



# GUIDE TO MACHU PICCHU

Juan Luis Tord

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Culture is the master key to open the doors of abundance and make the people happy.

José de San Martín

People will not look forward to posterity, who never look backward to their ancestors.

Edmund Burke

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The stone citadel of Machu Picchu.

## Introduction

In 1983, UNESCO declared the Historic Sanctuary of Machu Picchu a cultural and natural heritage to humanity. In July 2007, it was elected worldwide as one of the seven new wonders of the modern world, in a New 7 Wonders contest, and it is currently one of the favorite destinations on the planet — not only for its impressive Inca citadel and more than 100 archaeological sites but also for its spectacular geographic landscape and its biodiversity reserve containing several life zones including cloudforest. Leading travel magazines like Travel+Leisure and Condé Nast Traveler consider that the Inca Trail from *Wiñay Wayna* to Machu Picchu is the best day trek in the world. If we could imagine the stone citadel of Machu Picchu away from this impressive climate and geographical and ecological environment, it would not have the same impact that it has made on everyone who has been able to observe in person its architectural beauty in harmony with the marvelous natural landscape.

The stone citadel of Machu Picchu was carefully planned and designed long



The citadel of Machu Picchu seen from the peak of Huayna Picchu.

before the first rock of white granite was cut and fitted into place. The location had to be appropriately sacred and also spectacular, and the site chosen by the *Inca Pachacútec* was the top of a mountain with an incomparable view over the whole area and of the mountains on all sides. It was also essential that the site should have a source of clean water that could be used for drinking, bathing, and for ritual purposes. The *Inca* engineers located a natural source of water just above the proposed area, and they designed a stone canal that would carry the water by gravity from the spring at the top of the mountain to the lower hill where the stone citadel is located. There, the water would be distributed through sixteen ritual fountains to the entire complex. The symbol of water was sacred to the *Incas*, and in the case of Machu Picchu the mastery of the irrigation canals is considered incomparable by hydraulic engineers today. Indications are that this impressive construction of the Machu Picchu citadel was created for the elite of *Cuzco*.

The *Inca* citadel today has three clearly marked sectors. The main entrance, by the Inca Trail, leads to the Urban sector, the largest in the citadel. North of the urban area is the Spiritual sector, where the sacred temple and the *Intihuatana* or sun dial are located. On the east side is the Residential sector of the city, where the highlight is the *Acclahuasi* or houses of the chosen virgins who attended to the citadel. On the southeastern side, there is an area with different types of housing.



View of the Inca citadel from the southern terraces.

## The citadel of Stone

The citadel of Machu Picchu was discovered for the world and explored by a scientific expedition led by the American Hiram Bingham on June 24, 1911. Before this successful expedition, there were a number of notable explorers and researchers exploring the area, including Count Eugène de Sartiges in 1843, the Italian Antonio Raimondi in 1865 and the Frenchman Charles Wiener in 1875. It is known that the locals knew perfectly well of its existence before the discovery. A few days after Bingham arrived at the *Inca* citadel, another strong expeditionary, the American engineer K.C. Heald began climbing the Huayna Picchu mountain, which rises with vertical walls on all sides, covered in montane forest vegetation. He attempted to reach the summit three times, risking his life because of the steep walls and the thick vegetation on the path. When Heald reached the peak, his view was of spectacular mountains and snow-capped peaks as well an interesting overhead view of Machu Picchu.

The Inca Pachacutec, in his desire to broaden and consolidate the Inca Empire, conquered a number of regions in the north, west, east and south, battling against the



Citadel of Machu Picchu during the rainy season, when mist and water invade the site.

*Chancas* who dominated the neighboring region of *Apurimac*. Machu Picchu is closer than *Cuzco* to the archaeological site of *Sondor*, the military and political center of the *Chanca* civilization. The great *Inca Pachacútec* sought new routes from which to give them battle, building military settlements at *Vitcos*, *Vilcabamba*, *Pampaconas* and *Choquequirao*. Machu Picchu has an unparalleled view towards the *Vilcabamba Valley*, from where the *Chanca* army could approach if it wanted to confront the Incas. At the same time, the *Inca* policy to gain new coca-growing areas drove them to go beyond the Sacred Valley of the *Incas* towards the montane forest further along the *Urubamba* River, led by their valued *Inca, Pachacútec*.

The construction of Machu Picchu was undertaken with the *Inca* idiosyncrasy of bringing together the natural, astronomical and supernatural forces that influence mankind. According to the historian *Luis Valcárcel*, “Machu Picchu was created as a leading site of worship that would function more effectively if it concentrated all that was sacred, as if in that residential center were gathered all those who possessed the magnetism of maximum power.” The fountains and canals are the image of a channeled river, of tamed water. The citadel’s caves are conceived as entries to the *uku pacha* or the world below. The terraces symbolize the different levels of the cosmos, the communication between the world above, this world, and the world below. From *Huayna Picchu* one can clearly see that Machu Picchu is built in the shape of a condor, with the head facing north.



The *Acllahuasi* sector, the living quarters of the virgin women who served the citadel.

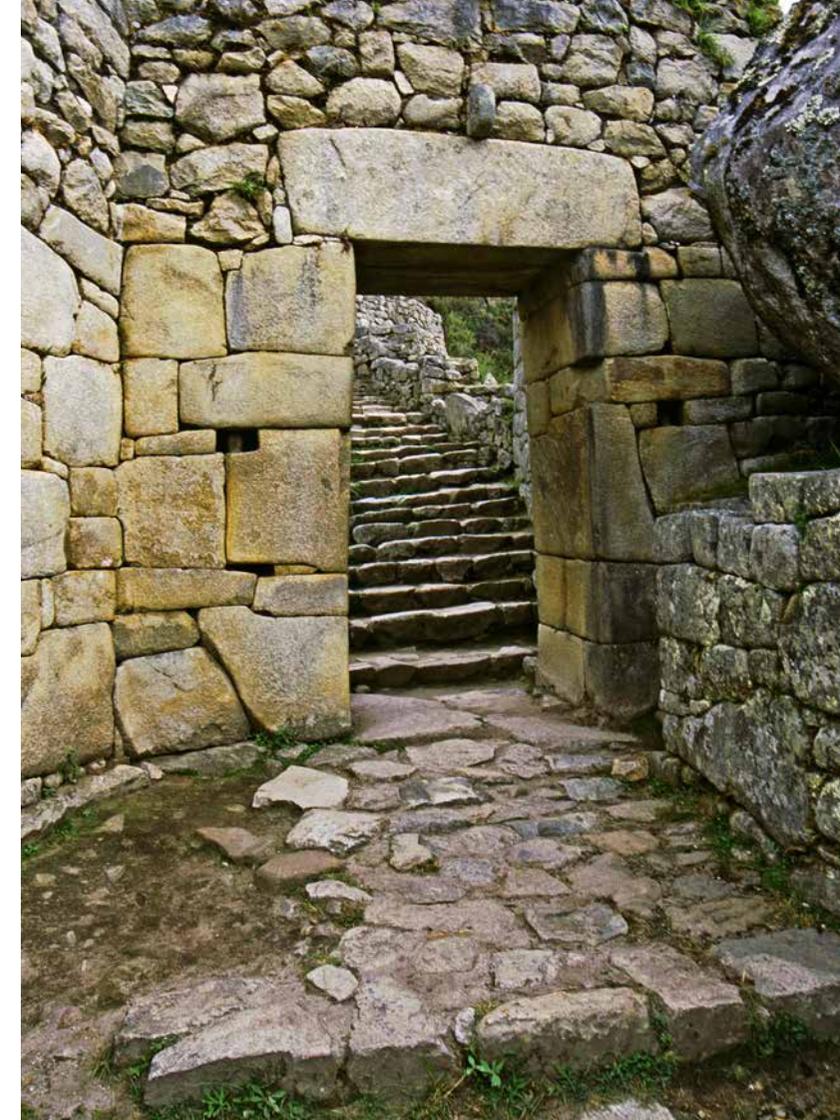
The archaeologists who have excavated at Machu Picchu have come to the conclusion that 60 percent of the work on the citadel was focused on its rock foundations. Because of the solid architecture of granite and the intense rains in the region, the *Inca* engineers had to be certain that the sites chosen for building had foundations that were capable of sustaining the water as well as the weight of the constructions. Thus the building of the citadel itself began once the foundations and the water canals had been completed. Several portions of the mountain were carefully flattened and packed down as the workers created foundations of gravel, stones and even of underground retaining walls. An army of laborers cut the rocks, mainly from the quarry located in the upper section of the same mountain, using a wide variety of stone and bronze tools. Once the first stone blocks were cut, the construction of the buildings, temples and palaces began. Engineers, laborers and specialists from all over the territory were brought to this remote site in the montane forest, all of them supervised by a team of architects and engineers.

In order to equip the citadel with the latest technology, the *Inca* astronomers worked together with the engineers and the stonemasons to shape observatories that could mark precisely the summer and winter solstices as well as other astronomical events. Other workers would fulfill their *mita* or mandatory community service by building the roads that would connect this citadel to the capital of *Cuzco* and other recently built centers such as *Ollantaytambo*, *Pisac*, *Vitcos* and *Vilcabamba*. Additional laborers were put to work on the extensive agricultural terraces that would provide food for the future

inhabitants of the citadel as well as produce for the ritual sacrifices. *Inca* technology and workmanship rapidly transformed the difficult terrain of the montane forest into a series of stepped terraces that would produce up to six hectares (14 acres) of sacred maize.

When Machu Picchu was finally ready to be inhabited, at some point between 1450 and 1460, the first governor of the

The principal entryway to Machu Picchu, located in the Urban sector, in the southwest of the stone citadel.



the recently created Inca Empire, *Pachacútec*, arrived most probably on a litter and accompanied by his royal guests, a large entourage of servants and part of his harem. The foods, supplies, and the servants and cooks must have been carefully planned and trained so that the emperor could relax comfortably with his guests. As with the architecture in *Cuzco*, a large part of the stonework at the citadel belongs to the imperial style imposed by *Pachacútec*; some of the buildings were built from rocks that weighed more than fourteen tons, cut and mounted into place with great precision. The water from the high section of the mountain that sustains Machu Picchu descended to the citadel along a stone canal and entered first into Pachacutec's quarters, ensuring that the *Inca* was in contact only with the purest water available from the old mountain. A carved stone pool in the royal quarters allowed the *Inca* to take a refreshing bath in complete privacy, and the royal chamber was the only one at Machu Picchu that had a wash basin with running water.

