

Syllabus

Boot Camp in Alpaca Husbandry, Winter Session (January 2-12, 2020)

Instructor: Stuart White

Introduction

The llama and alpaca were domesticated from the guanaco and vicuña, respectively, about 4000 years ago in the central Andes. Husbandry of the two domestic species subsequently diffused north and south, and by the early 16th century the camelid culture area encompassed the mountainous regions of modern Chile, Argentina, Bolivia, Peru and Ecuador, plus the irrigated coastal valleys of the desert Pacific Rim. Llamas and alpacas permitted the successful occupation of a vast area of the Andes, often too high and too dry for agriculture, but productive when occupied by these hardy herbivores. The transformative impact of the llama and alpaca, however, was halted by the demographic collapse of both human and camelid populations following the Spanish Conquest in 1532. Due to introduced disease and the displacement of camelids by Old World domestic animals, by 1650 the llama and alpaca population had dropped by 90%, associated with many local extinctions.

The demographic bottleneck was exacerbated by a loss of quality, as llamas were allowed to breed with alpacas (producing a fertile and undesirable hybrid) and as indigenous husbandry practices were abandoned. Camelids persisted in remote pockets away from Colonial activity, but their quality as well as their numbers continued to decline. The camelids now grazing the Andes, with localized exceptions, are a major retreat from the genetic and productive levels obtained after millennia of selection, culminating with the Incas. Recovering the pre-Columbian quality of llamas and alpacas therefore becomes the major challenge for contemporary herders and indigenous communities in the Andes.

This course will permit students to become accomplished in the principal alpaca husbandry practices through daily work with a large alpaca herd on the Mazar Wildlife Reserve (MWR), and will place alpacas, llamas and vicuñas in their historical and geographical contexts.

Setting for the Course

We will have access to a herd of 500 alpacas in a beautiful setting in Ecuador located between 10,000- and 12,000-foot elevation. The landscape includes alpaca pastures, montane forest, and grassland páramos above tree line. The host ranch is part of a private conservation area, the Mazar Wildlife Reserve (MWR), owned and operated since 1982 by the instructor and located 100 km to the northeast of Cuenca. Various sites within the MWR, separated by walking distances of 1-5 hours, will be used for husbandry practices.

Students will be housed in rustic cabins on the MWR. Basic services (flush toilets, running water, road access and electricity) will be available. Internet access will be limited to the beginning and end of the course, during stays in urban areas. Hikes between sites that traverse forests will be used to discuss the conservation opportunities provided by alpaca husbandry. Road trips, between Cuenca and the MWR, and between the MWR and Salinas, Chimborazo (see below), will be used to elucidate a grand variety of mixed animal-crop farming systems, many on steep mountainsides.

Although most of the course will take place on the Mazar Wildlife Reserve, where the alpacas ranch is located, a short field trip to central Ecuador will focus on llama and alpaca husbandry by indigenous communities, and will provide a unique opportunity to view wild vicuñas at close range on the high páramo within the government's Chimborazo Faunal Preserve. For those interested, we will have the option to ascend to a small glacial lake at 5100 m elevation on Mount Chimborazo.

Instructor

The instructor, Stuart White, has lived in Ecuador for 37 years and raised alpacas on the MWR since 1985 after introducing them from Chile and Peru. He has also raised cattle, llamas and sheep. Stuart received a PhD in Geography at the University of Wisconsin-Madison in 1981 and subsequently taught Geography at the University of New Mexico, Albuquerque, until moving to Ecuador. In addition to raising alpacas, Stuart has spent his years in two pursuits: First, promoting the reintroduction of this camelid to the Ecuadorian rural economy; and second, as habitat conservation advocate, crystallized in the establishment of the Fundación Cordillera Tropical (www.cordilleratropical.org), which he headed between 2000 and 2010. Since 2010 Stuart has been associated with the University of Vermont, where he taught during 2011-2012, and continues as an adjunct assistant professor in the departments of Geography and Animal and Veterinary Sciences.

Course Objectives

1. Understand camelid culture history in the Andes.
2. Learn the principal camelid husbandry practices: Students will have the opportunity to work directly with a large numbers of alpacas and will perform all of the practices (see table below), some many times.
3. Appreciate herd management as performed in the tropical Andes, including the use of infrastructure, routine preventive health care, major causes of morbidity and mortality, pasture management, and the construction of a salubrious and productive farm space.
4. Gain a practiced eye in the evaluation of fiber quality and conformation in alpacas, and review methods for genetic improvements. Students will learn to judge alpacas and to make on-farm selection of promising sires.
5. Know the principal parasitic and infectious diseases affecting alpacas, means of control, and treatment.
6. Observe the non-lethal methods employed to reduce predation by mountain lions and foxes, and the cost of these interventions.
7. Focus on the reproductive cycle, birthing and support for newborn crías and alpaca dams. For the Winter Session, we will have the opportunity to work with birthing mothers and alpaca newborns.
8. Distinguish llamas and alpacas in physical aspect, ideal types, and economic potential.
9. Evaluate the feasibility of alpaca husbandry as a tool for conservation and the protection of environmental services in the tropical Andes.

