

GUANACO

The Wild Llama

Part II

By Keith Payne



Most camelid owners are well acquainted with the history of how their animals originated eons ago in what today is the USA. Immigrating south through Central America, down the Andes to the bottom of South America. By the end of the Pleistocene Ice Age (10 – 12,000 years ago), earlier larger llama genera, *Paleolama* and *Hemiauchenia*, had become extinct leaving the two camelid genera, the guanaco and the vicuna. The genera of the llama and the vicuna are thought to have separated over 2 million years ago.

Origins of the two domesticated South American Camelids (SAC's), discussed and speculated on for many decades has now conclusively been determined, the llama being domesticated from the guanaco and the alpaca from the vicuna. In some areas, in particular parts of Peru, there will have been some bi-directional hybridisation between guanaco and vicuna as evidenced in DNA analysis but this is considered to have only occurred in areas where the two closely overlap, separated only by altitude. There are many other areas in the Andes where domestication has taken place without evidence of hybridisation between the two breeds.

But I thought it might be of interest to mention a couple of interesting aspects of SAC development.

The Llama Pace

As the guanaco was formed over millions of years during its gradual move to the south, a number of morphological adaptations took place:

- increased body size;
- padded digitigrade feet for better support;
- fusion of metapodials into a single stronger cannon bone;
- loss of upper incisors (one became modified into a canine or fighting tooth);
- development of a depression on the lower portion of the face to accommodate muscular development of a split upper lip;
- higher crowned cheek teeth to enable both browsing and grazing;
- shift of cranial orbits to provide what is termed a semi-stereoscopic vision; and
- the “llama pace” !

Now, the llama pace is quite interesting, and as most of you would have already observed, your llama does not have a true pace when walking.

A pace is a gait where lateral limbs move in unison and both feet land on the ground simultaneously. But the llama pace does not exactly fit this description. At a slow walk it is easy to view that the llama's hind foot commences its forward motion a touch before the front foot and equally lands on the ground before the front foot.

The quicker the pace of your llama the more difficult it becomes to observe this feature and slow motion would demonstrate that the llama moves closer to a true pace as it quickens. But as it never achieves the proper definition of a pace, the llama is said to have its own “llama pace”.

Now the pace is a particularly quick, long strided and efficient gait for long limbed animals like the llama however there are disadvantages as lateral stability and maneuverability are compromised. Accordingly several anatomical adaptations



needed to evolve to offset these disadvantages, such as :

- wide and splay toed feet;
- strong ligaments to support the feet;
- placement of the limbs near the body's midline; and
- low forward placement of the neck which together with the head act as a counterbalance to the side-to-side sway during pacing.

And so we can observe how the “llama pace” is an ideal gait for your llama on open flat ground.

Differences Between Guanaco and Vicuña

It is interesting to observe these differences as it assists us to more fully understand both breeds as well as the consequences of allowing the two to crossbreed. Each breed has a northern and a southern type. In both cases the northern animal is light brown, sandy coloured whereas the southern is a darker almost reddish brown (primary colour). In both cases the northern animal is physically smaller. The northern vicuna has very distinctive light coloured long chest hair (bib like).

Guanaco are far more adaptable than vicuna. Vicuna are obligate water drinkers and preferred habitats are in close proximity to high altitude natural spring or glacier melt, known as bofedales in the north and vegas in the south, guanaco on the other hand adapt quite handily to semi-dry, very dry, temperate, rainforest, altitude etc. When the first Europeans arrived in the Andes, guanaco population was thought to number 30-40 million whereas the vicuna population was estimated at 3-4 million.

Foraging behavior is divided into four parts : search for, selection of, ingestion of and digestion. Guanaco generally spend more time foraging than vicuna. Vicuna are traditional grass feeders but readily adapt for grazing on forbs and perennial grasses close to the ground. Their routine of forage incorporates a daily water intake, unlike the guanaco which often goes for days without. While guanaco and vicuna are generally considered to have identical nutritional requirements



when corrected for body size, guanaco are shown to perform better on low-quality forages than vicuna which depend more on selecting high quality grass and forbs.

A major factor in the Andes is the presence of large numbers of domestic European stock, mainly sheep which seriously deplete the extent and quality of vegetation.

