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Camelids in South America

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Abstract:

Camelids have been an important part of South American life and culture all throughout history. Their versatility made them an ideal animal for domestication, as seen in the llama and alpaca. Wild guanacos and vicuñas were important to the everyday lives of ancient civilizations. But somewhere down the line, humans began to exploit them, causing a decline in their population. Going into the future, it is vital to recognize our impact on these species and continue to enforce recent conservation efforts to return populations to what they once were.

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History of Wild Camelids

There are four species of camelids that originated from the genus *Lama* and *Vicugna*. The guanaco, or *Lama guanicoe*, is the largest of the non-domesticated camelids. They have more hemoglobin in their red blood cells than any other mammal, which allows them to survive at such high altitudes (Animals Club 2015). The vicuña, or *Vicugna vicugna*, is smaller and likely evolved from the guanaco, tolerates even higher elevations. The Vicuña played a larger role in the cultures of Pre-Columbian South America. However, the remains of both date back more than 2 million years ago (Wheeler 2012).

Vicuñas were prized for their soft wool, worn only by Inca royalty. They were believed to be gods, making it illegal to kill a vicuña according to Incan law. Even the shearing of these animals took place in ceremony. It happened every 4 years, since their coats take a long time to grow. Everyone would gather around and herd the animals into a funnel-like system, where they'd be shorn and released (Wheeler 2012).

When the Spanish arrived, bringing the end of the Incan empire in 1572, they were aware of the quality of the wool. Between the conquistadors and poachers, Vicuñas were almost extinct by the 1960's.

While the guanaco was still important in Andean life, it was not nearly as valued as the Vicuña. Research shows that in the Pleistocene, guanacos were hunted opportunistically and were important resources for early hunter-gatherers (Borrero & Franco 1997). Still, it's worth noting that the guanaco population suffered during the same times as the vicuña.

History of Domesticated Camelids

The other two of the four species of camelids are the llama (*Lama Glama*) and the alpaca (*Vicugna pacos*). The largest of those four species, the llama was domesticated over a thousand years ago in the Andes- first, in northwestern Argentina and northern Chile, later, in Peru. It was in Peru that llamas were bred to a larger size, and that is the size they remain to this day (Wheeler 2012).

Incas were known for their great agricultural successes at high altitudes. As it turns out, llamas are to thank for this success. The Incas used llama (and human) manure as fertilizer for their crops. This agricultural breakthrough lowered their reliance on quinoa, allowing the Incas to successfully conquer much of South America. They also used the manure for fuel to cook with and to make pottery (Carroll 2011). Llamas live in groups of around 10, and the groups have a single bathroom location by nature. This made the collection of llama manure simple.

Like the its relative, the camel, llamas can travel long distances while carrying some weight with little to no water. This makes them the ideal pack animal. It is believed that llamas were bred based on the type of wool they produced, which is categorized by either “course” or “fine”. Different fibers are used to make different products. For example, the course fibers may have been used to create a sturdy rug that would hold up outdoors. Fine fibers were used for making clothing. Another important focus of breeding was trying to get offspring of one solid color. These pure varieties were important for sacrificial rituals by the Incans (Wheeler 2012).

The alpacas resemble vicuñas more than llamas or guanacos due to its smaller stature. It is estimated that alpacas were domesticated much earlier than llamas- almost 6,000 years ago. They were also valued in the economy for similar reasons to the llama. They were bred for dung,

meat, fiber, and companionship. Alpaca wool is much softer than llama wool, and it was often reserved for royalty.

By the mid 1600's, approximately 90% of both domesticated species had been slaughtered by the Spanish (Wheeler 2012). They saw the llamas and alpacas as competition for their sheep, pig and goat production. They were mostly used for their meat. Fortunately, the small number of survivors fled high into the Andes with their owners. They lived here in the harshest climates for many years in exile. It was feared that llamas and alpacas could go extinct, but those few that escaped helped to eventually rebuild the population.

