



Llamas and the natives of the Andes Mountains have formed a bond of mutual dependence.

South America's Camels

By Eric Hoffman Photos by Wolfgang Kaehler

Llamas and their camelid cousins face major changes in their homeland ranges.

One cold night in the Andean highlands, Felix Palacios and Nolberto Chambilla Mandamiento lay in their bedrolls looking at the stars. Around them knelt llamas, their legs folded snugly under woolly bodies. The animals' thick coats glistened with the frost that occurs 300 nights a year on the altiplano, or high plain.

Palacios, a graduate student in anthropology at the Catholic University in Lima, Peru, asked Mandamiento, an Aymara-speaking herder, "If all the llamas and alpacas died, what would happen?"

"We would die," Mandamiento replied.

"Why?"

"Because we raise llamas and llamas raise us."

Since the 1970s Palacios has worked to record the beliefs of highland herders like Mandamiento. Living atop the 14,000-foot altiplano, close to Lake Titicaca, which

straddles Peru and Bolivia, Mandamiento represents traditional Andean pastoralism, an ancient way of life based on the only pre-European livestock domestication in the New World.

The llamas and alpacas under Mandamiento's care are part of a kinship between herders and animals that is cemented by appreciation, tradition, and religious devotion dating back 5,000 years through a series of cultures culminating in the Inca Empire.

Though it has been 400 years since conquistadors destroyed the Incas, Mandamiento lives much like his Inca forebears. He shears his alpacas and collects and loads his llamas with goods like potatoes and alpaca wool for trading journeys to lower, more temperate villages, where maize, wheat flour, squash, and fruit are available. With agriculture marginal, at best, on the altiplano, these bartering trips form the backbone of a timeless way of life.

But changes are afoot in the homeland of llamas and alpacas and their wild relatives, guanacos and vicunas. Although conditions for alpacas appear favorable, modernization is adversely affecting the traditional use of domestic llamas. Social upheaval, meanwhile, is hampering efforts

to conserve vicunas and guanacos, which are sometimes victimized by wanton acts of terrorism and hunting.

As members of the six-species camel family, Camelidae, the llama and its relatives are often called camelids. The ancestors of today's camelids evolved in North America between 9 and 30 million years ago. These creatures eventually died out in North America, but not before spreading to Asia, Africa, and South America. They reached Asia via the land bridge that connected Alaska to Siberia. Today's Asian and African species are Bactrian (two-hump) and dromedary (one hump) camels.

When the Spanish arrived in South America, they recorded four kinds of camelids. In the wild were the guanaco (*Lama guanicoe*) and vicuna (*Vicugna vicugna*), or (*Lama vicugna*). The alpacas (*Lama pacos*, or *Vicugna pacos*), and the llama (*Lama glama*) evolved from the breedings of highland Indians. Despite the ability of these animals to interbreed and produce fertile offspring, each has been classified as a separate species.

A guanaco herd grazes in Chile's Torres de Paine National Park. Although they once numbered 10 million, hunting has reduced their numbers to 600,000.



An immature guanaco gazes at its mother, while she contentedly ruminates.

A debate on the separate genus classification of vicunas and alpacas has hinged on the fact that vicunas and alpacas have different dentition from llamas and guanacos. Even though some scientists believe alpacas were bred from guanacos, the teeth of alpacas suggest they descended from vicunas. Most scientists see influences of both guanaco or llama and vicuna influences in the alpaca, although it is entirely possible that a now-extinct form of camelid made its genetic contributions.

