

sustainability, marketing, production economics, production structure, High Andes, Bolivia.

Messineo, Pablo G. **Analisis arqueofaunisticos en el sitio Laguna La Barrancosa 1 (Partido de Benito Juarez, provincia de Buenos Aires, Argentina).** [Archeological faunistic analysis of the Laguna La Barrancosa 1 site (Benito Juarez district, Buenos Aires province, Argentina).] *Archaeofauna*. 2003; 12: 73-86. ISSN: 1132-6891.

Note: In Spanish.

Descriptors: hunter gather site, late Holocene, bone analyses, exclusively guanaco bones, processing and use of bones, Argentina.

Norambuena, M. Cecilia; Paredes, Marco. **Variabilidad y estructura genetica en dos poblaciones de *Vicugna vicugna* (Camelidae) del norte de Chile.** [Genetic variability and structure in two populations of *Vicugna vicugna* (Camelidae) from northern Chile.] *Revista Chilena de Historia Natural*. 2003 Marzo; 76(1): 99-104. ISSN: 0716-078X. Note: In Spanish with an English summary.

NAL call no.: QH119.R48

Descriptors: vicunas, study of 2 populations, genetic variability, population genetics, allozymic variation, taxonomic implications, Chile.

Nykamp, S.G.; Dykes, N.L.; Cook, V.L.; Beinlich, C.P.; Woodie, J.B. **Computed tomographic appearance of choanal atresia in an alpaca cria.** *Veterinary Radiology and Ultrasound*. 2003; 44(5): 534-536. ISSN: 1058-8183.

NAL call no.: SF757.8.A4

Descriptors: alpacas, atresia, clinical aspects, computed tomography, diagnosis, epidemiology, head, respiratory diseases, case reports, New York, United States.

Olivera, L.V.M.; Zago, D.A.; Jones, C.J.P.; Bevilacqua, E. **Developmental changes at the materno-embryonic interface in early pregnancy of the alpaca, *Lama pacos*.** *Anatomy and Embryology*. 2003; 207(4/5): 317-331. ISSN: 0340-2061.

URL: <http://springerlink.metapress.com/app/home/contribution.asp?wasp=2g54>

[nhrtuk3w6xxtwc2l&referrer=parent&backto=issue,7,15;journal,4,78;linkingpublicationresults,id:100395,1](http://springerlink.metapress.com/app/home/contribution.asp?wasp=2g54)

Descriptors: alpacas, pregnancy, trophoblast cell adherence to uterine epithelium, epitheliochorial placentation, luteal and follicular phases, sampling at different ages of pregnancy, description, materno-fetal interactions, attachment areas, hormones.

Olivera, L.; Zago, D.; Leiser, R.; Jones, C.; Bevilacqua, E. **Placentation in the alpaca *Lama pacos*.** *Anatomy and Embryology*. 2003; 207(1): 45-62. ISSN: 0340-2061.

URL: <http://www.springerlink.com/app/home/contribution.asp?wasp=m1b672xvwq4jqg>

[768x2m&referrer=parent&backto=issue,6,9;journal,2,72;linkingpublicationresults,id:100395,1%20](http://www.springerlink.com/app/home/contribution.asp?wasp=m1b672xvwq4jqg) **Descriptors:** alpacas, study of reproduction in females, pregnancy changes in the uterus, trophoblast, chorion, choriomammotropin, endometrium, fetal membranes, histochemistry, morphology, placenta.

Oevermann, A.; Zanolari, P.; Pfyffer, G.E.; Meylan, M.; Robert, N. ***Mycobacterium microti* infection in two llamas (*Lama guanicoe* F. *glama*).** In: *Erkrankungen der Zootiere: Verhandlungsbericht des 41 Internationalen Symposiums über die Erkrankungen der Zoo und Wildtiere, Rome, Italy, 28 May--1 June, 2003*. 2003: 217-220.

Descriptors: llamas, *Mycobacterium microti*, clinical aspects, diagnosis, histopathology, mycobacterial diseases, case reports, Switzerland.

Parraguez, V.H.; Thenot, M.; Latorre, E.; Ferrando, G.; Raggi, L. A. **Milk composition in alpaca (*Lama pacos*): Comparative study in two regions of Chile.** *Archivos de Zootecnia*. 2003; 52(200): 431-439. ISSN: 0004-0592.