### The Urban area or *Hanan*

This is the largest area of the citadel. The entrance is where the Inca Trail travelers arrive, through a large stone gate on the southwest side of Machu Picchu. The stone entryway leads to a group of very well-built stone rooms with special buildings such as the Temple offered to Water.



The Urban sector or *Hanan* at the citadel of Machu Picchu.



The Temple of the Sun or Water Temple is located in the Urban sector of the citadel.

## The Temple of the Sun or Water Temple

This is the most surprising building in the stone citadel, built on one single block of granite. Its design is adapted to the shape of the rock on which it stands. The wall has a beautiful curve made up of regularly positioned polyhedrons of granite, and the whole has the appearance of a truncated cone. The contour of the wall is reminiscent of the *Coricancha* in *Cuzco*. It has two trapezoidal windows that on the outside have protruding knobs that stand out from the stone wall. Inside, on the ground, there is a large carved rock. There are niches and a beautiful double-jamb window known as the Door of the *Amarus*. Under this window is one of Machu Picchu's most beautiful fountains.

This temple contains fourteen rows of perfectly assembled stones and its two windows face towards the east and west. Under the fountains there is a large stone platform in which some authors believe to have seen a magic presence in the water. Behind the Temple of the Sun lies a rectangular courtyard and in one of its walls there are nine niches separated by projecting stone spikes. Facing the tower and the fountains is one of Machu Picchu's characteristic architectural features — the *Masma*. This is a three-walled room facing east. The rear wall has four recesses separated by three conical spikes and a window in each side wall. This is a place that would have been used for watching ceremonies and observing the course of the sun. It is the only circular building in this stone citadel and also the finest in its details and its 10-meter long curve. Its design, size, the

exquisite masonry and its similarity to the *Coricancha* lead to the possibility that it was a very important temple. Its windows are aligned with precise mathematical calculation to permit the rays of the sun during the winter solstice (June 21) to enter and illuminate the stone located in the center of the building. On each winter solstice visitors can clearly see this effect. The most remarkable feature of the buildings that surround the tower is the group of fountains. One source of water stems from this site to supply 16 other finely carved fountains, and some believe this was a shrine dedicated to the god of Water.

### The Royal Tomb

This is located below the Temple of the Sun, acting as a base for the temple with a huge granite stone that is both the entryway and the ceiling of the mausoleum. At the entrance stands a rock into which six steps have been carved. Inside, there are two beautiful walls with niches and cylindrical stone shafts, and a rock with two steps lies in the center of the room.

The appearance and atmosphere of this cave reveal the dedication given to funerals or the underworld. Facing northeast from the Temple of the Sun is a huge monolithic lintel that is estimated to weigh about three tons. The complex includes several chambers with finely detailed windows and niches.



The Royal Tomb is located in the lower section of the Temple of the Sun, in the Urban sector.



### The Residence of the *Inca*

Of all the buildings dedicated to housing, this is the finest, largest and with the best lay-out at Machu Picchu. Its entry door gives on to the city's first fountain and the Water Temple, crossing the walkway formed by the grand stone stairway. It includes two chambers with large monolithic lintels and beautifully crafted stone walls. One of these chambers has access to a service room with a sewage canal. The complex includes a corral for camelids and a private terrace with a

Gateway to the Inca Residence, to one side of the Temple of the Sun.

view of the eastern side of the city and the rising sun.

### The Principal Sacred Temple

This was built with three very well-crafted walls. The wall facing northwest is made of one solid piece of granite. The end wall has a rock shaped in the form of an altar and measures 4.3 meters long, 1.5 meters tall and 0.85 meters thick (approximately 14 ft x 5 ft x 3 ft). There are two smaller

The Spiritual sector of Machu Picchu. Below is the Principal Temple and the *Intihuatana* sundial is above.





stones beside this monolith, measuring one meter tall. The wall that rises above the platform is one of the most beautiful at the citadel. It is 2.5 meters high (8 ft) and is formed by regularly shaped six-sided polyhedrons that diminish in size. It has eight trapezoidal niches and in between them there are six sleepers to tie down the roof. The northeast wall also features megalithic stones and niches. The Principal Temple or *Templo Mayor* is one of the two buildings with greatest spiritual significance in the citadel, and appears to have been

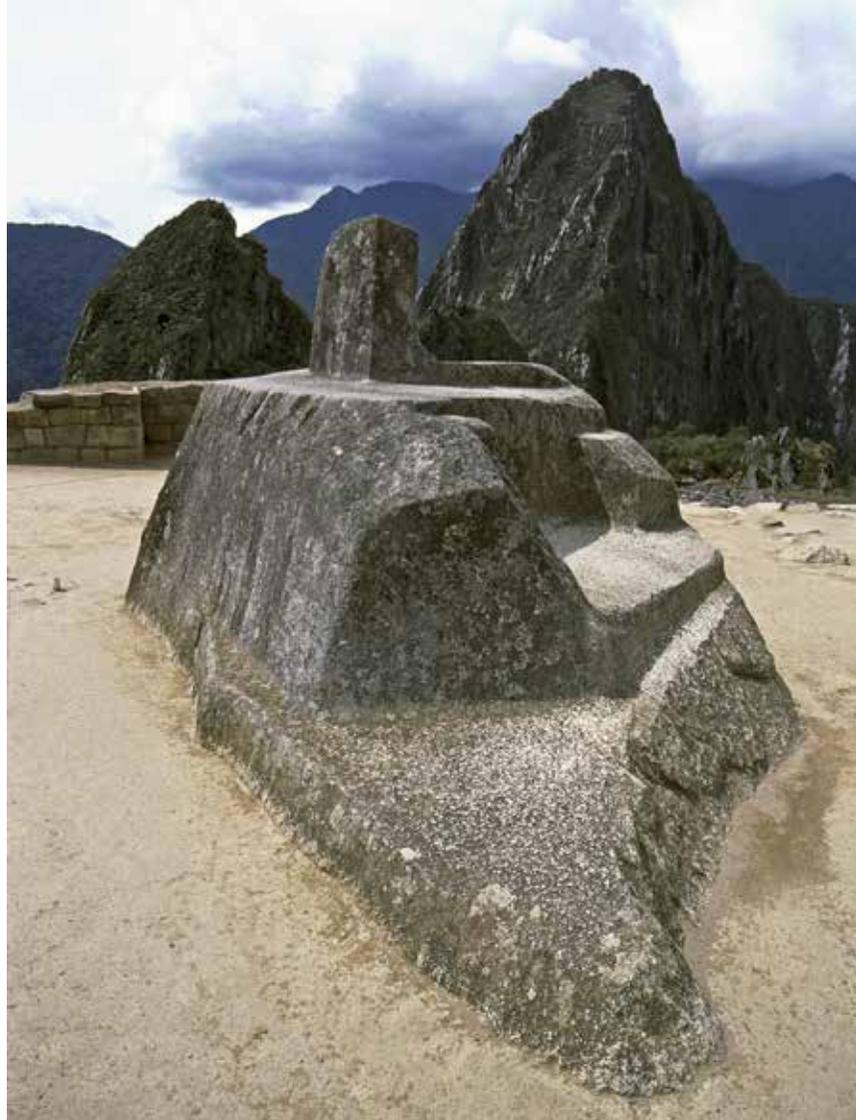
One of the three windows in the Sacred Temple, facing east to the rising of the sun and to the great main plaza.

dedicated to the worship of the god *Wiracocha*, the invisible and superior Andean god. The Principal Temple's architecture is similar to the materials used for constructing both temples but its immense and finely cut foundation rocks present a more polished and linear structure, which has led anthropologists to believe that this was the most important temple in the citadel. It was the site of important celebrations and sacred rituals that had great mystic significance for the citadel and for the world view of the *Incas*.

### The Temple of the Three Windows

This is located northeast of the Sacred Square. It measures 10.5 meters long by 4.2 m wide (35 x 14 ft), with three artfully cut stone walls. The east wall is formed by polygonal stones and the windows partly cut into the wall are the largest found in all *Inca* monuments. The step motif, found in other stone monuments of the *Incas* such as *Ollantaytambo* and *Pisac*, is cut into the stones that face southwest.

Names carved into the stonework of this Temple and dated July 14, 1902 still can be clearly seen. This building is one of the most important because of its proximity to one of the greatest spiritual points — the Main Square. It is rectangular, formed by only three walls and covered by an adobe roof. The walls were built from huge blocks of massive rock cut into polygonal shapes and fitted perfectly one to the other, leaving space for three windows that face the exact point of the rising sun. The roof is



The *Intihuatana* stone, located at the highest point of the citadel, above the Sacred Temple. This sundial stone casts a continually moving shadow from sunrise to sundown.

sustained by a stone pillar and there is a stone carved with figures that represent the three levels in which the Incas divided the Andean world: the heavens or spiritual world (*Hanan Pacha*), the earth or the mundane (*Kay Pacha*), and the underground or interior life (*Uku Pacha*).

### The *Intihuatana* or Sun Dial

The *Intihuatana* is on the highest esplanade of the Spiritual sector of the citadel. Hundreds of visitors every day admire this beautiful stone sculpture, which creates a moving shadow from sunrise to sundown. This stone clock is on a small artificial mound of superimposed terraces. It has been carved from one solid piece of granite with successive horizontal cuts, and measures 1.8 meters high. The sun dial is surrounded by walls of fine masonry as well as a number of stone steps. This artificial pyramid is connected to the Sacred Plaza by a stone stairway of 78 steps. The meaning of *Intihuatana* is “hitching post of the sun.” This mystic place served as a center to worship the *Hanan Pacha* or world above, represented by the sun, which was a reflection of the god *Wiracocha*, the all-powerful god of the *Incas* who stood above all else in the *Inca* people’s particular viewpoint. Even today, the legend of the *Intihuatana* is told by men of all indigenous races and nations, who describe unique monoliths that served as hitching posts for the king of the skies. It is believed that one of these posts is located on the esplanade of the Temple of the Three Windows. The *Intihuatana* is sculpted

from one piece of granite in the form of a prism with four sides for the points of the compass. The obelisk occupies a total area of 8.6 cubic meters (303 cubic feet) and is located on a small esplanade. The time and the seasons of the year were calculated according to the shadows cast by the sun as its rays landed on the granite sculpture.