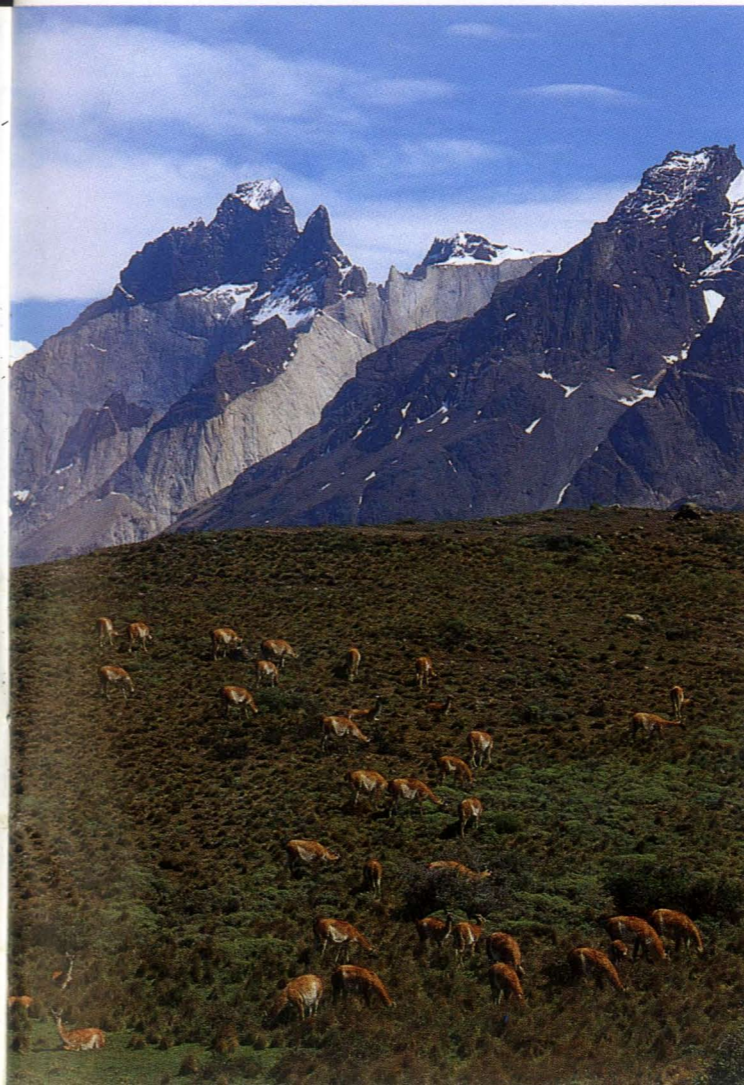
The llama and its apparent wild progenitor, the guanaco, are similar in size and form. Both animals usually weigh between 200 and 350 pounds, but llamas are often more muscular and heavier. Llama coloration includes white, black, and shades of brown, often in dramatic patchwork combinations. Guanacos are always distinguished by a brown coat, a black or gray head, and an evenly marked underside. Llamas' and, to a lesser extent, guanacos' woolly coats usually contain coarse, long, guardhair, which diminishes the commercial value of the fleece. Llama fiber is commonly used to make ropes and such textile products as potato sacks that are fashioned into llama packs.

Centuries of selective-breeding practices created a predictable, cooperative animal with plenty of stamina. "Typically, llamas have excellent temperaments accompanied by a stoic aloofness and intelligence similar to the people who breed and own them. They're a reflection of the culture that oversees them," comments Jim Robinson, a former Peace Corps worker on the altiplano. During the peak of the Inca Empire, llamas enjoyed a 3,000 mile distribution along the spine of the Andes, where they served as pack animals in the highland areas of Argentina, Chile, Bolivia, Peru, Ecuador, and Colombia.

Today, llamas are still plentiful in Peru, Bolivia, and Chile. But even in these strongholds, the llama is steadily losing ground to its own obsolescence.

"What the Spanish colonizers couldn't eradicate, the truck is making obsolete," says anthropologist George Miller of California State University, Hayward. "Many herders have sold their animals to slaughterhouses, and llama caravans are a less frequent sight.

"There are still plenty of llamas in remote areas, but the purpose for having them is changing. In subsistence cultures found in the Andean highlands animals can't be kept around as pets. As long as the animal or its by-products



Camelids

can be utilized, the llama will have a future." Still, rough estimates put the South American llama population at more than 3 million.

The extremely adaptable wild guanaco once roamed the entire length of the Andes from sea level to elevations of 12,000 feet, inhabiting open grassland and alpine meadows. Prior to European colonization they were the dominant large animal in South America, and probably occurred in numbers in excess of 10 million. Today there are about 600,000, chiefly in the southern Andes, Patagonia, and in the continent's southernmost archipelago, Tierra del Fuego.

Although guanacos have been hunted out of existence in much of their range and continue to be persecuted, biologist William Franklin of Iowa State University sees a shift in attitudes in Chile and Argentina that may help the guanaco, especially in the southern areas, where the largest populations

Large hearts and elliptically shaped blood cells for extra oxygen capacity allow camelids to thrive in the thin air of high altitudes.



