: the entire Ordesa y Monte Perdido National Park in Spain and the eastern part of Pyrénées Occidentales National Park in France. These were established by Spanish Royal Decree of 1918 (extended from 2,100ha to 15,608 in 1982) and by the French Governmental Decree on 1967, respectively. The Spanish National Park received the Council of Europe European Diploma category A in 1,988, which was renewed in 1993, it has also been established as a Special Protection Area under the 1979 Birds Directive. It includes the core area (8,116ha) of the Ordesa-Viñamala Reserve (51,396ha), which was internationally recognised as a Biosphere Reserve in 1977. Viñamala National Hunting Reserve was established in 1966 and it is coincidental with Ordesa-Viñamala Biosphere Reserve. In France the Gavarnie, Troumouse and Estaubé "Site Classé" (Classified Reserve) was established in 1941. There is a buffer zone surrounding the nominated site which includes to the north the remaining area of the Gavarnie, Troumouse and Estaubé "Site Classé" (France) and in Spain: to the west the remaining area of the Viñamala National Hunting Reserve, coincidental with Ordesa-Viñamala Biosphere Reserve; to the south two buffer zones of the Spanish national park; and to the east another buffer zone and the Los Circos National Hunting Reserve established in 1966. A Cooperation Charter between France and Spain was signed in September 1988.

AREA The site covers an area of 30.639ha, of which 20,134ha are in Spain: the entire "Ordesa y Monte Perdido" National Park (15,608ha), and an buffer zone of 4,526ha; and 10,505ha in France: the eastern part of Pyrénées Occidentales National Park (7,451ha) and part of Gavarnie "Site Classé" (3,054ha).

LAND TENURE In France mainly owned by the communities of the Barèges and Aure valleys and in Spain mainly by the municipal governments of the five localities included. There are also some State and private ownership. (España-France, 1997)

ALTITUDE From 600m to 3,352m (Monte Perdido/Mont Perdu)

PHYSICAL FEATURES The site, a limestone massif, is a mountain landscape with lakes,

waterfalls, rocky outcrops, glacial cirques and canyons. The four glacial cirques: Gavarnie, Estaubé, Troumouse and Baroude are located to the north; to the south there are three canyons and a gorge: Ordesa, Añisclo, Pineta and Escuaín. Three distinct geomorphological regions are found. First, in the north, three convergent valleys are surmounted by crests oriented north-south comprising schistose and sandstone. The cirques of Estaubé and Troumouse are separated in the south-east by a crest dominated by Munia Peak (3,133m). The second region comprises a line of steep limestone steps stretching for 20km, most of the summits of which are higher than 3,000m. Third, high sandstone and schistose plateaus, at about 2,000m are found to the south-west of the "Tres Serols". (AMPPM, 1995).

CLIMATE Altitude and topography significantly affect the local climate. The two main climate regimes are oceanic climate to the north and a continental perimediterranean climate to the south side. Average annual temperature is 5°C, mean winter temperature in February is -1°C and the mean during the summer (July) is 12°C. Rainfall varies from 900mm to 2,000mm, annual mean rainfall is 1600mm. Seasonal distribution of rainfall is approximately winter (16%), spring (30%), summer (22%), and autumn (32%).

VEGETATION Five vegetation types have been described: submediterranean, collinean, montane, subalpine and the alpine type. The submediterranean type is mostly found in valleys in the south and is dominated by *Quercus ilex rotundifolia* in rocky sites, and *Quercus faginea* in deep soils. The collinean vegetation is dominated by *Quercus sessiliflora*. The montane areas are characterised by beech *Fagus sylvatica*, *Abies alba* and *Pinus sylvestris*. *Ramonda myconi*, endemic to the Pyrénées, is found in this habitat and others species such as the Pyrenean saxifrage *Saxifraga longifolia*, *Antirrhinum sempervirens* and *Pinguicula longifolia* occur in the same habitat. The subalpine vegetation is dominated by black mountain pine *Pinus uncinata*, *Vicia argentea* (R) and the endemic *Borderea pyrenaica*. The alpine area holds a high proportion of endemic species to the Pyrénées, including *Saxifraga iratiana* and *Androsace pyrenaica* (AMPPM, 1995). The flora includes more than 1,500 species, of which 50 are Pyrenean endemic species (España-Francia, 1997).