### The Sacred Square

This is a large, almost square esplanade in the middle of the citadel. It is surrounded by the most important group of buildings at Machu Picchu: the Sacred Temple, The Temple of the Three Windows, and the *Intihuatana* sun dial, as well as the chamber for the priests, or the Sacristy, on the southeast.

At the time the citadel was inhabited, the *Incas* carried out grand ceremonies and rites in this large and strategically placed plaza. Today the plaza is empty, a place where llamas are often seen crossing the open spaces and walking along the innumerable terraces that are custodians of this beautiful citadel.

### The *Acllahuasi* or House of the Virgins

This is a group of high-ceilinged and spacious rooms that occupy a considerable part of the Residential sector. The architecture is finely detailed and it was supposedly

reserved for the craftswomen who worked in the religious rites. Behind the large rooms there are a series of square stone structures that were used to store the harvest from the different farm terraces that surround the citadel. This sector appears to be closely related to the daily work of providing food and the tasks necessary to maintain this magnificent stone city. A stone staircase leads down from the *Acllahuasi* to the Temple of the Condor.

### The Temple of the Condor

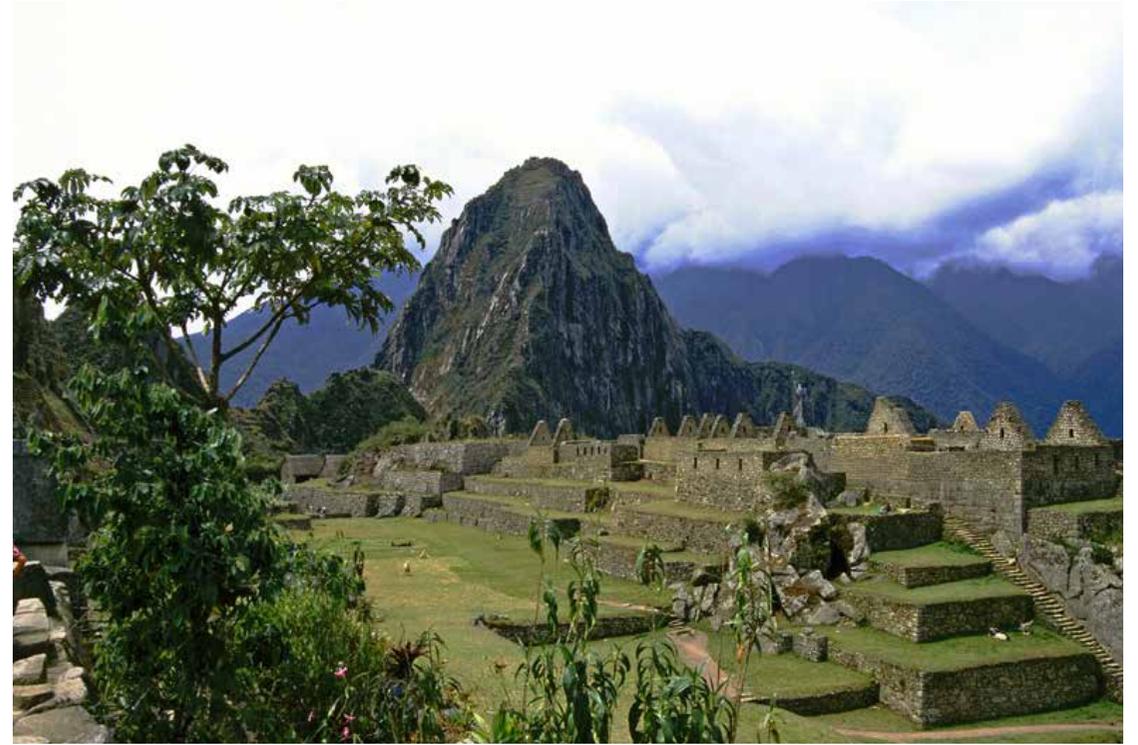
This is a stone sculpture of the neck and head of a condor cut into the ground as if it were drinking water from a small spring. The rear walls are used to complement the three-dimensional image of the bird. The three dimensions of the *Inca* world are seen here: the sky or spirituality (*Hanan Pacha*), the earth or the mundane (*Kay Pacha*) and the subsoil or interior life (*Uku Pacha*). There are several caves, a large image in the upper section carved with large niches and bone remains of camelids. It was an area used for sacrificing *llamas*, which were a standard offering to the Andean gods. The condor and other birds were used to relate to the *Apus* or sacred mountains, in sessions organized by the shamans or healers.

In the *Inca* world view, the condor represents production and fertility when it is seen flying — by moving its wings it brings the clouds together, causing storms and the



The Principal Plaza, which is guarded by the most important sites and where the *Inca* rites were performed.

subsequent rain that fertilizes the earth. On the south side of the Temple of the Condor lies the Residential sector for the *Inca* upper class elite, to which it is connected by a



The *Acllahuasi* sector, the living quarters of the virgin women who served the *Inca* citadel.

series of courtyards. This Temple is located on the southeast side of the citadel, and its architecture includes a unique series of irregular features in its different sections.



Circular stone mortars filled with water for gazing at the stars and the sky over Machu Picchu.

## The Mortars Section

In the Residential sector there is an area of mortars, where there are two stone discs or dishes placed in the center of the room. Initially it was thought that they might be stones used to prepare dyes, perhaps because remains of weaving tools were found in the neighboring rooms. It appears, however, that they were used for ceremonial purposes related to observing the sky, which was reflected in the water.

## Fountains and Aqueducts

This is a group of water storage tanks, dispensers or *paqchas*, made up of sixteen fountains that held an important spiritual and sacred significance, since the religious beliefs of the *Incas* considered the natural elements to be the most important gods. This is why water was particularly important as one of their most highly venerated gods and why the citadel had so many fountains and pools for worshipping this divinity.

A principal aqueduct descends from the South Cemetery, distributing water to the terraces in the agricultural sector. These fountains would collect the water from the springs, which would channel the groundwater from the infiltrations of rain, providing one of the most important and indispensable elements for this civilization to exist.

## District of the Intellectuals

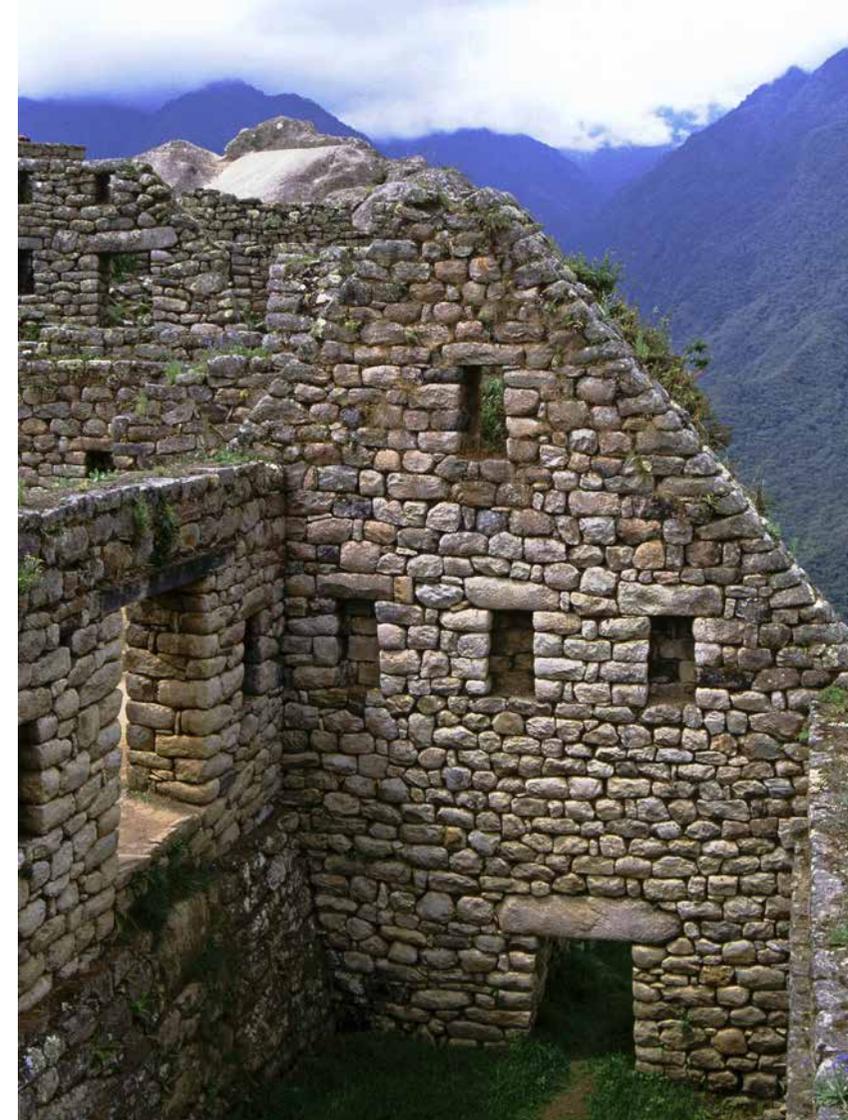
These chambers contain fine walls of massive rock and some of the most beautiful niches in the stone citadel. This group is composed of narrow streets, passageways and terraces on rocky outcrops that provide an amazing view of the canyon. These terraces are known as the “east terraces.” Here too, there are two stone mortars in the ground of one of the chambers, in a reddish colored stone. These mortars were used to prepare dyes used in the fine weavings and for decorating pottery.

## The Prisons

Access to this area is by the street to enter the Intellectuals district. One walks southeast past the mausoleums and to a series of niches on a stone platform. It is believed that the rings sculpted into the edges served to immobilize the criminals who had been caught. There are ten water fountains next to the stone stairway.