Young male guanacos engage in play fighting. In the wild, unattached males live in bachelor groups, while family groups are protected by one, territorial male.

are found. This growing appreciation of guanacos is tied to the profit motive, which translates to controlled hunting and a sustained harvest. This is seen as an improvement, because previously many ranchers, unwilling to share the pastures of their sheep and cattle, merely shot all guanacos.

The plight of the vicuna, the smallest of the four species, is even more precarious. High above the timberline, usually between 13,000 and 16,000 feet, lives the imperiled vicuna, the most delicate looking member of the camelid family. These animals have large eyes, a long narrow neck, and thin legs. They also have valuable pelts – worth as much as \$1,000 – which unfortunately have made them the target of illegal hunters. They have also been victimized by terrorists who kill them for the publicity.

'It's difficult to run a conservation program in the middle of a civil war.'

Like the wild guanaco, the vicuna has uniform markings. The coat is cinnamon with a white underbelly and light-colored head. The mensalis subspecies has a distinct white bib. Exceptionally fine, the vicuna's hair is considered one of the top luxury fibers in the world.

The Incas and Aymara-speaking pastoralists, who descended from the Incas, would not hunt vicunas because they believed the animal to be a goddess of fertility. European colonizers, however, entertained few thoughts about conservation of wildlife. In 1825, South America's great liberator, Simon Bolívar, passed laws to protect vicunas, but there was virtually no enforcement until vicunas were extirpated from much of their range.

The Importation Story

Promised Land, Broken Promises

In North America, the camelid story has taken an entirely different turn. Here llamas and alpacas have enjoyed vaulted status. Often the animals are pampered beyond anything experienced by their brethren in South America. In fact, some owners pamper their camelids too much. There is even a "fat farm" in California that specializes in taking pounds off llamas so overfed that they can no longer reproduce.

During the 1970s, llamas caught on with the backpacking set. They receive high marks as an ecologically sound pack animal whose quiet ways, meager appetite, and padded feet leave little impact on heavy-use areas in national parks.

As an investment animal, llamas and alpacas have sold individually for \$20,000 or higher, and highly promoted sales in many instances gross millions of dollars. Outside of the show-ring circuit, reasonable prices start around \$500. Today there are about 50,000 llamas in North America and about 2,200 alpacas, mostly on private farms. Perhaps 150 guanacos and a couple of vicunas reside in zoos.

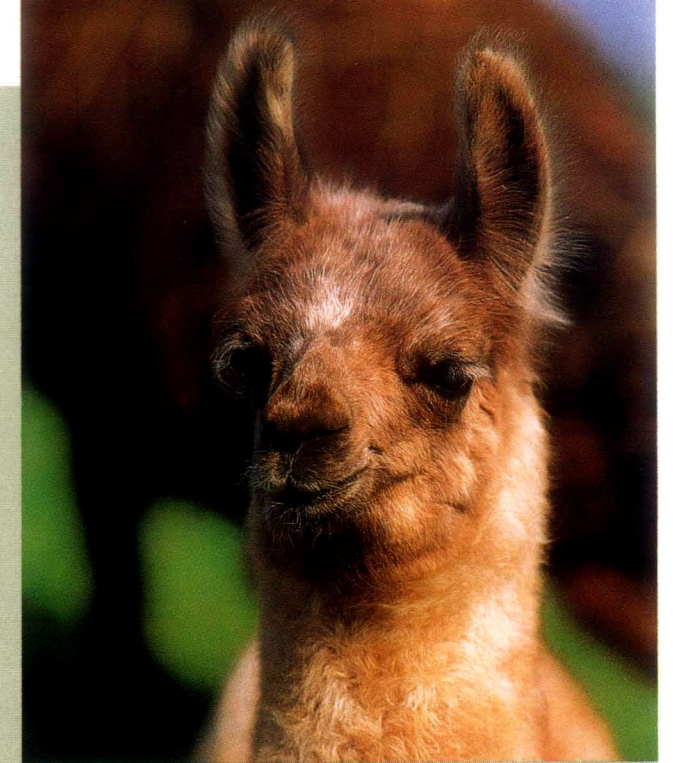
No doubt the high price tags on llamas and alpacas in North America has contributed to the diligent care provided by the large majority of owners. High prices have also motivated a number of animal importers to go through the lengthy and expensive process of importing llamas and alpacas from Bolivia and Chile in the 1980s.