FAUNA The site supports many species typical of the Pyrénées. Mammals include the marmot *Marmota marmota*, *Mustela erminea*, ungulates such as *Capreolus capreolus* and *Rupicapra p. pyrenaica*, with the population estimated at 800 individuals, and Spanish ibex *Capra p. pyrenaica* now only three female individuals. A small brown bear *Ursus arctos* population remains in the Pyrenees, but not in the nominated area. The insectivorous Pyrenean desman *Galemys pyrenaicus*, occurs in lowland elevation. The avifauna includes Lammergeyer *Gypaetus barbatus*, in decline throughout Europe, Bonelli's Eagle *Hieraëtus fasciatus*, *Lagopus mutus*, *Tetrastes bonasia*, *Tetrao urogallus*, *Pyrrhocorax graculus*, *Parus palustris*, *Certhia familiaris*, *Tichodroma muraria*, *Oenanthe oenanthe*, *Phoenicurus ochrurus*, *Prunella collaris*, *Anthus s. spinoletta*, and *Montifringilla nivalis*. Reptiles include the montane lizard *Archaeolacerta bonnali*, restricted to high elevations. Among the amphibians, species of interest include *Euproctus asper*, *Rana temporaria* and *R. pyrenaica*. Other noteworthy fauna include cave-dwelling species such as a collembolan *Tricantella frigida*, an endemic found in Gavarnie cirque at 2,500m, and coleopteran *Tipnus unicolor* and *Speonomus bolivari* (AMPPM, 1995).

CULTURAL HERITAGE There are human settlements in the area since the Palaeolithic (40,000-10,000 BC). The Massif has played a major role in the communication between Spanish and French communities bordering the site. Cultural similarities are found in both sides of the nominated area, especially the use of terraces. Striking terraces and cultural

monuments constitute a significant symbol of past occupation in the region.

LOCAL HUMAN POPULATION Socio-economic activities have declined during last 50 years, although transhumant grazing still occur, with livestock being grazed on the massif in summer. The only two economic activities occurring the nominated site are related to grazing and trekking (España-Francia, 1997).

VISITORS AND VISITOR FACILITIES A total of two million tourists visit the site each year. Two places are most visited, Torla in Spain, and Gavarnie village in France. The Cirque de Gavarnie is a glacial amphitheatre with a rock-face popular with climbers, and with one of the highest waterfalls (423m) in the Pyrénées. Measures have been taken to limit visitor pressure, especially those using cars, in order to encourage pedestrians to visit the protected areas. In general, entrance to the site is controlled by national park managers. Four mountain refuges are available between 2,000 and 2,600m altitude: Góriz in Spain; La Brèche-Boucharo, Les Espuguettes and Barroude in France. Other accommodation is available in villages and two hotels outside the site.

SCIENTIFIC RESEARCH AND FACILITIES According to the Cooperation Charter, two species are considered of particular research interest: *Rupicapra p. pyrenaica*, and *Capra p. pyrenaica* (AMPPM, 1995). No further information is available.

CONSERVATION VALUE The site represents an exceptional geophysical landscape. Around 20km of Pyrenean mountains cross the site from west and north-west to east and south-east. The massif plays a hydrographical role as a watershed, and contains important and spectacular cirques. The site has served as a refuge during glacial periods, leading to a high degree of endemism in fauna and flora. Many species are restricted to Monte Perdido such as *Saxifraga iratiana* and *Androsace pyrenaica*, *Rupicapra p. pyrenaica*, *Capra p. pyrenaica*, and *Rana pyrenaica*.

CONSERVATION MANAGEMENT The conservation plan is oriented towards limiting road construction and vehicle use. Farming is recognised as an integrated activity for local communities. Other programmes include the management of the large numbers of visitors to the site.

Management plans: Spain: Plan Rector de Uso y Gestión del Parque Nacional de Ordesa y Monte Perdido, approved in 1995 by Royal Decree; France: Plan d'Amenagement approved in 1990, to be reviewed and approved in 1997 (España-Francia, 1997).