## The Three Doors

These are located north of the Intellectuals district. They are double jamb doors with holes on the sides enclosing vertically-positioned cylindrical pegs which would appear to have been locked to a mechanism on which the doors swung. The buildings are



Architecture of a house at the extreme south of the Residential sector of the *Inca* citadel.

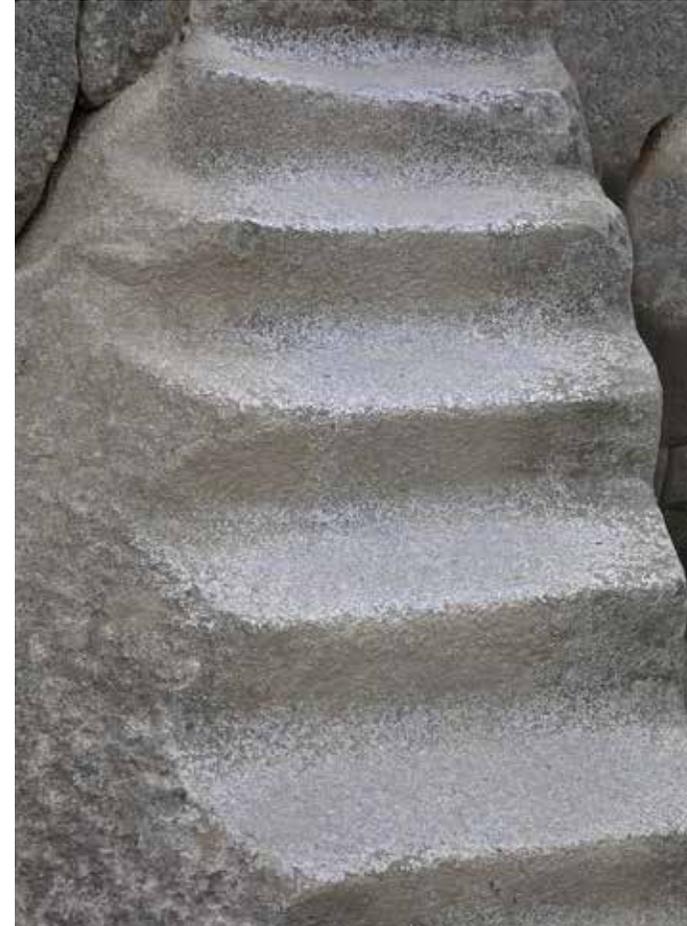


Residential sector of the citadel, on the east side of Machu Picchu.

composed of three interior areas subdivided into rooms, patios and passageways built with roughly hewn rock and joined with some form of mortar. The terraces face east and provide an ideal space for contemplation, and a full view of Huayna Picchu. Next to this complex is the path that leads to the top of that beautiful mountain.

#### Stone stairs

The stone stairs at Machu Picchu are well used and essential to be able to reach every nook of this magic *Inca* city.



Stone steps leading to the Temple of the Sun or Water Temple.

The Hiram Bingham expedition counted three thousand steps inside the citadel. There are steps sculpted into the existing stone or extensive stairways formed by well-crafted steps or fitted firmly into the edge of the abyss, as they are on the pathway that climbs Huayna Picchu.

There are also unique staircases built with stones or slabs that jut out of walls like an audacious design of cantilevered steps. The precipices are the natural defenses of this citadel,

surrounded by steep cliffs and sheer drops that make it almost impregnable because of its height and the difficulty of climbing the steep sides covered in dense undergrowth.

### The House of the *Ayamayocc* or Watchman's Hut

This is located on the south esplanade next to the Cemetery. It is a stone chamber with a high thatched roof and would have housed the “guardian of the dead.” Its windows open onto an excellent view of the *Putucusi* hill and the canyon valley of Machu Picchu that comes from the *Urubamba* Valley. The terrace of this hut affords one of the most beautiful views of the Inca citadel and of the impressive mountain of Huayna Picchu.

### The Agricultural Sector or *Hurin*

This sector is made up of superimposed Andean terraces, measured to perfection, known in Spanish as *andenes*. They are contained by stone walls that are built to facilitate the use of the mountainside and the channeling of water through canals or gutters. The terrace walls are 3.5 meters tall, 3 meters wide and 20 meters long (11 x 10 x 65 ft). In the lower section of the housing sector at Machu Picchu there are particularly important buildings such as the Sacred Rock and the group of courtyards and gardens known as *Acclahuasi*, built between the terraces in the *Hurin* sector. The incredible views from the agricultural terraces not only frame the magnificent landscape of the *Inca*



Unique stairs with stones that jut out from the walls lead to the *Ayamayocc* or Watchman's Hut, located in the upper section of the citadel from where the whole panorama can be observed.

A large number of terraces located in the southern section of the stone citadel.

Empire's citadel but also speak of the sophisticated system of farming that the *Incas* developed. This sector was built in such a way that the crops were not affected by the heavy rains throughout the year because of their excellent drainage system. It is said that it was *Pachacútec* himself who created the network of terraces, canals and storage areas. Without such a perfect drainage system, Machu Picchu would have disappeared long ago from the effects of earthquakes and the torrential rains typical of the cloud forest and rainforest. It is also worth noting that the terraces are at different altitudes, reaching up to the highest parts of the Huayna Picchu mountain. The *Incas* were very skilled in utilizing the different altitudes to plant crops for each climate level, using seeds of the different species that grow at different altitudes in the montane forest, expanding the variety of tubers, vegetables and other species grown for consumption.

### Huayna Picchu

This steep rocky mountain is thickly covered with the vegetation of the montane forest. It stands north of the Machu Picchu citadel at 2,740 masl (9000 ft), 350 meters (1148 ft) above Machu Picchu. The stone pathway to this beautiful pyramid-like mountain starts at the northernmost edge of the stone citadel from the group of the buildings of the Three Doors. It is a narrow path with sections of steps carved into the





original rock and the greater part of the route is along the south face of the mountain. The climb becomes steeper and steeper until it reaches a wall that has to be scaled at an eighty-degree angle just 40 meters below the top. Care needs to be taken because of the dew on the vegetation in the early hours of the morning. There are guiding ropes and cables along some parts of the climb.

There are crop terraces on the upper part of Huayna Picchu and above them

The rock peak of Huayna Picchu.

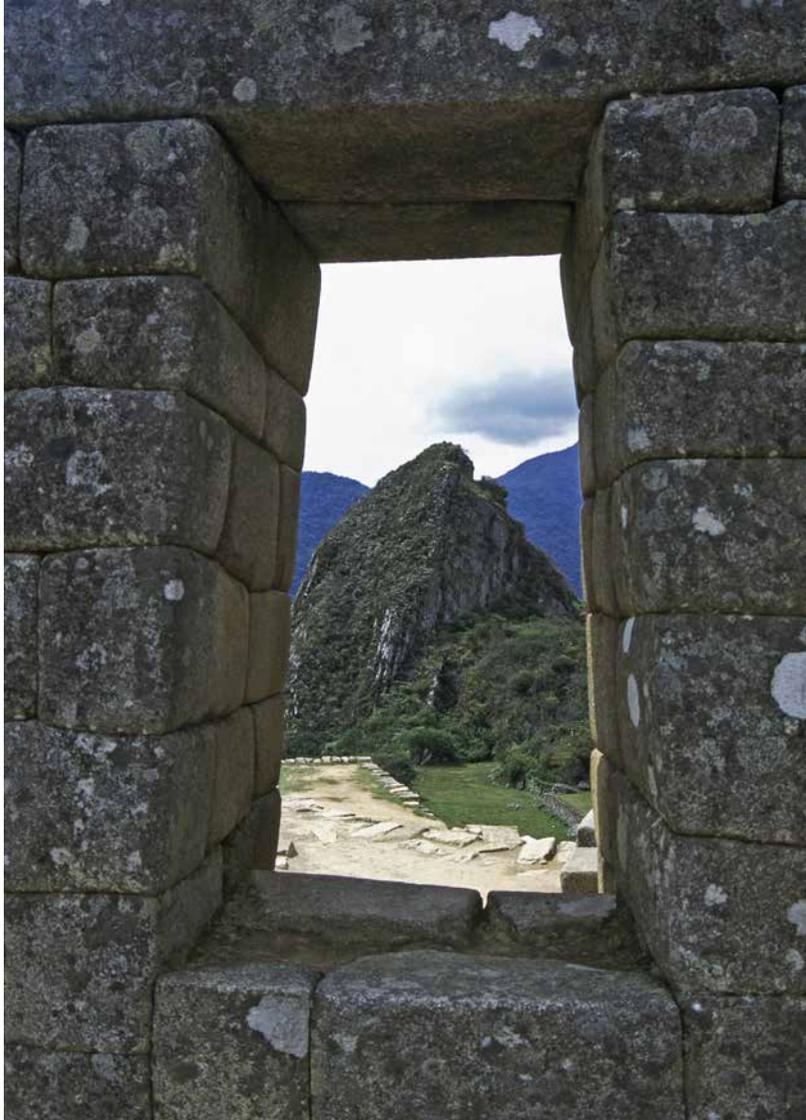


are archaeological remains that appear to be an overnight lookout point. The panorama is stunning from the top of Huayna Picchu. Looking northward is *Mandor*, where there is a beautiful waterfall, and to the east is the steep hill of *Putucusi*. Looking south provides a fabulous aerial view of Machu Picchu, and to the west lies the gully of *Ccolpani*. One can also see the peaks of *Ollantaytambo* towards the southeast and the sharp peaks of

The archaeological site near the top of Huayna Picchu mountain.



*Putucusi* mountain, located across from the stone citadel and part of the *Cordillera Urubamba* mountain range.



A window onto the large natural rock known as Machu Picchu, which means “old mountain” in *Quechua*.

*Huarocondo*, while to the east in the distance is the region of *Apurimac* and to the north lie the warm valleys of *Vilcabamba*.

### The Temple of the Cave

An hour and a half’s walk behind Huayna Picchu leads to this site. It is one of the most remarkable underground constructions in the region. It is a series of caves, some of which have been sculpted with blocks of fine quarry rock that are fitted with precision into the uneven contours of the huge natural rocks that serve as the ceiling. The walls include false facades and trapezoidal niches with double and triple jambs. It is believed that it may have been used as a cemetery and that the tombs were sacked at some time in the region’s history. Continuing east from Huayna Picchu, the path leads to the *Urubamba River*.