To assure the animals were not carrying dangerous diseases, such as foot-and-mouth disease, the U.S. Department of Agriculture (USDA) issued stringent and expensive quarantine requirements, costing importers literally millions of dollars. Camelids entering the United States usually are sent to the Harry S. Truman quarantine center on the Florida Keys, where it is humid and hot – not a climate suited for llamas and alpacas. The animals must wait 90 days in small pens while tests are performed and evaluated.

After nearly 60 camelids in one shipment died, importers made efforts to safeguard their investments from the stressful conditions of quarantine by installing water cooling devices, adjusting diets, and shearing the animals. Most shipments had few losses.

Unfortunately, by the late 1980s, llamas and alpacas began to attract entrepreneurs who were looking for a speculative commodity but were short on importation experience and even shorter on compassion for the animals.

In 1989, two Florida men, Keith Kerr and David Strickland, moved 268 llamas from Chile to a tiny five-acre Caribbean island near Barbuda, which



Llamas have inspired adoration in the United States – and, unfortunately, also greed.

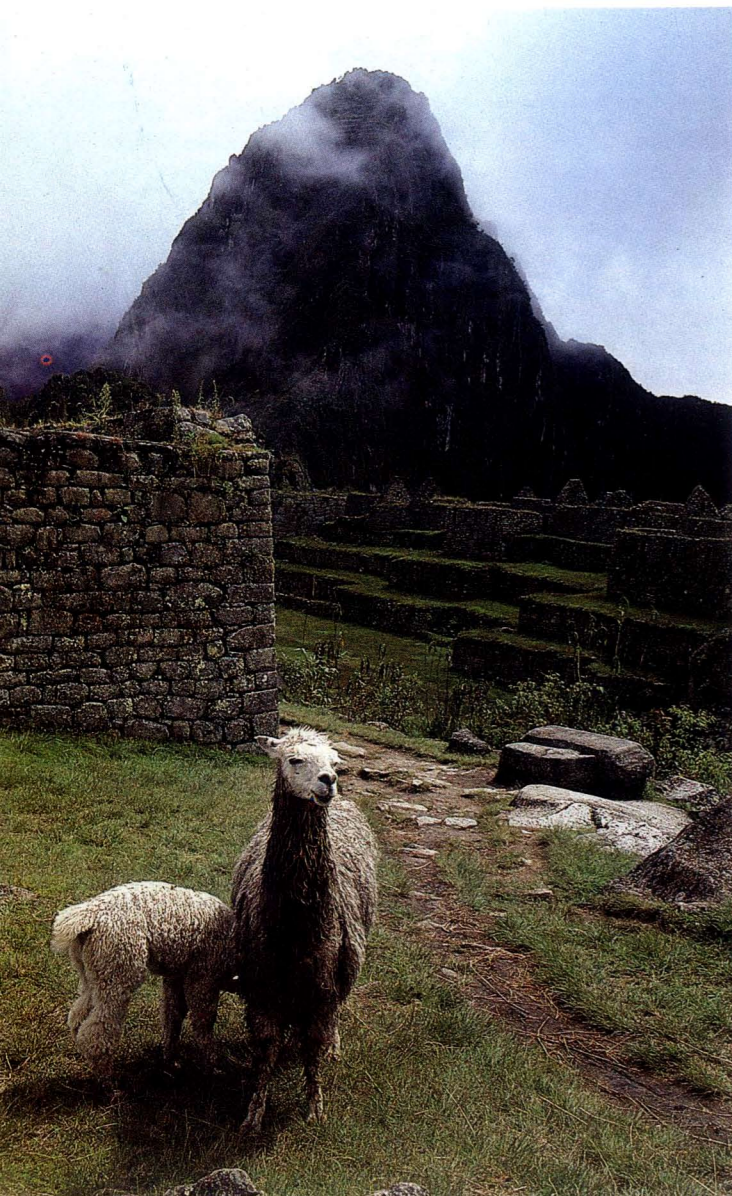
is governed by neighboring Antigua. Kerr's representative in the United States collected \$500,000 from U.S. investors with the promise that the animals would be delivered once they cleared USDA quarantine. This would never happen.

