Ethnobiological use of High Andean Forest as a source for vernacular architecture at Nature Reserve La Ilusión

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The poster presented in Klagenfurt 2026, for the Conference From Forests to Heritage, describes the restoration of two architectural volumes located in a rural area with remnants of high Andean forest in Colombia. The volumes were restored in 2020 as part of the La Ilusión Nature Reserve's natural and cultural heritage restoration program, which was recognized as an OECM (Other Area-based Effective Conservation Measure) in 2021 by the Ministry of Environment and UNEP-WCMC. The program is led by the El Bosque y La Niebla Foundation and aims to rescue and prevent the disappearance of intangible and tangible heritage related to the high Andean forest in Colombia.

Before and after restoration. Volume ¨Tia Pascuala¨ (left) and volume ¨El Gato¨ (right).

The buildings were restored with the aim of giving them heritage value—and today they serve as a Interpretive Center, museum, and educational, and artistic space. The volumes are the main focus of the La Ilusión Nature Reserve's Meeting and Bio-Learning Center.

The heritage complex of the La Ilusión private nature reserve is made up of two buildings dating from the late 19th and early 20th centuries, built in vernacular architecture. The first building is called ¨Tia Pascuala¨ its walls used bahareque as a technique (wooden framework with mud mortar) and the second volume is called ¨El Gato¨ built in adobe (sunbaked brick) technique both traditionally used in rural areas of the country.

For its restoration, both tangible and intangible aspects were taken into account. In the first phase, the reserve owners and the Foundation financed the hiring of heritage architect Oscar Eduardo Villamizar, who led the identification and assessment of the two

buildings and subsequently generated an intervention proposal for the restoration and adaptation of both buildings in a manner that was careful and respectful of the environment and the history of the site.

The team led by architect Villamizar assessed the state of conservation of the homes and determined the necessary measures to safeguard the integrity of the structures. This led to the definition of measures to preserve the highly deteriorated wooden roof trusses and their protective clay tile mantles. Likewise, reinforcements were carried out on the wall and roof structures to ensure the structural integrity of the heritage structures. These interventions, respectful of the construction systems, safeguarded the woven ceilings made of vines and *chuscón* or Andean bamboo (*Chusquea, sp.),* and the bahareque and adobe walls that shape the vernacular buildings. Both constructions featured the doweling technique, which uses wooden joints such as tenons and mortises to fit pieces together without the use of metal nails or screws.

The cyclopean bases were preserved and reinforced, and the woodwork was moistened, retaining its color and patina, determined by the smoke from a nearby kitchen that took place adjacent to the adobe volume. The plasters made with mortars of mud, lime, sand, and horse manure were preserved. Finally, the façade was painted with earth pigments recovered from the same area, achieving the complete preservation of the heritage complex.

Extensive ethnobiological research was conducted to document the traditional inhabitants of this rural area's habitation and use of flora and soil as building materials extracted from the high Andean cloud forest found *in situ*. Both bahareque and adobe constructions feature a variety of flora and soil materials: tree fern trunks (Cyathea sp.), Andean bamboo canes (Chusquea sp.), and strings and braids of various materials: as yet unidentified white vines and other fibers such as fique (*Furcraea cabuya*) and the bark of the leather tree (*Daphnopsis caracasana*), wheat (*Triticum spp*.), boards and columns made of encenillo (*Weinmannia tomentosa*), and other unkown species, ground limestone, horse dung, and sugarcane molasses as a binder, among other materials. Both houses use white, yellow, and pink clays extracted from the same site and belonging to the Guaduas Formation, a Subachoque syncline characterized by claystones, siltstones, quartz and coal sandstones.

In-depth interviews were conducted with elderly traditional inhabitants, who described how they came to know the houses. Certificates of tradition and freedom of the land, as well as property deeds, were also studied to establish genealogies that would allow us to find direct sources that could help us calculate the year of construction of the buildings. During the roof reconstruction process, objects such as espadrilles, bottles, horseshoes, tools, and old nails were found on the rooftops, which we preserved as vestiges of

peasant living styles from different periods of the municipality's and the country's development.

The restoration took almost five months. Upon completion, the process of structuring the Structural Design Plan for the Interpretive Center (SDPIC) began with the help of Beatriz Piñeros, museologist, and Kevin Fonseca, industrial designer. This process defined the narrative content and educational tools that would be housed in the houses.

Beatriz Piñeros, museologist and Kevin Fonseca, designer conducted interviews to design the SDPIC. 2020

In the adobe house—called "El Gato" in homage to one of the 90-year-old descendants of the builders who shares that nickname—found objects and others donated by local residents who voluntarily wanted to contribute to the "little museum," as they have called it, are preserved, along with a chronology of the area's ethnohistory.

Volume ¨El Gato¨. Ceiling made of Andean bamboo, cueron, and clay cured by smoke

The adobe house "Tía Pascuala" displays indigenous artifacts such as Spindle whorls and grinding stones found in the Nature Reserve, as well as works of art related to the geopolitical future of the area and the nature reserve's biodiversity. Both volumes or houses have a time window in the ceiling that allows visitors to see the construction technique, a shadow theater, and the display of an ox anvil that Serafín Contreras, a local farmer, made from ¨balso¨ wood in 1960.

