

How To Plan Your Trip To Peru

MANU

<http://www.peruperu.com/manu-national-park.htm>

The **Manu Biosphere Reserve**, internationally recognized in 1977 as a Biosphere Reserve under UNESCO's Man and the Biosphere Programme, is composed of three main parts: Manu National Park, the Reserve Zone, and the Cultural Zone.

Separate from the Manu BioSphere, yet areas now important to conservation and indigenous Indian sustainable development projects, are the private nature reserves located east of the Manu BioSphere along the Made de Dios River. These areas are referenced as the Manu Wilderness.



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Biosphere Reserve Information

Major ecosystem type: Mixed mountain and highland systems / Tropical humid forests.

Major habitats & land cover types: Cloud forest; alpine grasslands of the Andes; rainforest; humid forest; humid sub-tropical forest; very humid sub-tropical forest characterized by mahogany (*Swietenia* sp. and *Cedrela* sp.) and the palm *Phytelephas macrocarpa*; very humid low mountain forest; lakes and rivers; agroecosystems.

Location: 11°17' to 13°11'S; 71°10' to 72°22'W

Area (hectares): total 1,841,806.

Core area(s) 1,532,806

Buffer zone(s) 52,000

Transition area(s) 257,000

Altitude (metres above sea level): +240 to +4,000

Manu National Park

The 3.7 million-acre Manu National Park was formed in 1973 and was inscribed on the World Heritage List in 1987.

Tourist lodges are not allowed in the park itself. In 1980 a relatively small area to the east of the park was designated as a Tourist Reserve Zone, reserved for tourist and commercial activities.

GEOGRAPHICAL LOCATION The park is located in the provinces of Manu and Paucartambo (Departments of Madre de Dios and Cuzco respectively), comprising lands on the eastern slopes of the Andes and on the Peruvian Amazonas. The limits to the north are the watershed separating the catchment basins of Manu and de las Piedras rivers (72° 01'W, 11° 17'S); to the south the area where the road from Paucartambo to the north-west turns to Tres Cruces (71° 30'W, 13° 11'S); to the east the region on the left margin of the Alto Madre de Dios River to the Pilcopata River, Department of Cuzco (71° 10'W, 12° 18'S); and to the west the watershed separating the catchment basins of the Manu and Camisea Rivers - also the limit between the Departments of Cuzco and Madre de Dios (72° 22'W, 11° 45'S)

ALTITUDE From 365m (Manu River mouth) to 4,000m (Cerro Huascar)

PHYSICAL FEATURES The park is located on the eastern slopes of the Andes and extends down from precipitous mountains. The entire area is situated within the Amazon River basin and protects almost the entire watershed of the River Manu and most of the tributaries of the River Alto Madre de Dios. Alluvial plains are found along the rivers where sediments

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may be deposited on a seasonal basis. The hills occupy the lowlands between the rivers and are relatively small with slopes between 15% and 50%, forming an undulating topography, which covers much of the park. The alluvial plains and hills above 1,500m mainly comprise sedimentary rocks of the Superior Tertiary (1 to 111 million years old) and Recent Quaternary (less than 1 million years old). The mountainous area above 1,500m is formed of sedimentary and metamorphic rocks of the Precambrian and Palaeozoic era (more than 440 million years old). The adjacent reserved zone mainly comprises the flood plains of the lower Manu river, down to its confluence with the Rio Alto Madre de Dios, and over long periods of time the river has wandered over the plain leaving a number of ox-bow lakes.