Kerr and Strickland never scheduled use of the Key West quarantine facility. Apparently, they hoped to talk USDA officials into approving the island as a quarantine facility, which never happened. As a result their animals became marooned and began dying as they sweltered under the Caribbean sun, unshorn and on starvation rations. Efforts to repatriate the animals failed, and after two years the Antiguan government confiscated the surviving animals.

When Maryland llama owners Barbara Berg and Joyce White visited the animals during a January 1992 vacation, they were shocked. They found only 42 llamas and alpacas, some of which "looked like skeletons draped in skin." The survivors depended on inadequate food and water being left on the island every month or so.

Berg made it her mission to make sure the surviving animals were treated more humanely. "I worked with the head veterinarian of the Antiguan Humane Society on the basics of diet and handling the animals," she says. "It looks like the government intends to move the survivors to Antigua, where they can be properly cared for."

Terry Price, editor of *Llama Life*, points to greed as the cause of the suffering. "The importers thought they had a clever end run around USDA regulations," he says. "The investors thought they would beat the system and get their animals for less money and make a killing when they were sold in the United States. They all lost. But the animals paid the price."





Alpacas are prized for their fine, soft, and multihued wool.

The most intensive hunting, sometimes with machine guns and helicopters, began in the 1950s. By the early 1960s there may have been as few as 10,000 left, mostly in Peru around Lake Titicaca. During the 1960s, 80,000 vicunas were killed for their coats in a single year.

During this time, the International Union for the Conservation of Nature and Natural Resources designated the vicuna as an endangered species. Bolstered by this and funding from abroad, the Peruvian government created the Pampas Galeras National Vicuna Reserve in 1966 and instituted a successful and much heralded conservation program. Vicuna numbers increased to about 100,000 animals, 90 percent of which are found in Peru.

But now, Peru's social upheaval, with its dramatic acts of violence, are reversing years of progress. The Shining Path guerrillas, a group responsible for more than 23,000 human deaths, operates throughout southern Peru in the area occupied by the majority of vicunas. The disintegration of social order has allowed poaching of the vicunas to commence. On the Bolivian side of the border, in Ulla-Ulla National Park, where a large population of vicunas live, the Shining Path machine gunned down numerous family groups of the animals to bring attention to itself.

"The potential for a total reversal in the progress made with vicunas is now a very sad possibility," says Franklin, whose 20 years of research have helped launch conservation efforts in Peru and other countries. "It's difficult to run a conservation program in the middle of a civil war."

Of all the New World camelids, the alpaca appears to have the brightest future. Among the earliest forms of selectively bred livestock in the world, alpacas were first bred by the Incas and cultures preceding them for their fiber quality and gentle, easy temperaments.

They come in the greatest variety of natural colors of all domestic fleece-producing animals, and their wool is longer and regenerates faster than that of vicunas and other camelids. Unlike the other three species of South American camelids, alpacas produce wool that grows continuously and must be shorn every year to 16 months.

At Inca Tops, a large Peruvian wool-producing mill near Arequipa, fleeces are sorted into 8 basic colors — gold,

Camelids

black, white, brown, grey, red, fawn, and mixed — and 22 different hues. Exports of alpaca fiber represent a \$20 million industry to Peru, home to more than 75 percent of alpacas. An estimated 3.5 million alpacas live in South America, 80 percent of them owned by Quechua- or Arayama- speaking pastoralists in the highlands of Peru and Bolivia.

Of all the animals found in the Americas prior to European colonization, llamas and their diminutive woolly alpaca cousins have had a truly unique role as silent partners to centuries of people whose lives have depended on them. And, the wild vicunas and guanacos have managed to survive so far despite ruthless persecution. But now, with the pull of modernization eroding the reason for owning Americas' original beast of burden, the llama, and with the graceful vicuna facing grave danger from civil turmoil, South America's humpless camels may be embarking on a more perilous journey than these animals have ever undertaken.

Nature writer Eric Hoffman's articles appear frequently in Animals. He and his wife operate the Bonny Doon Ranch in Santa Cruz, California, where they have bred and raised llamas and alpacas for 17 years.

Llamas are giving way to modern vehicles, but can still be seen at the city center of Cuzco, Peru.