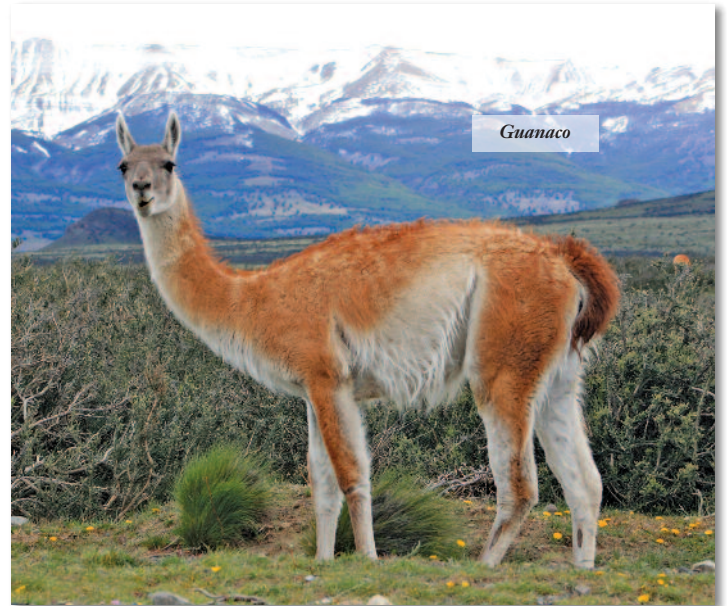
Guanaco once again demonstrate an ability to adapt and they will frequently alter their foraging to include up to 60% browsing, vicuna tend to fare less well in this regard.

Throughout the Andes, the vicuna displays its preference for the wet areas of the higher plains and is comfortable at altitudes up to 4,800m. This also helps explain the superb quality of vicuna fibre! Guanaco while proven to be comfortable at sea level to 4,000m plus display little interest to spend as much time at the highest altitudes.

At the time of the Inca, the llama was the most important domesticated South American camelid. Llamas were far more numerous and of greater economic value and religious significance. Both alpaca and llama were important for their meat, hides, dung, fibre, etc but the llama always carried more value in religious application such as sacrifice. And perhaps most significantly, the Inca army depended heavily on the llama to transport its supplies, weapons, armaments etc when going into battle. And all of this not to mention the thousands of packing caravans which kept the wheels of commerce and trade flourishing in the Inca empire.

Today, the alpaca has replaced the llama in economic importance. Almost as numerous as the llama, they are intensively managed through advanced husbandry and breeding by national government and university research stations throughout South America.

The fibre of the vicuna is still considered to be one of the finest on the planet, followed closely by guanaco



fibre. Both animals have fully shedding double coats, their guard hair representing 5 -12% of total fibre, therefore being very simple and inexpensive to remove. Leaving a very fine inner coat, the vicuna generally at 12-14 micron, the guanaco at 16-18 micron. A feature of vicuna fibre is its length, generally being slightly longer than that of guanaco, neither fibre is found to have a crimp although the longer vicuna fibre has a characteristic 'wave'. The vicuna fibre industry in South America is well controlled by government and commercial interests whereas guanaco fibre tends to find its way more towards artisan-craft usage.

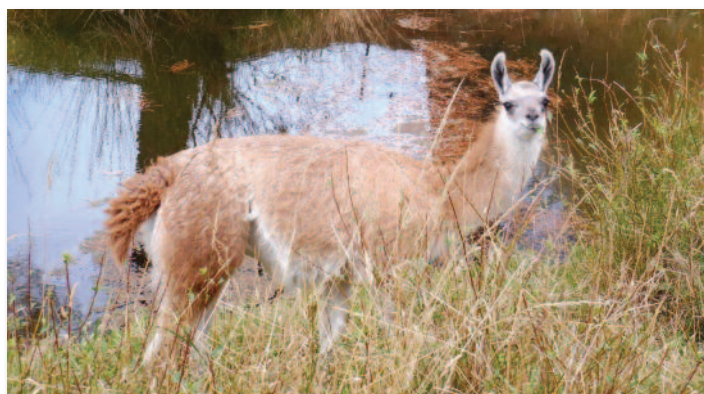
Domesticates of guanaco and vicuna are of course the llama and the alpaca. Alpaca have undergone significant specialized breeding to increase body mass and accordingly the quantity of fibre carried. To a much lessor extent, the llama has clung to its repete as a beast of burden and a source of meat. Hybridisation of these two breeds subsequent to Spanish colonization has resulted in them being barely comparable to the original wild versions and many llama and alpaca farmers in the west have only a vague comprehension of their genetic strength, physical stamina and athletic prowess.

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About the Author

Keith Payne, owner and operator of Big Ears Llama Ranch, is an ex-patCanadian happily settled in Blythe Valley, South Island, New Zealand.

While he is retired, he devotes his time and efforts towards his llama farm. His aim is to preserve the guanaco and promote 'breeding back' to the original llama type.



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