### The Imperial Tomb at Machu Picchu

In 2012, French explorer Thierry Jamin discovered an important tomb in the Urban sector or *Hanan* of the *Inca* citadel. Using geo-raders, which provided a 3D view and analysis of the subsoil as deep as 20 meters below the ground, the research team were able to determine the existence of a large funeral chamber, with a considerable amount of gold and silver, and a whole underground structure that harbors a dozen



cavities that possibly hold an equal number of mummies, some of them very small and that could belong to children. There is also proof of the existence, behind the access door, of a gold-plated staircase leading to the main chamber.

According to Jamin, “The time, dedication and materials used in this building tell us that it could only have been for a very important person. It cannot be a priest or a curaca, a provincial authority, who is buried there. It could only be the final resting place of someone of royal lineage, and very possibly of the *panaca* (Emperor) *Pachacútec*.”

#### Archaeological remains found at Machu Picchu

The first excavations undertaken by the Yale expedition led by Hiram Bingham did not yield any results. But some of the sectors of the citadel contained an extraordinary number of remains of the people who lived at Machu Picchu, while other sectors had hardly any. The excavations inside the houses rarely

*A llama in front of the stone citadel of Machu Picchu.*

yielded results, while certain piles of waste were excellent — the remains found included potsherds, stone objects, metalwork (silver and copper), and skeletal remains.

### Skeletal Remains

The expedition found the remains of 135 people at Machu Picchu, of which 109 were women, 22 men and four children. Lying alongside the men were stone hammers, bronze bars, polishers and stone knives. With the women's remains there were small clay jars as well as dogs and guinea pigs.

### Remains of Pottery, Stones and Metals

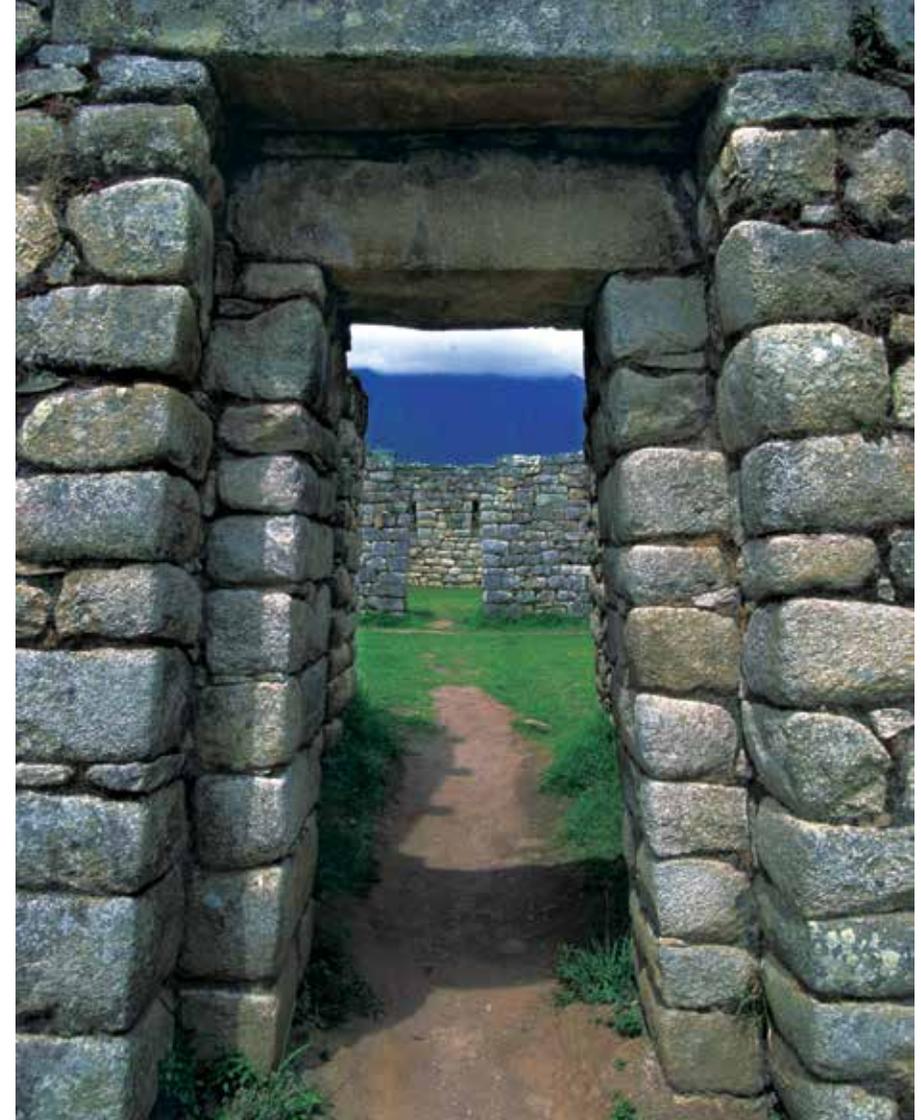
The most intact findings were pottery and potsherds. The Bingham expedition collected 555 pots, of which 58 were excavated close to the main entrance door to the citadel, 53 in the highest terrace, 28 in the middle terrace, 108 on the north side of the main stairway, and 95 at the stairway itself and in the fountains. The largest number of fragments were found on the terrace of the Temple of the Three Windows. They found close to 350 platters and jugs in the tombs that were excavated. The 200 pieces of bronze and silver that they found included knives, axes, chisels, tweezers, stilettos, rings, bracelets, discs, bells, needles and pendants. Bingham remarked on the discovery of a beautiful bronze knife on which were carved a young fisherman and his catch,

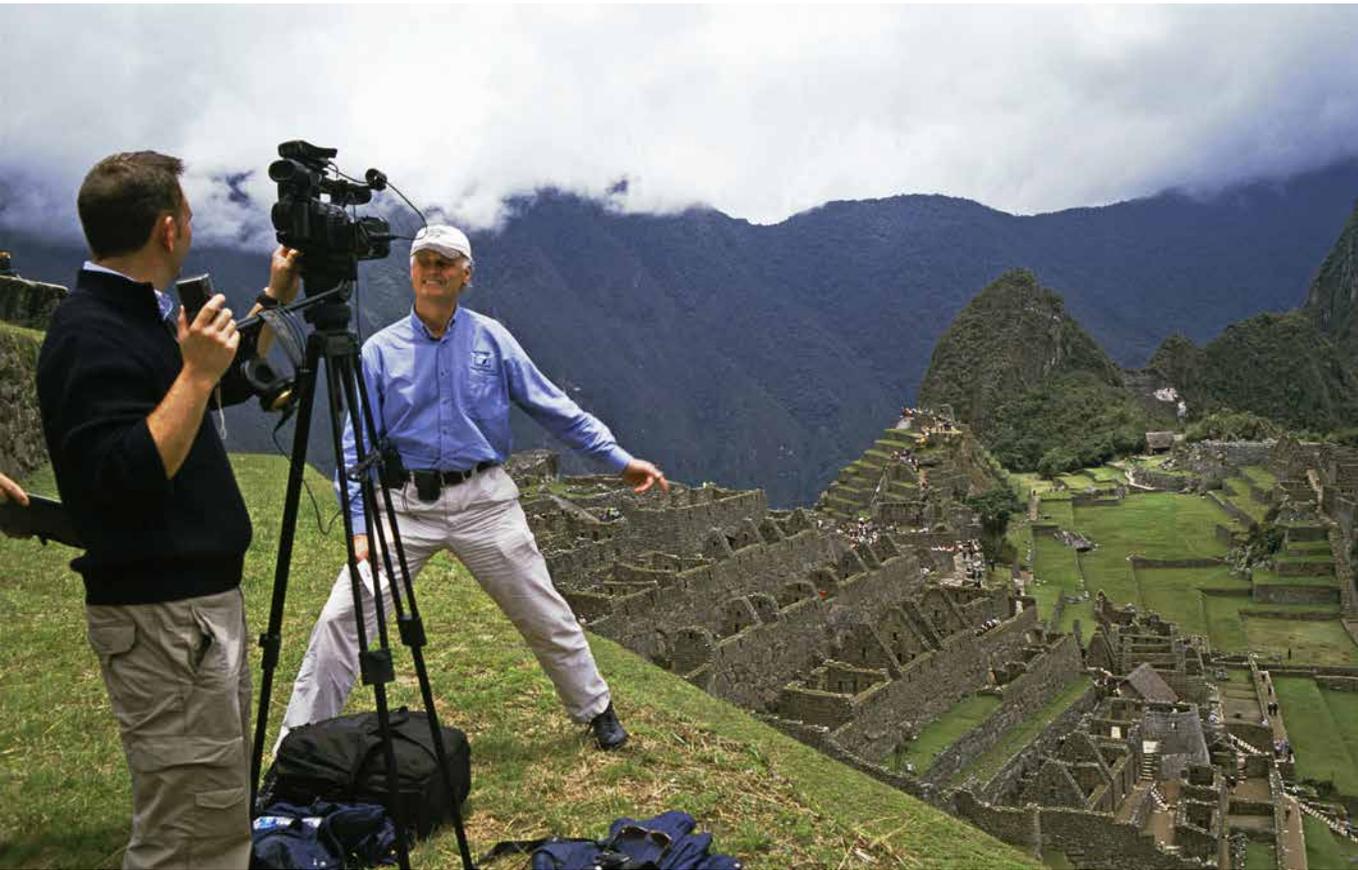


found close to the Sacred Rock. According to W.H. Holmes, this knife is considered to be “one of the most beautiful examples of the ancient work in bronze that has ever been found in the Americas.” The artifacts in stone included mortars and decorated quadrangles. The hammers that were found were made of diorite and hematite, very hard stones. But most remarkable among the stone artifacts were a collection of stone discs of different sizes. There are 156, which measure between one centimeter (half an inch) to as large as 23.5 centimeters (11 inches). Bingham was convinced that they were accounting chips. Another enigma is the collection of 42 small oblong stones made of green schist or shale. There are also 29 tiny triangular stones. The Peruvian historian *Luis Valcárcel* points out that the very dark stone discs, and the triangular and oblong stones have only ever been found at Machu Picchu, “and there is no archaeological reference of any excavation where so many samples have been found together, and because of their size they form actual series.” Other remarkable pieces are a black stone goblet, a dove-shaped stone, and a *konopa* or offering container carved in the shape of an *alpaca*.