MANAGEMENT CONSTRAINTS An estimated two million tourists visit the site each year. Activities include hiking, riding, climbing, skiing and fishing. According to reports in the IUCN Bear Specialist Group Newsletter, restrictions of hunting and limitations on motorised vehicles have not been welcomed by local people and hunters.

STAFF The French national park has a Director and a Deputy Director managing seven technical staff (scientific, development, grazing and communication), seven administrative staff and 34 rangers in charge of vigilance and guidance. The Spanish national park has a Conservation Director managing a staff of two technicians (Deputy Director and Head of Conservation), four administrative staff and 12 rangers (España-Francia, 1997).

BUDGET The budget for each national park, excluding the budget for personnel, is

approximately:

P.N.P.: 14 millions FF

P.N.O.M.P.: 300 millions Pts.

Additional budget is provided to the local municipalities to implement conservation measures in the buffer zone by the Estate in Spain and by the State and the Regional government in France (Epaña-Francia, 1997).

LOCAL ADDRESSES

In France:

At national level:

Ministère de l'Environnement - Direction de la Nature et des Paysages. 20, avenue de Ségur.
75007 Paris.

At local level:

Parc National Français des Pyrénées Occidentales. 59, rue de Pau. 65000 Tarbes.

In Spain:

At national level:

Ministerio de Medio Ambiente - Organismo Autónomo Parques Nacionales. Gran Vía de San Francisco, 4. 28071 Madrid.

At regional level:

Consejería de Agricultura y Medio Ambiente. Gobierno de Aragón. Edificio Pignatelli.
50071 Zaragoza.

At local level:

Parque Nacional de Ordesa y Monte Perdido, Plaza de Cervantes, 5. 22071 - Huesca.

REFERENCES

- Almela, A., Rios, J. M., y Alastrue, E. (1957). Explicación al mapa geológico de la provincia de Huesca (1/200.000). IGME, Madrid.
- Association Mont Perdu Patrimoine Mondial (AMPPM), 1995. Massif Mont Perdu/Tres Serols. France-Espagne. Nomination dossier, 100 pages + Annexes (140 pages).
- Balcells, E. (1985). Ordesa-Viñamala. Monografía n° 37 ICONA-MAPA, Madrid.
- Balcells, E. (1994). La vida y sus manifestaciones en el Parque Nacional de Ordesa y Monte Perdido. E. Lunweg, Barcelona.
- Besson, J. P. (1971). Introduction de la marmotte dans le Pyrénées. 96e Congrès des Sociétés savantes. Toulouse.
- Biarge, F. (1992). Senderos. Parque Nacional de Ordesa y Monte Perdido. E. F. Biarge. Huesca.
- Bresson, A. (1902). La nappe de recouvrement des environs de Gavarnie et de Gèdre. Comparaison des bassins crétacés d'Eaux Chaudes, de Gèdre et de Gavarnie. C. R. Acad. Sc. Paris.
- Castanet, J. Y. and Guyetant, R. (1989). Atlas de répartition des amphibiens et reptiles de France. Société Herpétologique de France. Paris.
- Crampe, J. P. (1986). Aperçus démographiques sur une population d'isards protégée. Exemple du Mayouret (Cauterets). Documents scientifiques du PNP, n° 21. Tarbes.
- Creus Novau, J. (1983). El clima del Alto Aragón Occidental. Mongr. Inst. Estud. Pirenaicos, 109. Jaca.