NAL call no.: 49 AR22

Descriptors: alpacas, colostrum and milk composition, 5 months of lactation, effects of environmental conditions, pasture quality, altitude, 4400 meters in the Andean high plateau, Patagonian at 12 meters, comparison study, dry matter, protein, fat, lactose, ash content, variations in fat and lactose levels, differences may be pasture and behavior related.

Pinares Patino, C.S.; Ulyatt, M.J.; Waghorn, G.C.; Lassey, K.R.; Barry, T.N.; Holmes, C.W.; Johnson, D.E. **Methane emission by alpaca and sheep fed on lucerne hay or grazed on pastures of perennial ryegrass/white clover or**

birdsfoot trefoil. *Journal of Agricultural Science.* 2003 Mar; 140(pt. 2): 215-226. ISSN: 0021-8596.

NAL call no.: 10 J822

Descriptors: alpacas, Romney sheep, feeding, chaff, alfalfa, hay, grazing, *Lolium perenne*, *Lotus corniculatus*, *Trifolium repens*, forage evaluation, chemical constituents of plants, organic matter, digestibility, rumen fermentation, methane gas emission levels, quantitative analysis, comparison study, New Zealand.

Abstract: Based on the knowledge that alpaca (*Lama pacos*) have a lower fractional outflow rate of feed particles (particulate FOR) from their forestomach than sheep (San Martin 1987), the current study measured methane (CH₄) production and other digestion parameters in these species in three successive experiments (1, 2 and 3): Experiment 1, lucerne hay fed indoors; Experiment 2, grazed on perennial ryegrass/white clover pasture (PRG/WC); and Experiment 3, grazed on birdsfoot trefoil (*Lotus corniculatus*) pasture (*Lotus*). Six male alpaca and six castrated Romney sheep were simultaneously and successively fed on the forages either ad libitum or at generous herbage allowances (grazing). CH₄ production (g/day) (using the sulphur hexafluoride tracer technique), voluntary feed intake (VFI), diet quality, and protozoa counts and volatile fatty acid concentrations in samples of forestomach contents were determined. In addition, feed digestibility, energy and nitrogen (N) balances and microbial N supply from the forestomach (using purine derivatives excretion) were measured in Experiment 1. Diets selected by alpaca were of lower quality than those selected by sheep, and the voluntary gross energy intakes (GEI, MJ) per kg of liveweight(0.75) were consistently lower ($P < 0.001$) for the alpaca than for the sheep (0.74 v. 1.36, 0.61 v. 1.32 and 0.77 v. 2.53 on lucerne hay, PRG/WC and Lotus, respectively). Alpaca and sheep did not differ ($P > 0.05$) in their CH₄ yields (% GEI) when fed on lucerne hay (5.1 v. 4.7), but alpaca had a higher CH₄ yield when fed on PRG/WC (9.4 v. 7.5, $P < 0.05$) and Lotus (6.4 v. 2.7, $P < 0.001$). When grazing on Lotus, the sheep had very high protozoa counts in their forestomach contents, compared with those with the other forages and those in the alpaca. On lucerne hay and Lotus, but not on PRG/WC, the alpaca had higher ($P < 0.01$) acetate/propionate ratio in their forestomach fluid than sheep. When fed on lucerne hay, alpaca and sheep did not differ ($P > 0.05$) in diet N partition or microbial N yield, but alpaca had higher ($P < 0.05$) neutral detergent fibre digestibility (0.478 v. 0.461) and lower ($P < 0.01$) urinary energy losses (5.2 v. 5.8 % GEI) than sheep. It is suggested that differences between these species in forestomach particulate FOR might have been the underlying physiological mechanism responsible for the differences in CH₄ yield, although the between-species differences in VFI and diet quality also had a major effect on it.

Pineda, M.H.; Dooley, M.P. *Veterinary Endocrinology and Reproduction.* 5th edition. Iowa State Press, Ames. 2003; xiv + 597 pp. ISBN: 0813811066.

NAL call no.: SF768.3.M335 2003

Descriptors: alpacas, llamas, cats, dogs, cattle, goats, horses, pigs, sheep, adrenal glands, reproduction, endocrinology, thyroid glands, pancreas, pituitary, artificial insemination, calcitonin, cholecalciferol, embryo transfer, parathyroid, reproduction.