Course Structure

This course earns 4 credits.

Class discussions on specific topics late in the day will be combined with sustained daily involvements with the alpacas as detailed in the schedule below. On most days, 2 hours will be dedicated to the instructor's presentations of case studies, followed by discussions; and 5 hours learning husbandry techniques with the alpacas. An additional 1-2 hours will be needed to complete the day's readings. Grading will be based on participation in discussions (20%), mastery of husbandry techniques (40%), and a written final exam (40%).

WS 2020 Schedule

DATE	LOCATION	ACTIVIITY
Thursday, Jan 2, 2020	Travel from US to Ecuador	Students travel from origin cities in US to Cuenca via Quito
Fri, Jan 3	Cuenca to Mazar Wildlife Reserve (MWR)	Travel and settle in at MWR; visit alpaca herd
Sat, Jan 4	MWR	Alpaca husbandry practices*
Sun, Jan 5	MWR	Alpaca husbandry practices
Mon, Jan 6	MWR	Alpaca husbandry practices
Tues, Jan 7	MWR	Alpaca husbandry practices
Wed, Jan 8	MWR	Alpaca husbandry practices
Thur, Jan 9	MWR to Salinas	Travel overland, about 6 hours
Fri, Jan 10	Chimborazo & Salinas	Study vicuñas in their native habitat; ascend flanks of Chimborazo
Sat, Jan 11	Salinas to Cuenca	Return to Cuenca; visit indigenous llama community in route; final exam in Cuenca PM
Sun, Jan 12	Return to US	Flights during the day

*Husbandry practices include restraint, SC, IM and IV injections, castration, oral administration of liquids, gastric tubing, toenail and incisor trimming, blood drawing, placement of uterine boluses, shearing, fiber classification and body scoring.

Readings

Students will be provided a text, *The Complete Alpaca Book* (Hoffman, 2003, 604 pp), whose cost is included in the program fee. ASCI will distribute copies to students by early December, 2019, allowing the opportunity to start the course readings before traveling to Ecuador on January 2 (see above). In Ecuador, students will also be provided a spiral-bound volume of photocopied articles from which additional readings will be assigned*.

*Possible additional photocopied and digital sources

Brown BW (2000) A review on reproduction in South American camelids. *Animal Reproduction Science* 58: 169-195

Fernández-Baca S (1990) Llamoids or New World Camelidae: Llama, alpaca, guanaco and vicuña. In: Payne, WJA, *An Introduction to Animal Husbandry in the Tropics*, 4th edition, pp. 557-580. Longman, Essex, England.

- Frank, EN, Hick, M, Gauna C, Lamas H, Renieri C, Antonini M (2006) Phenotypic and genetic description of fibre traits in South American domestic camelids (llamas and alpacas). *Small Ruminant Research* 61: 113-129.
- Giorgi J (1990) Trematodes. In: Giorgi J, *Parasitology for Veterinarians*, 5th edition, pp. 103-117. Saunders, Philadelphia.
- Purdy S (2003) 1. Female camelid breeding soundness examination, New England Animal Health Institute, Chester, VT, ppt; 2. Considerations for the pregnant camelid, New England Animal Health Institute, Chester, VT, ppt; 3. Female camelid reproduction, New England Animal Health Institute, Chester, VT, ppt; 4. Camelid lactation and cria growth, New England Animal Health Institute, Chester, VT, ppt; 5. The camelid birthing process, New England Animal Health Institute, Chester, VT, ppt; 6. Conformation and breeding practices, New England Animal Health Institute, Chester, VT, ppt
- Safely M (nd) 1. Glossary of alpaca terms, Northwest Alpacas, www.alpacas.com; 2. How to select alpacas, Northwest Alpacas, www.alpacas.com; 3. Views on suri fiber, Northwest Alpacas, www.alpacas.com
- Smith B, Timm K and Long P (1996) *Llama and Alpaca Neonatal Care*. Clay Press, Jackson, CA, pp. 1-112.
- Sumar J (1996) Reproduction in llamas and alpacas. *Animal Reproduction Science* 42: 405-415.
- Theford T and Johnson L (1989) Infectious diseases of New-World Camelids (NWC). In: Johnson L (ed), *Llama Medicine*, pp. 145-157 (*The Veterinary Clinics of North America, Food Animal Practice* 5(1)). Saunders, Philadelphia.
- Tibary A, Vaughan J (2006) Reproductive physiology and infertility in male South American camelids: A review and clinical observations. *Small Ruminant Research* 61: 283-298.
- Vaughan J, Tibary A (2006) Reproduction in female South American camelids: A review and clinical observations. *Small Ruminant Research* 61: 259-281.
- Wheeler J (2012a) Evaluación genética de las variedades de llama k'ara, suri y llamingo en Peru y Ecuador. *PowerPoint presentation at the International Camelid Conference*, Arica, Chile.
- Wheeler J (2012b) South American camelids: Past, present and future. *Journal of Camelid Science* 5: 1-24.
- Wheeler J, Russel A and Redden H (1995) Llamas and alpacas: Pre-conquest breeds and post-conquest hybrids. *Journal of Archaeological Science* 22: 833-840.