CLIMATE The area has a wide range of climates, from the cold, dry Andes to the hot, humid Amazon forests. There are however, no long term records of rainfall or temperature in the park, and up to 1985 continuous records of rainfall were only available for two years (1976 and 1982). At the Biological Station of Cocha Cashu (400m), the rainfall between September 1976 and August 1977 was 2100mm. There is a rainy season from October to April with an average monthly rainfall of more than 200mm. From early May to late September rainfall decreases to less than 100mm per month. There is a slight variation of air temperature during the year. The coldest month is June with an average temperature of 11.1° C the hottest month is October with 25.4° C. There are virtually no records of rainfall within the park above 650m. At Pilcopata (650m) the mean annual rainfall (1971-1980) was 3929mm and all months have more than 100mm of rain. July is the driest month with an average rainfall of 188mm. Higher up into the Andes rainfall drops again, and temperatures fall significantly to average a few degrees above zero. Fog is common all year round in montane forest regions.

VEGETATION With a park the size of Manu, with a wide range of altitude, vegetation varies widely, however the most widespread vegetation types found are tropical lowland rainforest, tropical montane rainforest and Puna vegetation (grasslands). The lowland forests occur on the alluvial plains and the interfluvial hills. Those on the hills may experience seasonal water supply, given the monthly variation in rainfall, while the forests on the alluvial plains are likely to be seasonally flooded. The montane forests experience less variation in the water supply and are exposed to lower temperatures. The management plan (La Molina, 1986) maps 14 forest types using the Holdridge system (after Tosi, 1960), although, given the lack of rainfall data, this must be to some extent speculative. Despite the high diversity of plant species in this region, the flora of Manu is still poorly known and floristic inventories must be considered as preliminary (Gentry, 1985). The few collections of plants are those of Foster (1985) and Gentry (1985) made in the alluvial plains near the Biological Station, and in the Tres Cruces region of the uplands. Other collections have been made by Terborgh (1985) and Janson (1985) on trees where birds and

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primates obtain food. Despite this, in the last ten years, 1147 plant species have been identified in the park within quite a small area (500ha), and it is likely that the number of species to be found within the park is well over this figure. More recent data (Saavedra, 1989) indicate 1,200 lowland vascular species and a single one hectare plot near the Cocha Cashu research station supported more than 200 tree species.

In a hectare plot on the alluvial plains, 17 trees with a diameter of more than 70cm were found (4 to 11 trees with such a diameter would be more usual). The biggest tree was a *Ceiba pentandra* (120cm), while others included the locally rare *Poulsenia armata* (110cm) and *Calycophyllum* sp. (117cm), and locally endangered *Swietenia macrophylla* (105cm) and *Dipteryx odorata* (100cm). The most common tree in the plot was *Otoba parviflora* (IK), and other highly abundant species included palms of the genera *Astrocaryum*, *Iriartea* and *Scheelea*, two species of *Quararibea* (Bombacaceae), *Guarea* and *Trichilia* (both Meliaceae from the subcanopy), one *Pouteria* (Sapotaceae), *Pseudolmedia laevis* (Moraceae) and *Theobroma cacao* (Sterculiaceae). Another striking feature of these forests is the high abundance of *Ficus* spp., of which there are at least 18 species - only 15 *Ficus* species are mentioned in the Flora of Peru (Standley, 1937). Lianas are common, and 79 lianas of 43 species were found within 1,000 sq.m. With the current knowledge of the flora of the park it is not possible to give a detailed account of threatened, endemic or potentially economically important species. *Swietenia macrophylla* and *Cedrela odorata* which grow in almost pure stands, are two of the species economically important for their wood, while *Theobroma cacao* and *Quararibea cordata* (IK) are both cultivated for their fruits outside the park.

FAUNA A total of more than 800 bird species (Saavedra, 1989) and 200 species of mammals has been identified, 500 birds alone from the lowland forests around Cocha Cashu Biological Station, and the check lists of Terborgh, Janson and Brecht (1984) give habitats, foraging position, activity (sociability) and abundance for all birds and mammals found up to 1982. The bird species found in Manu represent 25% of all the birds known in South America and 10% of all the species in the world and it is thought that there may be as many 1,000 bird species in total. According to Renton (1990), six species of macaw occur in the lowland forest, *Ara ararauna*, *A. chloroptera*, *A. macao*, *A. severa*, and *A. manilata*. Three Endemic Bird Areas are represented within the park, the South-east Peruvian lowlands (B30), home to 15 restricted range species, the Eastern Andes of Peru (B29), with 11 restricted range species, and the Western Andes of Peru (B27) with 30 restricted range species (ICBP, 1992). There are 13 species of monkey, and it is estimated that there are over 100 species of bat. There are also 12 species of reptiles within 7 families (UNA-CEPID, 1986), and 77 species of Amphibian from fire families are known for the Cocha Cashu area (Rodriguez, in press). There are no check lists available for invertebrates, although it has been estimated that the park contains