Ratto, M.H.; Singh, J.; Huanca, W.; Adams, G.P. **Ovarian follicular wave synchronization and pregnancy rate after fixed-time natural mating in llamas.** *Theriogenology.* 2003; 60(9): 1645-1656. ISSN: 0093-691X.

NAL call no.: QP251.A5

Descriptors: llamas, reproduction physiology, induction of follicular wave synchronization, pregnancy rates, fixed time natural mating, estradiol and progesterone (E/P, n=20); (3) LH (LH, n=20); or (4) transvaginal ultrasound-guided follicle ablation (FA, n=20), daily monitoring with transrectal ultrasonography, LH and FA most effective, increased pregnancy in synchronized females.

Reynolds, B.J. **Turning problems into profits.** *Rural Cooperatives.* 2003 Mar/Apr; 70(2): 8-10. ISSN: 1088-8845.

URL: <http://purl.access.gpo.gov/GPO/LPS5331>

NAL call no.: aHD1491.U6R87

Descriptors: cooperatives, alpacas, fibers, textile industry, United States.

Sarno, Ronald J.; Bank, Michael S.; Stern, Hal S.; Franklin, William L. **Forced dispersal of juvenile guanacos (*Lama guanicoe*): Causes, variation, and fates of individuals dispersing at different times.** *Behavioral Ecology and Sociobiology.* 2003 Jun; 54(1): 22-29. ISSN: 0340-5443.

Descriptors: guanacos, impacts of forced dispersal, behavior, activity patterns, population dynamics, dispersal patterns in habitat, Torres del Paine National Park, Chile.

Schulman, F.Y.; Krafft, A.E.; Janczewski, T.; Reupert, R.; Jackson, K.; Garner, M.M. **Camelid mucocutaneous fibropapillomas: clinicopathologic findings and association with papillomavirus.** *Veterinary Pathology.* 2003; 40(1): 103-107. ISSN: 0300-9858.

NAL call no.: 41.8 P27

Descriptors: alpacas, llamas, fibropapillomas, similar to equine sarcoids, ulcerated hyperplastic epidermis with thin rete pegs, lesions on nose, lip and cheek, papillomavirus by PCR, one was a unique PV, clinical aspects, histopathology lesions, nucleotide sequences.

Shi, Yan Feng; Shan, Xiang Nian; Li, Jian; Zhang, Hai Jun; Zheng, Ai Ling. **[Phylogenetic relationships of seven *Cetartiodactyla* species inferred from mitochondrial genome.]** *Zoological Research.* 2003; 24(5): 331-336. ISSN: 0254-5853. Note: In Chinese.

Descriptors: mitochondrial genomes, muntjak, based on concatenated sequences of 13 inferred amino acid sequences of protein coding genes, phylogenetic tree, 3 clades, muntjak-sheep, cow clade, pig alpaca clade, hippopotamus-whale clade, divergence millions of years ago.

Sponheimer, M.; Robinson, T.; Ayliffe, L.; Passey, B.; Roeder, B.; Shipley, L.; Lopez, E.; Cerling, T.; Dearing, D.; Ehleringer, J. **An experimental study of carbon-isotope fractionation between diet, hair, and feces of mammalian herbivores.** *Canadian Journal of Zoology.* May 2003; 81(5): 871-876. ISSN: 0008-4301. Note: In English with a French summary.

NAL call no.: 470 C16D

Descriptors: cattle, llamas, alpacas, goats, rabbits, horses, herbivores, diet, feeds, alfalfa, *Medicago sativa*, *Cynodon dactylon*, *Bromus inermis*, carbon, stable isotopes, isotope fractionation, hairs, feces, chemical composition, diet switch, carbon turnover.

Sponheimer, M.; Robinson, T.F.; Roeder, B.L.; Passey, B.H.; Ayliffe, L.K.; Cerling, T.E.; Dearing, M.D.; Ehleringer, J.R **An experimental study of nitrogen flux in llamas: Is ^{14}N preferentially excreted?** *Journal of Archaeological Science.* 2003; 30(12): 1649-1655. ISSN: 0305-4403.

Descriptors: llamas, nitrogen isotopes, ^{15}N enrichment as move up the food chain, differential excretion for ^{14}N , diet study, high and low protein, fecal and urinary nitrogen loss, theorize influx and efflux in adult animals is steady state, possibly under growth, diet change, nutritional stress, heat stress, may change steady state.