Hiram Bingham’s expedition took 46,000 pieces from Machu Picchu to Yale University between 1911 and 1912, with the commitment to return them to Peru within a year. As a consequence of the 100 years since Bingham’s discovery of Machu Picchu,

A double jam door in the Residential sector, in the *Acclahuasi*. This type of door indicated that only someone who had the appropriate rank could enter there.





negotiations to recover the thousands of pieces of pottery, metal, stones and human remains were successful. Yale University signed an agreement with the Peruvian state and returned to Peru the archaeological artifacts and skeletal remains from Machu Picchu in air shipments from the United States in 2011, and the final shipment in November 2012.

### The South Cemetery

The South Cemetery is on an esplanade before reaching the main entrance to Machu Picchu. There is an interesting monolith facing west. It is 4 meters long and 1.2 meters tall (13 ft x 4 ft), and has seating space and a handle on one corner. Some writers believe it is a funeral table.

Swiss cinematographer Bernard Weber presenting Machu Picchu for the New Seven Wonders world contest in 2007.



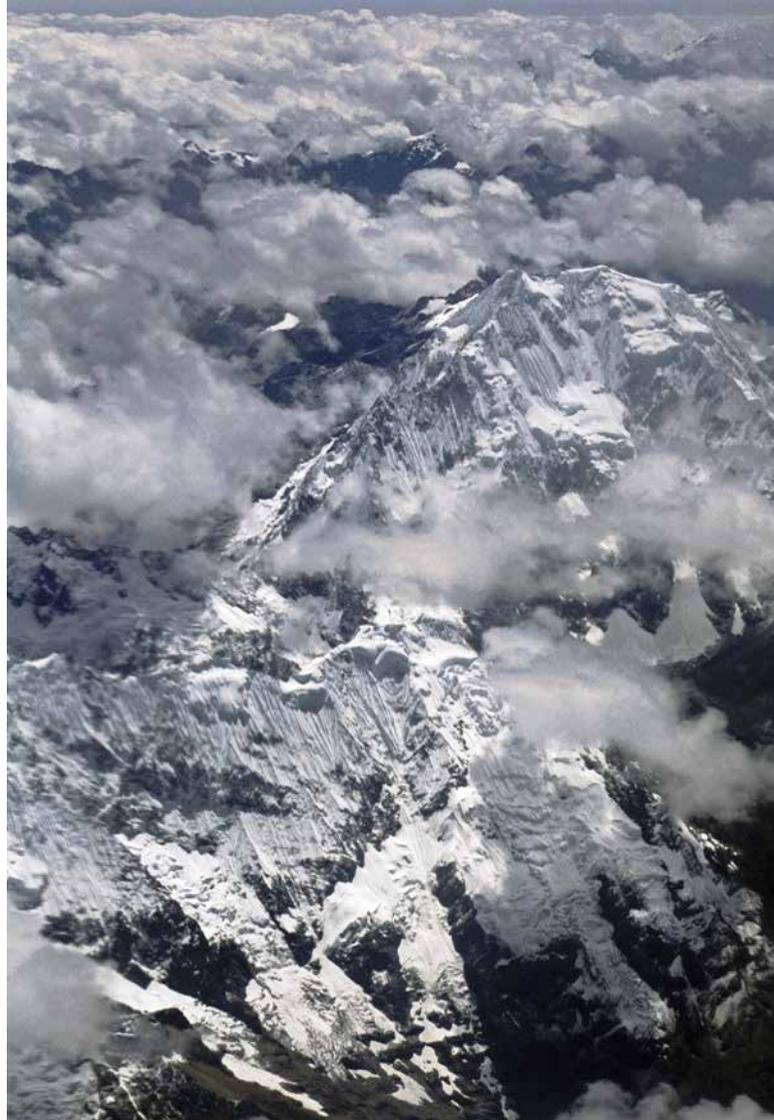
A spectacled bear at the Bear Rescue Center in the Historic Sanctuary.

## The Biodiversity in the Sanctuary

Altitudes in the Machu Picchu Historic Sanctuary cover a range of 4545 meters (14,911 ft), from the lower areas of the Amazon rainforest at 1725 meters above sea level (5,600 ft), between the *Urubamba* and *Aobamba* rivers, to the snow-covered peaks that reach 6271 masl (20,574 ft) at the top of the great Mt. *Salkantay*. This extraordinary sanctuary contains nine life zones, huge granite mountains, snow-capped peaks, rivers, canyons and extraordinary precipices. These life zones are:

1. Subtropical Humid Forest — Located between 1725 to 2000 masl (5000 to 6500 ft) at the end of the *Urubamba* Valley, a vegetation thick with trees typical of the Amazon montane forest, where there is a rich variety of flora and fauna. Trees stand 30 meters tall (98 ft), surrounded by many types of small trees and bushes, creepers and plants that grow on others (epiphytes), including colorful orchids.

2. Subtropical Humid Low Montane Forest — Between 2400 and 3000 masl (7870 ft and 9800 ft) in the *Urubamba* and *Cusichaca* Valleys as well as the mountain slopes that



Aerial photograph of Mt. Salkantay, which in Quechua means “wild mountain.” This is the highest point in the Machu Picchu Historic Sanctuary, at 6271 masl (20,574 ft).

flank them. The trees that grow here include alder trees, the tall *pisonay*, *cetico* and the *jacaranda*.

3. Subtropical Very Humid Low Montane Forest — This life zone includes the Machu Picchu citadel, *Intipunko*, *Chachabamba* and the Temple of the Moon. It extends over more than four thousand hectares (almost 10,000 acres), occupying 14 percent of the Sanctuary. This life zone lies between 2000 and 3000 masl (6500 and 9800 ft). The most representative species are the cedar and the quina tree.

4. Subtropical Montane Rainforest — Located between 3000 and 3800 masl (9800 and 12,400 ft), this zone includes the archaeological sites of *Intipata*, *Wiñay Wayna*, *Phuyupatamarca* and *Sayaqmarka*. It covers nine thousand hectares (22,000 acres) and occupies 27 percent of the Sanctuary. The trees are not as tall, and include *aliso*, *intimpa*, *carapacho*, *maqui maqui*, *unca*, bay, *carricillo* and the tree fern.

5. Subtropical Very Humid Montane Forest — The altitude in this zone also ranges between 3000 and 3800 masl (9800 and 12,400 ft) but the annual rainfall is much lower. It covers an area of 2500 hectares and represents eight percent of the Sanctuary. The tree species include *intimpa*, *maqui maqui*, *unca*, bay and the beautiful *queñual*.

6. Very Humid Subtropical Sub-Alpine Paramo — The altitude ranges from 3800

to 4100 masl (12,400 and 13,400 ft), on the upper half of the mountain slopes. Here there are no longer the forests seen at lower altitudes. It is the domain of high altitude grasslands, with different species of grasses and small shrubs.

7. Subtropical Sub-Alpine Pluvial Paramo —

Located in the upper part of the mountain slopes between 4100 and 4400 masl (up to 14,400 ft). This is a grassland flora, with plants such as *ichu*, herbs and small plants.

8. Subtropical Alpine Pluvial Tundra —

Located between 4400 and 4900 masl (14,400 to 16,000 ft), it covers a little more than 4000 hectares (just under 10,000 acres) and represents 13 percent of the Sanctuary's surface. The scrublands are drier and the most widespread plants are the *ichu* and other grasses. Close to 4900 masl lies the

The vertical geography that surrounds the citadel of Machu Picchu, with the *Urubamba* River making its way between the mountains and the cloud forest.



moraine landscape of soil and rock that stretches across this cold area before reaching the snow-covered mountains.

9. Subtropical Nival — This life zone is within an altitude of 4600 meters above sea level and 6271 masl (20,500 ft) on the peak of the snow-capped *Salkantay*. The only plant species that have adapted to this harsh zone are fungi and lichens clinging to the rocks. Most of this life zone is made up of the mountain ridges and peaks of the *Cordillera Urubamba* mountain range.

#### The Wildlife of the Historic Sanctuary of Machu Picchu

The most important animals in the sanctuary are those that live in the cloud forest, including the Andean or spectacled bear, swift hummingbirds and the beautiful cock-of-the-rocks. There are other animals in almost all the Sanctuary's life zones, including the American kestrel and red-backed hawk, and the Andean fox. If we were to choose the most representative species in the Sanctuary, they would be the following:

1) Andean or Spectacled Bear — The spectacled bear, *Tremarctos ornatus*, is native to South America and can be found in Venezuela, Colombia, Ecuador, Peru and

The Andean bear inhabits the cloud forest of the Historic Sanctuary.



Bolivia, usually in humid forests. They are omnivores but their diet is basically vegetarian since they constantly feed on wild fruits, honey and bromeliads. The male of the species reaches a height of two meters (6.5 ft) standing on its two hind feet, while the females rarely grow taller than 1.5 meters (5 ft). Illegal hunting and the accelerated deforestation of their habitat are the main causes of the decreasing population. In the Sanctuary, they can be seen in the cloud forests eating bromeliads, their favorite food in these ancient woods.

2) Andean Fox — They can be seen along the river banks of the Sanctuary as well as in the high *tundra* or *puna* close to the mountains. It is a species of wild dog about 70 cm long (27 in), with a long and furry tail, pointed ears, and a grayish brown coat that allows it blend into its surroundings. It is a carnivore and hunts its prey very cautiously, hiding from sight, to finally surprise the prey with a leap to catch it — mice, *vizcachas*, lizards, eggs, fowl and small animals. It belongs to the canine family that includes jackals, wolves and dogs. They live in burrows and their lifespan is about twelve years. Its habitat covers the region of Andes mountains from Ecuador to Patagonia. There are five sub-species of fox that inhabit the Andes. The fox in the photograph is the *Lycalopex culpaeus andinus*, which inhabits the coast and the mountains of Peru and Chile.