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around 500,000 species of arthropod. Again, most of the information has been gathered in the lowlands, and little detailed information is available on mountain fauna. Species known to be globally threatened which occur in the park include woolly monkey *Lagothrix lagotricha*, Emperor tamarin *Saguinus imperator*, giant otter *Pteronura brasiliensis* (VU), giant anteater *Myrmecophaga tridactyla* (VU), giant armadillo *Priodontes maximus* (EN), ocelot *Felis pardalis*, Andean cat *Oreailurus jacobita* (VU), jaguar *Panthera onca*, small-eared zorro *Atelocynus microtis* (DD), bush dog *Speothos venaticus* (VU), North Andean Huemul *Hippocamelus antisensis* (DD), spectacled bear *Tremarctos ornatus* (VU), crocodile *crocodilus crocodilus*, and black caiman *Melanosuchus niger* (EN). Fish species identified by Groenendijk and Hajek (1995) which are eaten by the local population include gamitana *Colossoma macropomum*, paco *Piaratus brachypomus* red-tailed sabalo *Brycon erythropterum*, boquichico *Prochilodus nigricans*, lisa *Leporinus trifasciatus* and lisa *Schizodon fasciatus*.

CULTURAL HERITAGE The park is inhabited by at least four different native groups: the Machiguenga (or Yora), the Mascho-Piro, the Yaminahua and the Amahuaca. The best known and largest ethnic group within the park is the Machiguenga, found throughout the area with the exception of the highlands and upper parts of the Manu river. The forest indians are nomadic, mostly subsistent on some form of rootcrop agriculture on alluvial soils along river banks and lakes, on hunting along water courses and inside the forest, on fishing and on the collection of turtle eggs (Jungius, 1976). Shifting cultivation is the basic agricultural practice. In this system, a patch of primary forest or an abandoned field is cleared, burned and used during the first, second and sometimes third year for cultivation. The field is then abandoned for at least five years and a new one is opened up. As it is easier to clear secondary growth on abandoned fields than to clear the primary forest, the indians prefer to re-use old fields. These peoples are considered part of the park's natural system, and are left to use the park as they please while their lifestyle does not threaten the park's objectives.

LOCAL HUMAN POPULATION Most of the people within the park are indians. The Machiguenga tribe, which is the best known, was reported by Ferrero (1967) to have a total population of 5,000 people, and by Varese (1972) 12,000. Very little is known about the Amahuaca and Yaminahua distribution and their numbers are relatively small. Varese (1972) recorded some 4,000 Amahuaca along the Curanga, Inuya and Sepanua rivers, and 2,000 Yaminahua along the Carija Basin and Piedra Rivers. However, the management plan (La Molina, 1986) suggests that only 300-500 natives of different tribes live in the park. There are no towns in the park, but there is are some 70,000 Quechua speaking inhabitants grouped in 30 rural communities in the high Andean zone, which is adjacent to the park in the Province of Paucartambo. In 1980, most people living outside the park were miners (over 50%), the remainder being principally peasant farmers or fishermen (over 25%).