Both houses featured the doweling technique, which uses wooden joints such as tenons and mortises to fit pieces together.

The houses were used as living quarters for various peasant families who modified the landscape over time. One of the inhabitants interviewed commented that when he lived there, the bathroom was in the back, serving as a latrine, and the kitchen was located in a separate structure next to the adobe house. It consisted of a stove made of clay and seasoned stone, not very high off the ground so people could gather around it. Fires were lit over the stoned stove to cook food in clay pots.

Ancient stone stove rebuilt by local inhabitants. Made of wood, clay and stones.

At the time of the restoration in 2020, the kitchen was gone, but the smoke and soot definitely left their mark on the wood and roofs of the adobe house, which were stained black and seasoned. In 2022, following the Foundation's heritage program, the kitchen and stove were rebuilt with the help of traditional inhabitants who shared the stories woven around them and revived the way they were built.

Below is a list of the materials extracted from the Andean cloud forest by the ancient builders of what are now heritage buildings.

Flora

Common name (Spanish)	Scientific name	Usage
Chuscón (Andean bamboo)	*Chusquea, sp.*	Structure for bahareque walls Mesh ceiling
Helecho arboreo o palma boba	*Cyathea, sp.*	Columns
Encenillo	*Weinmannia tomentosa*	Tie beams, columns
Aliso	*Alnus acuminata*	Tie beams, columns
Bejuco blanco	*Unknown*	Tie
Cuerón	*Daphnopsis caracasans*	Bark used as tie of andean bamboo in ceilings
Paja de trigo	*Triticum aestivum*	As filling for roofs under the clay tiles
Unknown	*Unknown*	Floor board
Cabuya	*Furchraea andina*	Tie ceiling
Fibra	Unknown	Natural fiber tressed to tie ceiling mesh

Rocks excavated *in situ*

Rocks	Scientific name	Usage
Yellow Clay	Sedimentary rock	Used to make adobe bricks and stuffed walls of bahareque house.
Pink clay	Sedimentary rock	Used to make adobe bricks and make a style composition in walls.
Grey rock	Limestone	Pulverized and mixed with horse manure and water to paste walls
White rock	Limestone	Pulverized and mixed with horse manure and water to paste walls
Other rocks	Limestones, unknown	To build the cyclopean base of both houses

Other materials found in walls and ceilings

Material	Usage
Equine manure	It is collected dry and powdered. Mixed works as plaster for walls and ceilings
Charcoal pieces	In the Andean region, it is traditional to make charcoal from different species of trees. Small pieces were found in adobe bricks. Charcoal was mixed with clay, giving it a particular style, either as decoration or to enhance the mixture.
Molasses	Mixed with clay to make plaster

Fauna found living in the abandoned volume (All individual were rescued and relocated successfully)

Common name	**Scientific name**
Lonely wasp	*Unknown*
Bat	*Myotis, sp.*
Swallow	*Pygochelidon-cyanoleuca*
Shrew	*Cryptotis thomasi*
Lizard	*Riama striata*

In 2023, the municipality of El Rosal donated a solar energy system that complemented the operation of the Interpretation Center. Visits to the Interpretation Center are scheduled and guided according to the El Bosque y La Niebla Foundation's socio-environmental education plan. Thousands of rural students and visitors have visited the center since 2021, learning about the past, present, and future of the cloud forest, the ethnohistory of the area, and its heritage.

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Abstract

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The poster describes the restoration of two architectural volumes located in a rural area of high Andean forest in Colombia. The volumes were restored in 2020 as part of the La Ilusión Nature Reserve's natural and cultural heritage restoration program led by El Bosque y La Niebla Foundation. La Ilusión was the first area in Latin America recognized as an OECM (Other Area-based Effective Conservation Measure) in 2021 by the Ministry of Environment and UNEP-WCMC. The program aims to prevent the disappearance of intangible and tangible heritage related to the high Andean cloud forest in Colombia.

The heritage complex of the La Ilusión private nature reserve is made up of two buildings dating from the late 19th and early 20th centuries, built in vernacular architecture. Their walls used techniques such as ¨bahareque¨ (wooden framework with mud mortar) and adobe (sun-baked clay brick), respectively, construction techniques traditionally used in rural areas of the country.

For its restoration, both tangible and intangible aspects were taken into account. In the first phase heritage architect Oscar Eduardo Villamizar, led the identification and assessment of the two buildings and subsequently generated an intervention proposal for the restoration and adaptation of both buildings in a manner that was careful and respectful of the environment, the community and the history of the site. In the second phase, identification of wood and plants used, and ethnographic research (in-depth interviews with elderly traditional inhabitants) were conducted.

The restoration took about five months and involved native elder inhabitants that shared vernacular building knowledge to local youngsters. Upon completion, the Structural Design Plan for the Interpretive Center (SDPIC) was implemented. The SDPIC defined the narrative content and educational tools that allow sharing the ethnobiological history of the architectural complex. Nowadays, thousands of rural students and visitors have visited the Center, learning about the past, present, and future of their territory, and how ¨the cloud forest became both a house and a home¨.

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