An Andean fox, which can be seen in almost all the life zones of the Historic Sanctuary.

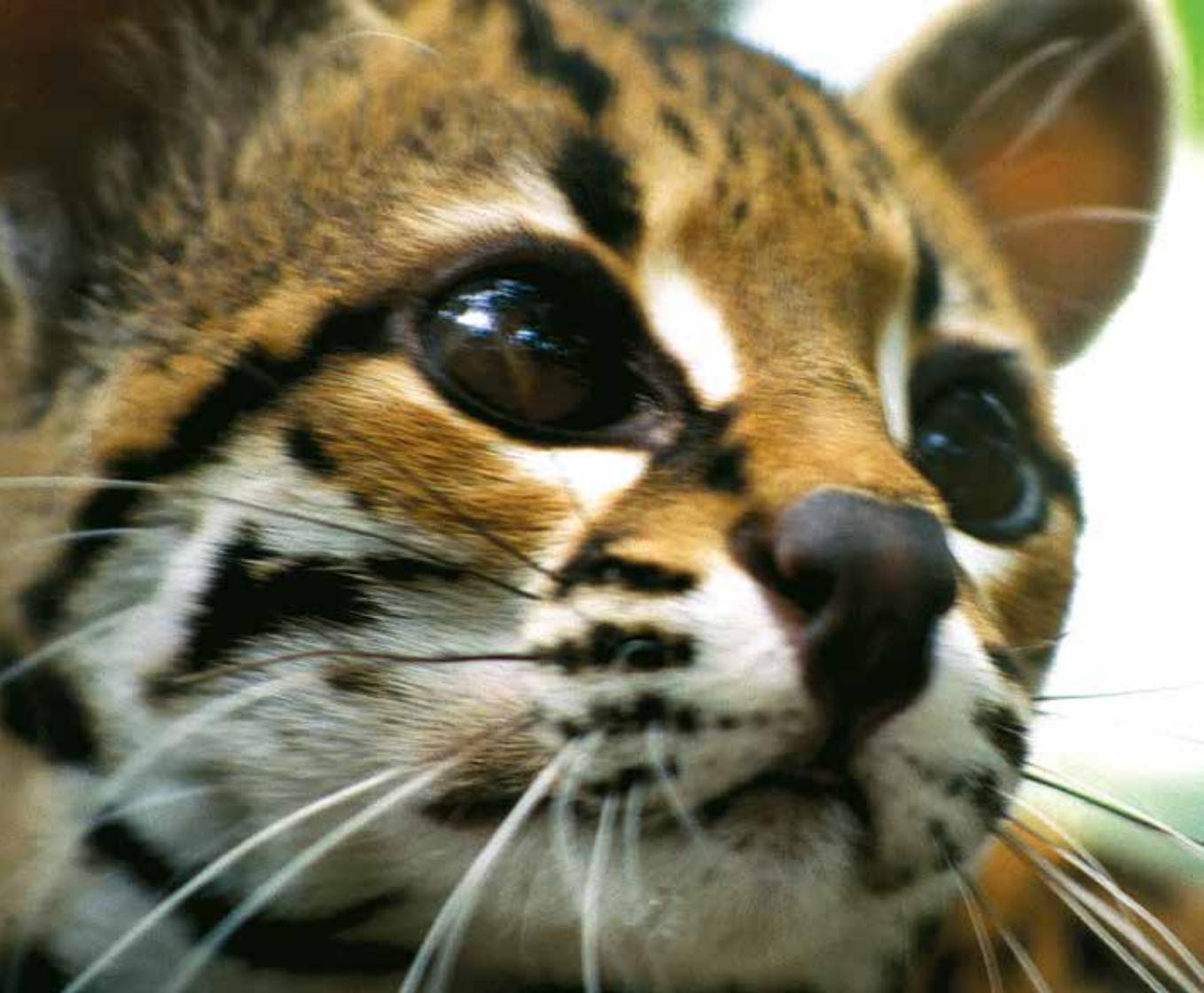




The *puma* can be found in several ecological zones in the Historic Sanctuary.

3) *Puma* or Mountain Lion — The *puma* or mountain lion (*Puma concolor*) is a carnivore mammal of the *Felidae* family, native to the Americas. This great feline lives in more places than any other wild land mammal in the North and South American continents. It possesses an extraordinary skill to adapt to its surroundings and its diet includes numerous species from different ecosystems, which allows it to live in all the principal ecosystems of the Americas. It is the second largest cat on the continents and the fourth largest in the world, after the tiger, lion and jaguar. As a hunter and ambush predator, the puma tracks a large variety of prey. In the Machu Picchu Sanctuary it will find agouti rodents, *vizcachas*, birds, small reptiles, deer, and if it is lucky, an Andean fox.

4) Ocelot — The ocelot or tiger leopard (*Leopardus tigrinus*) is a carnivore mammal species with the nocturne habits typical of wildlife in the tropical forests of Central and South America. It lives within the Sanctuary at altitudes of 1700 and 2000 masl (4200 and 5000 ft) in the high jungle, although its habitat can range from between 400 and 4300 masl. It is more than double the size of a common cat and weighs around 10 kilos (22 lbs). It is an efficient hunter that likes to catch rodents, birds, eggs, reptiles and agoutis — and not only on the ground, since it also climbs trees to steal eggs or catch birds. It lives in the trees, about halfway up, where it is camouflaged to cautiously make speedy and surprise attacks, which also makes it difficult to locate them in the dense



The ocelot usually forages for food in the high jungle of the Sanctuary, between 1700 and 2000 masl (between 5500 and 6500 ft).

Amazonian vegetation, its preferred habitat.

5) Giant Hummingbird — The giant hummingbird (*Patagona gigas peruviana*) is the world's largest hummingbird, measuring 18 cm (almost 9 inches). It has a long body, light brown in color with a white underside, and a forked tail. It flies more slowly than other hummingbirds, reminiscent of a swallow. This beautiful bird tends to look for nectar in the flowers of *Puya Raymondii* bromeliads at great altitudes in the Andes. Its habitat ranges between southwest Colombia to the northeast of Argentina and north of Chile. It can be seen along the Inca Trail towards Machu Picchu.

6) Andean Cock-of-the-Rocks — The Andean cock-of-the-rocks or *tunqui* (*Rupicola peruviana*) is Peru's national bird. It inhabits the high and humid cloud forests of Amazonia on the eastern slopes of the Andes mountain range from Colombia to Ecuador and south to Peru and Bolivia. Its unparalleled beauty and popularity has made it a hunted bird since the nineteenth century, as mentioned in the writings of German explorer Alexander von Humboldt. Today there is strong pressure to capture these birds for trafficking since one specimen can fetch up to five thousand dollars on the illegal foreign market. It is a threatened species.



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The American kestrel can be seen in almost all of the life zones at the Machu Picchu Historic Sanctuary.

7) American Kestrel— This hawk (*Falco sparverius*) inhabits almost all of the Sanctuary's ecosystems, from 1725 to 4400 masl. It is small, measuring between 21 and 27 cm. Its light weight forces it to change course even in the mildest winds. It nests in the holes of trees and in cacti, possibly using nests that have been abandoned by woodpeckers. It also nests in the crevices of the rocks on cliff sides, in nests abandoned by other birds. It feeds off large insects such as crickets and even frogs, salamanders, rodents, small birds that it hunts in flight, and carrion.

8) Torrent Duck — The torrent duck (*Merganetta armata*) is a species that lives along the Andes mountains. The male is beautiful, with a bright plumage of streaks of black and white, speckled brown on black on its wings, a striking black and white head with continuous horizontal streaks that follow the curvature of the head down to the neck. It has a shiny red beak that matches its red webbed feet.

9) Andean Condor — This is the symbol of the Andes and is the largest bird in the Americas that can fly. It can be seen gliding between the mountains of the Sanctuary,

A torrent duck in  
the *Urubamba* River.



using the strong air currents with little effort. The wingspan of the Andean condor (*Vultur gryphus*) can be as wide as four meters (13 ft) and its length is 1.20 m (4 ft) from beak to tail. To gain altitude it glides in a climbing spiral, using the thermal air currents that rise from the ravines below. It is a huge vulture, and it feeds on carrion, smelling the bodies of llamas or foxes that die frequently in these mountainous regions.

10) Andean Motmot — This bird is given several names locally (*barranquero*, *caracolero*), describing its habits. It eats insects as well as snails, and fruits such as ripe bananas. They are seen flying in the dense forest areas of the Sanctuary, both in the cloud forest and lower tropical Amazon forest. They are easily spotted due to their intensely green-blue plumage. They make their nests by burrowing deep holes in the sides of cliffs or in banks of earth. They are large birds, measuring more than a foot long, with a large head, a strong and thick beak that is slightly curved and serrated on the upper edges; the tail is long, black underneath, and sometimes swings like a pendulum.

11) Orchids — There is a special scientific interest in the original genetic diversity found in the Machu Picchu Historic Sanctuary. The lush forest vegetation includes cedar trees, bay, *romerillo* and the *queñual*, bushes, ferns from the Tertiary era,

The beautiful bird known as an Andean Motmot, seen in the Machu Picchu Historic Sanctuary in the cloud forest areas as well as the tropical Amazon rainforest.



as well as high-altitude palm trees. Highlighted among these numerous plants are the ornamental variety, many with beautiful blooms like the many different exotic orchids.