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VISITORS AND VISITOR FACILITIES Since 1980 the Park has received 250-300 visitors annually, usually in organized groups. There were no accommodation facilities inside the park, and all visitors had to come equipped with food and camping equipment. In 1986 the first permanent tourist lodge was built, and by the late 1980s some 500 visitors came to the park annually, usually during the May to October dry season. A study on the impact of tourism on the park has been undertaken (Dunstone, 1989). There are two main routes into the park, a gravel road from Cuzco to Salvacion (where the Administration Centre of the park is located), followed by travel along the river, or by air from Cuzco (although again river travel is necessary to get up into the area). The overland journey takes up to 1.5 days. Tourist camps exist within cultural and reserved zones adjacent to the park (WWF and IUCN, 1997). According to Janson (1994), six tourism companies operate 20-bed lodges in Manu, run on sustainable principles.

SCIENTIFIC RESEARCH AND FACILITIES The first collections in Manu were made at the end of the 1950s by Celestino Kalinowski, who sold birds, mammals and reptiles to several museums around the world. The first research was done on the black cayman by Kai Otte, assisted by Ranger Jorge Cardenas. After that in 1974 a group of scientists from Princetown University and Chicago University (US) began a series of long-term ecological studies on primates around Cocha Cashu Biological Station, which had been established in 1969 by the National Agrarian University La Molina. In 1975 botanical and ornithological studies were added to the primate studies. In 1981, a donation by WWF was used to construct a new facility for scientific research. Since 1983, the Cocha Cashu Biological Station accommodates between 20 and 30 researcher workers each year. Although the main programmes are in primates, birds and floristic inventories, there are other projects on mammals (*Pteronura brasiliensis*, *Felis* spp.), reptiles (*Melanosuchus*), ants and the population dynamics of the yellow spotted sideneck turtle *Podocnemis unifilis* (VU). Cocha Cashu Biological Station is located 45km northwest from the mouth of Rio Manu (80km upstream) and about 8km inside the border of Manu National Park. It consists of two thatch-roofed houses and a network of trails totaling roughly 20km. A report on the impact of tourism, bats, fish and birds has been compiled (Dunstone, 1989). In 1994, the Imperial College Manu expedition studied orchid and fish diversity (Groenendijk and Hajek, 1995).

CONSERVATION VALUE Manu National Park is probably the most biologically diverse protected area in the world. It contains nearly all the ecological formations of eastern Peru: tropical lowland forest; montane forest and puna grasslands, with their respective flora and fauna. Consequently, Manu is the most exclusive and representative park in the Amazon basin. Some botanists claim that Manu has more plant species than any other protected area on the earth.

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The 850 bird species found in Manu represent 15% of all the bird species in the world. There are at least 13 wildlife species in the park known to be globally threatened including black caiman, giant otter and ocelot. There is also a diverse number of fish, amphibians and invertebrates and it has been estimated that the park contains at least 500,000 species of arthropods (IUCN Technical Evaluation, 1989).

CONSERVATION MANAGEMENT Manu National Park is fully protected by a National Supreme Decree. There are two main objectives for the park, to preserve the environment and species diversity, and to provide an area for recreation and education of the general public. Most of the tourist and research pressure is however directed to the adjacent reserved zone. A management plan has been drafted and is being implemented by means of three programmes, Environmental Management, Public Use and Operations. The park has been divided into 4 zones, the largest by far being a restricted zone mostly of undisturbed forest, accessible only to authorized researchers, official visitors and scientific tourist groups. There are two recreational areas, in Ajanaco-Tres Cruces where there are 200ha, and in the reserved zone of 257,000ha adjacent to the park, as well as a cultural zone where fishing, hunting and logging is permitted. There is also a recuperation zone located in the Andean pastures, where burning and cattle raising are being controlled. Service zones comprises small areas around control posts or the Biological Station, in some cases outside the park. There is an administrative headquarters, five operational control posts, one of which is located outside the park on the lower Manu River to discourage potential loggers and poachers. By the early 1980s all illegal logging along the Manu River had been stopped. Efforts have been made to integrate local inhabitants into the management of the park and a sustained programme of personnel training, health care, education and rural development are likely to continue to contribute to Manu's protection (Saavedra, 1989).

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