Sponheimer, M.; Robinson, T.; Roeder, B.; Hammer, J.; Ayliffe, L.; Passey, B.; Cerling, T.; Dearing, D.; Ehleringer, J. **Digestion and passage rates of grass hays by llamas, alpacas, goats, rabbits, and horses.** *Small Ruminant Research.* 2003; 48(2): 149-154. ISSN: 0921-4488.

NAL call no.: SF380.I52

Descriptors: alpacas, llamas, goats, horses, rabbits, digestive efficiency, pecoran ruminants and South American camelids comparison, digestibility, C3 *Bromus inermis*, C4 *Cynodon dactylon*, grass hay, foregut fermenters and hindgut fermenters, nitrogen metabolism, nutrition, nutritive value, pasture plants, photosynthesis, species differences.

Staudte, K.L.; Gibson, N.R. **Type 1B external fixation of a metacarpal fracture in an alpaca.** *Australian Veterinary Journal.* 2003; 81(5): 265-267. ISSN: 0005-0423.

NAL call no.: 41.8 AU72

Descriptors: alpacas, external skeletal fixation, 1B frame, comminuted metacarpal bone fractures, first treated with internal fixation, normal recovery with complete healing, case reports, Australia.

Step, D.L.; Ritchey, J.W.; Drost, W.T.; Bahr, R.J. **Ameloblastic odontoma in the mandible of a llama.** *Canadian Veterinary Journal.* 2003; 44(10): 824-827. ISSN: 0008-5286. Note: In English with a French summary.

NAL call no.: 41.8 R3224

Descriptors: 4 year old llama, clinical picture, aggressive, multiloculated, expansile bone lesion, rostral mandible, diagnosis, radiography, computed tomography, ameloblastic odontoma, tooth diseases, Oklahoma, United States.

Tharaldsen, J.; Djonne, B.; Fredriksen, B.; Nyberg, O.; Sigurdardottir, O. **The national paratuberculosis program in Norway.** *Acta Veterinaria Scandinavica.* 2003; 44(3/4): 243-246. ISSN: 0044-605X.

NAL call no.: 41.8 AC87

Descriptors: cattle, goats, llamas, Johne's disease, paratuberculosis, disease control programs, diagnosis, disease prevalence, disease surveys, epidemiology, immunodiagnosis, seroprevalence, *Mycobacterium avium* subsp. *paratuberculosis*, Norway.

Vaughan, J.L.; Macmillan, K.L.; Anderson, G.A.; D'Occhio, M.J. **Effects of mating behaviour and the ovarian follicular state of female alpacas on conception.** *Australian Veterinary Journal*. 2003; 81(1/2): 86-90. ISSN: 0005-0423.

NAL call no.: 41.8 AU72

Descriptors: alpacas, mating behavior effects on ovarian follicles, success of conception, corpus luteum, pregnancy, commercial stud, Victoria, receptive and nonreceptive behaviors, transdominal ultrasound scanning, plasma concentration of estradiol and progesterone, Australia.

Villarreal, F.; Longo, L. **Valoracion economica del guanaco patagonico. [A methodological approach for the economic valuation of an alive natural resource.]** *Revista de la Facultad de Agronomia Universidad de Buenos Aires*. 2003; 23(1): 59-69. ISSN: 0325-9250. Note: In Spanish with an English summary.

Descriptors: guanaco, sheep, production animals, contingent valuation, cost benefit analysis of 3 systems, traditional sheep production, sustainable sheep production, extensive guanaco production, rangeland farming systems, negative impact of desertification on sheep, methodology, reduced sustainability of sheep farming, value of guanacos, conservation of forage resources, Patagonia, Argentina.

Waldrige, B.M.; Billups, L.H.; Frost, A.R.; McKenzie, D.M.; Lenz, S.D. **A hormone receptor positive mammary gland adenocarcinoma in a llama.** *Journal of Applied Research in Veterinary Medicine*. 2003; 1(2): 163-167. ISSN: 1542-2666.

Descriptors: adult female llama, ovariectomized, udder enlargement, mammary gland adenocarcinoma, estrogen hormone receptors, immunohistochemistry, neoplasms, physiopathology, progesterone.

Wentz, P.A.; Belknap, E.B.; Brock, K.V.; Collins, J.K.; Pugh, D.G. **Evaluation of bovine viral diarrhea virus in New World camelids.** *Journal of the American Veterinary Medical Association*. 2003; 223(2): 223-228. ISSN: 0003-1488.