- Daumas, M. (1976). La vie rurale dans le Haut Aragón Oriental. CSIC. Madrid.
- Dendaletche, Cl. (1973). Guide du Naturliste dans les Pyrénées occidentales. Tomes 1 y 2. Delachaux et Niestlé, Neuchâtel.
- Dupias, G., Izard, M. y Montserrat, P. (1982). Carte de la Végétation de la France: feuille au 1/200.000, n°76. Luz. CNRS, Toulouse.
- España-Francia, 1997. Monte Perdido, Circos y Cañones. Proposition d'Inscription au Patrimoine Mondial de l'UNESCO. February 1997. 21 pages + annexes.
- Flachere, H. (1977). La nappe du Mont Perdu et ses relations avec la nappe de Gavarnie. Th. 3è Cycle, Université Paul Sabatier. Toulouse.
- Garcia Gonzalez, R. (1991). Inventario de la población española de bucardo (*Capra pyrenaica pyrenaica*) en el Parque Nacional de Ordesa. ICONA-CSIC. Huesca.
- Garcia Ruiz, J. M. y Marti Bono, C. (1994). Cartografía geomorfológica del parque Nacional de Ordesa y Monte Perdido. (1/25.000) ICONA-CSIC. Huesca.
- Gomez de Llarena, J. (1936). Algunos datos sobre el glaciar actual de Monte Perdido. Bol. Soc. Esp. Historia natural, tomo XXXVI. Madrid.
- Hernandez-Pacheco, F. y Vidal-Box, C. (1946). La tectónica y la morfología del macizo del Monte Perdido y de las zonas de cumbres inmediatas en el Pirineo Central. Rev. Pirineos, 4. Zaragoza.
- Izard, M. (1988). Continentialité dans les Pyrénées et son impact sur la végétation. Homenaje a Pedro Montserrat. Jaca.
- Losa, M. et Montserrat, P. (1947). Aportaciones para el conocimiento de la flora de Valle de Ordesa. Collet. Bot., 11. Madrid.
- Mallada, L. (1878). Descripción física y geológica de la Provincia de Huesca. Mém. Com. del Mapa Geológica de España. Madrid.
- Marti Bono, C. y Garcia Ruis, J. M. (1993). La extensión del glaciario cuaternario en el Parque Nacional de Ordesa y Monte Perdido. Geographicalia, 30.
- Martinez de Pison, E. (1994). Relieves del Alto Pirineo Aragonés, Itinerarios geográficos. Caja de Ahorros de la Inmaculada. Zaragoza.
- Martinez Rica, J. P. (1983). Atlas herpetológico del Pirineo. Munibe 35. San Sebastián.
- Ministère de l'Environnement, France 1995. Massif Mont Perdu-Tres Serols. Proposition d'Inscription au Patrimoine Mondial de l'UNESCO. September 1995. 12 pages + annexe
- Pallaruelo, S. (1988). Pastores del Pirineo. Ministerio de Cultura. Madrid.
- Parque Nacional de Ordesa y Monte Perdido - Parc National des Pyrenees. (1988). Un sendero para dos Parques. Huesca-Tarbes.
- Pascual, R. (1981). La cabra hispánica en el Parque Nacional de Ordesa. XV Congr. Int. Fauna Cinegética y Silvestre. Trujillo (Cáceres).
- Ramon de Carbonnieres (1807). Voyages au Mont Perdu (Geneve, Slatkine 1978).
- Rivas-Martinez, S. (1969). Las comunidades de las ventisqueros (*Salicetea herbaceae*) del Pirineo Central. Vegetatio 17. Madrid.
- Schrader, F. (1936). Pyrénées, t. I. Courses et ascensions, t. II. Science et art. Toulouse.
- Seijas Rodriguez, J. M. Seguimiento de la población de bucardo (*Capra pyrenaica pyrenaica*) en el Parque Nacional de Ordesa y Monte Perdido. Informe 1994-1995. Huesca (inédito).
- Serra-Cobo, J. (1993). Descripción de una nueva especie europea de rana parda (Amphibia, Anura, Ranidae) Rv. Alites 11. París.
- Souquet, P. (1965). Structure du massif du Mont Perdu; ses relations avec la nappe de recouvrement de Gavarnie (Pyrénées) C. R. Acad. Sc. Paris.
- Van Lith, J. C. (1965). Geology of the Spanish part of the Gavarnie nappe (Pyrenees).

Geologica Ultrajectina, 10. Utrecht.

Villar, L., Montserrat, P., y Perez, R. (1993). Cartografía vegetal del Parque Nacional de Ordesa y Monte Perdido (1/25.000) ICONA-CSIC. Huesca.

Villar, L., y Garcia, B. (1989). Vers una banque de données des plantes vasculaires endémiques des Pyrénées. Acta Biol. Mont. IX .Toulouse.

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