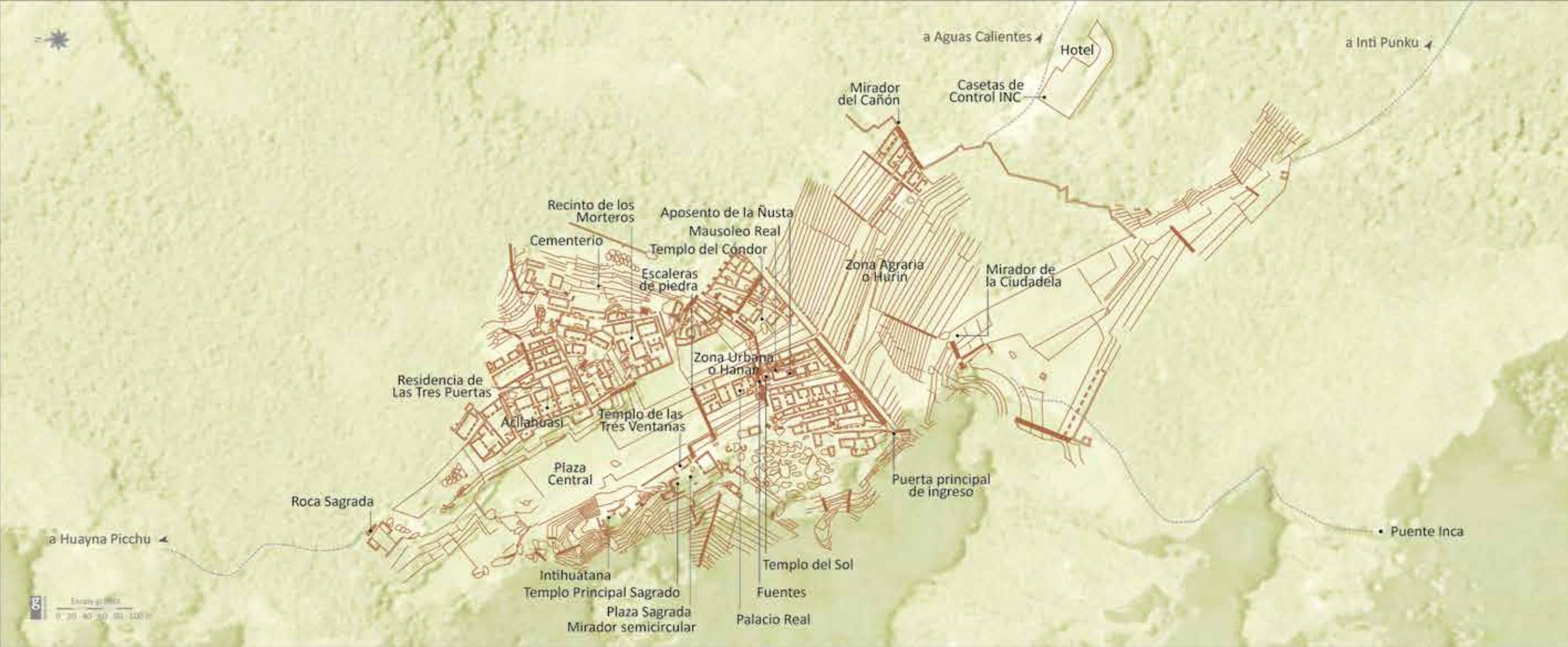
Eighty genera and 400 species of orchids have been scientifically recorded in the Historic Sanctuary of Machu Picchu, including eight species new to science, three new varieties, one new name for science, one new genera for Peru, seven new species for Peru, as well as four new genera and 38 new registrations. The Sanctuary includes five different micro-climates between 1800 and 5000 masl (5900 and 16,400 ft), a rich breeding ground for a large number of orchid species.

The American Orchids Society (AOS) in its May 2001 magazine recognized that the Inkaterra Machu Picchu Pueblo Hotel's "Orchid Collection is probably the world's largest orchid species collection set in a natural environment in a private facility that is open to the public."

Waqanki Orchid.

The oral tradition of *Cuzco* has preserved the *Masdevallia veitchiana* in an *Inca* tale known as the Legend of Waqanki, which in *Quechua* means tears or "you will cry." The petals of this beautiful flower have tear-like marks.





a Aguas Calientes ↙

a Inti Punku ↘

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Casetas de Control INC

Mirador del Cañón

Recinto de los Morteros

Aposento de la Ñusta

Mausoleo Real

Cementerio

Templo del Condor

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Mirador de la Ciudadela

Residencia de Las Tres Puertas

Zona Urbana o Hanan

Acllahuasi

Templo de las Tres Ventanas

Puerta principal de ingreso

Roca Sagrada

Plaza Central

• Puente Inca

a Huayna Picchu ↙

Intihuátana

Templo del Sol

Fuentes

Palacio Real

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# GUIDE TO MACHU PICCHU

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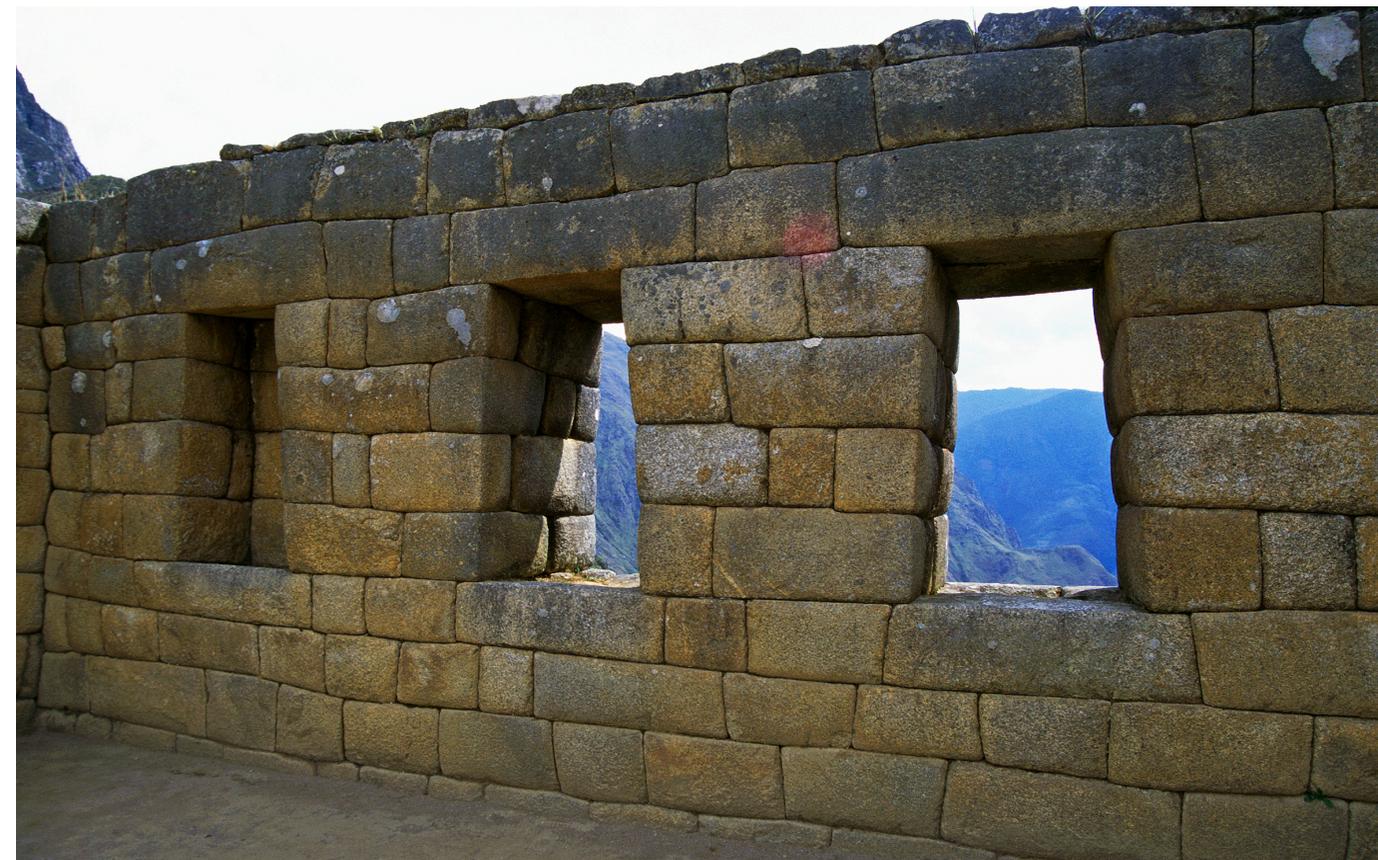
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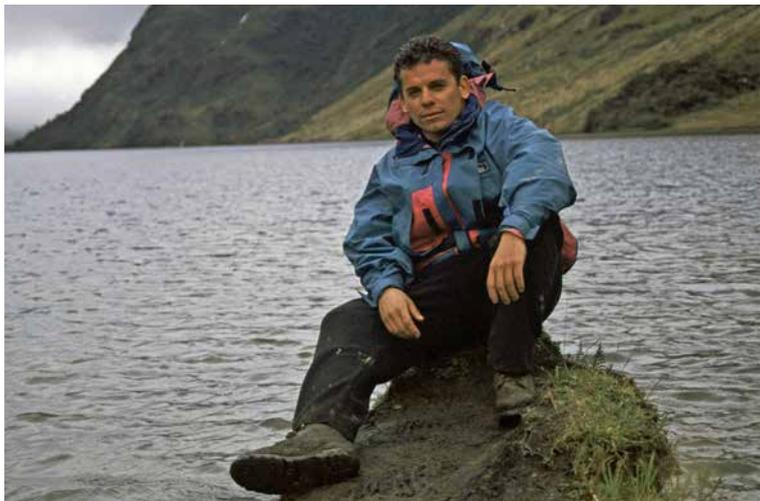
Cover photo

Mist over the citadel of Machu Picchu, seen from the Watchman's Hut that stands out at the upper edge of the archaeological site.

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Juan Luis Tord was born in Lima, Perú, in 1971. He is a book producer, editor, photographer, writer, graduate in Law and Political Sciences from the University of Lima and Master in Company Management from the University of Piura. He is the first Peruvian to conquer the snow peaks of Huandoy Este and el Churup, in the Cordillera Blanca. He has been production coordinator for Panamericana TV on special documentaries about Peru, re-transmitted globally on Discovery Channel. He is the author of the text and the photos of the book *Mundo Perú*; editor and photographer of the book *Antártida - La península Antártica*; co-author, editor and co-photographer of the book *Andes Peruanos - Historia Viva*; editor and co-photographer of the book *Santuario Histórico de Machu Picchu*; editor of the book *The Colonial Churches of Colca - Arequipa*, and editor and photographer of the book *Pueblo Libre: Historia, Cultura y Tradición*. He has been producer and researcher of documentaries for America TV. He was publications manager for the prestigious Inkaterra company.



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