Current Human Use and Exploitation

Guanaco-

Today, Guanacos have a population of about one million adults spread throughout South America. They are considered "of least concern" due to this current population size and numerous protected areas in which they inhabit. The real concern lies on a more local scale. Guanacos could potentially go extinct in Paraguay, Peru, and Bolivia (three of the five countries where they have normally been found). In these countries, guanacos are considered "endangered".

Human activities have interrupted the lives of the guanacos. Oil exploration efforts, fencing land for grazing, over-grazing, increase in infrastructure, and poaching are all contributors to smaller population sizes. Many of these things make migration difficult, causing small populations that are weak due to a lack of diversity.

Conservation-

There are many reasons that people should want to conserve these animals. Many believe that if guanacos weren't present, other livestock would be eaten by pumas. Therefore, they're obviously beneficial to farmers. They also keep the dry, grassy flora prone to fires at a minimum. No matter the reason, whether it be intrinsic value or tourism value or anything else, conservation efforts have been put into place to protect guanacos. These efforts include stricter laws for legally hunting, protected areas for them to live, and the addition of park staff who are trained to monitor and assist the animals if need be. Thanks to these efforts, population trends seem to be increasing.

Vicuña-

Vicuñas have previously been listed as a "vulnerable" species. Similarly, this is due to human activities harming their typical habitats. Today, they are listed as a species of "least concern". It is important to note that they've obtained this status due to increased conservation efforts. Their total population is just under 350,000, spread across 5 different countries. Vicuñas are still valued for their high-quality wool. Since they are protected, the shearing takes place on a capture-and-release basis. However, poachers are still a serious threat.

Conservation-

Today, Argentina, Bolivia, Chile, and Peru are all working on managing vicuña populations. Since there is no standard way to do this, different approaches have been taken. Some involve cracking down on poachers, while others deal directly with livestock owners who see them as a threat. Others use protected areas to educate locals and visitors about vicuñas. Peru and Chile gave the Ecuadorian government 1,600 vicuñas in 1988, hoping to restore their population as well. Bolivia would later donate some once they had a large enough population to create genetic diversity. Ecuador places these vicuñas in the Chimborazo Wildlife Reserve. The reserve is the only location in Ecuador where one can see vicuñas. Their population is monitored to create better management plans in the future. Currently, these combined efforts have created a trend of increase in the vicuña population (Southern Explorations 2014).

Llama-

Today, llamas are used mainly as pack animals and for their wool. However, it is very common for them to be companion animals. Adding a few llamas to a herd of sheep makes them less likely to be preyed on. Llamas have even served as golf caddies in the United States. There are more than 3 million llamas worldwide, so they are not endangered.

Conservation-

Since they have such a large population, llamas are not endangered or in need of protection. Locally, they face very few threats. These threats include mountain lions, ocelots, and coyotes (Stamberg 1997).

Alpaca-

Alpacas may be bred for their milk today, along with their fiber, and for meat. As previously mentioned, their fiber is softer than llamas, and they generally have a friendlier temperament. Alpaca wool is unique because, unlike sheep wool, it is hypoallergenic.

Conservation-

Since alpacas can no longer be found in the wild, they have no conservation status. However, hybridization of llamas and alpacas has created the possibility of the elimination of the alpaca genome, meaning the pure alpaca DNA could be lost. This can be fixed through educating breeders and farmers about hybridization and urging them to only mix pure alpacas to save the genome.

Conclusion

Camelids in South America provide people with wool, meat, dung, and service, along with their companionship. Some have been domesticated, while others remain wild. It is the vicuñas and guanacos that face the most dangers today. While certain efforts are currently working to increase their populations, it is unknown what climate change will do to their already sparse habitats. They are widely adaptable creatures, but we shouldn’t take any chances with them. They’ve been threatened before and been brought back. Guanacos, vicuñas, llamas, and alpacas play an important role in the economy, along with having the most basic value of all: intrinsic value. Their protection should be a human concern since humans caused the

endangerment in the first place. Fortunately, the efforts of several countries are working to increase population sizes so we may visit these wonderful animals for many more decades ahead.

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