NAL call no.: 41.8 AM3

Descriptors: llamas, alpacas, experimental infection of females with bovine diarrhea virus, no effects on crias or fetus, antibodies after colostrums consumption, antibodies, effect on fetuses, seroprevalence, genetic characterization of BVDV isolates from llamas, reverse transcription polymerase chain reaction assay, specific antibody responses, few clinical signs, infection source probably cattle.

Wheeler, J.C.; Fernandez, M.; Rosadio, R.; Hoces, D.; Kadwell, M.; Buford, M.W. **Genetic diversity and management implications for vicuna populations in Peru.** In: John Lemons; Reginald Victor; Daniel Schaffer (Editors). *Conserving Biodiversity in Arid Regions: Best Practices in Developing Nations*. Kluwer Academic, Boston, Dordrecht & London. 2003: 327-344. ISBN: 1402074832.

Descriptors: vicuna populations, genetic diversity of populations, animal resource management, conservation measures and genetic diversity, molecular genetics, Peru.

Yau, K.Y.F.; Groves, M.A.T.; Li, Sheng Hua; Sheedy, C.; Lee, Hung; Tanha, J.; MacKenzie, C.R.; Jermutus, L.; Hall, J.C. **Selection of hapten-specific single-domain antibodies from a non-immunized llama ribosome display library.** *Journal of Immunological Methods*. 2003; 281(1/2): 161-175. ISSN: 0022-1759.

Descriptors: llamas, lymphocytes, VHH of heavy chain antibodies, complementary DNA, DNA libraries, haptens, lymphocytes, messenger RNA, peptides, ribosomes, selection.

Zanolari, P.; Zulauf, M.; Nitzl, D.; Ueltschi, G.; Steiner, A. **Offene Schragfraktur von Metatarsus III/IV und interne Fixation bei einem Alpaka. [Open fracture of metatarsus III/IV treated by open reduction and internal fixation in an alpaca.]** *SAT, Schweizer Archiv fur Tierheilkunde*. 2003; 145(8): 378-385. ISSN: 0036-7281. Note: In German with summaries in English, French and Italian.

Descriptors: 15 month old male alpaca, bone fracture of metatarsus, fracture fixation, surgical procedure, meticulous lavage and curettage, fracture reduction, internal fixation with 12 hole broad 3.5 mmDCP, implantation of gentamicin

impregnated collagen sponge, healing was good, implant later removed, case report, Czechoslovakia.

Zapata, B.; Fuentes, V.; Bonacic, C.; Gonzalez, B.; Villouta, G.; Bas, F. **Haematological and clinical biochemistry findings in captive juvenile guanacos (*Lama guanicoe* Muller 1776) in central Chile.** *Small Ruminant Research*. 2003; 48(1): 15-21. ISSN: 0921-4488.

NAL call no.: SF380.I52

Descriptors: male and female guanacos, farmed animals, hematological values, blood biochemistry, plasma, hematocrit, blood protein, serum albumin, blood sugar, creatine kinase, enzyme activity, hematology, hemoglobin, blood cells, lymphocytes, neutrophils, seasonal variation, sex differences, wild animals, Chile.

2002

Aller, J.F.; Rebuffi, G.E.; Cancino, A.K.; Alberio, R.H. **Successful transfer of vitrified llama (*Lama glama*) embryos.** *Animal Reproduction Science*. Sep 16, 2002; 73(1/2): 121-127. ISSN: 0378-4320.

NAL call no.: QP251.A5

Descriptors: llamas, embryos, embryo culture, embryo transfer, sexual reproduction, embryo survival, cryopreservation, chorionic gonadotropin, GnRH, estradiol, ovulation, blastocysts, glycerol, ethylene glycol, sucrose, synchronized females, pregnancy rate, reproductive techniques.

Aller, J.F.; Rebuffi, G.E.; Cancino, A.K. **Superovulation response to progestogen treatment in vicuna (*Vicugna vicugna*) in semicaptive conditions.** *Theriogenology*. January 2, 2002; 57(1): 576. ISSN: 0093-691X. Note: Proceedings of the Annual Conference of the International Embryo Transfer Society, Foz do Iguassu, Parana, Brazil, January 12-15, 2001.

NAL call no.: QP251.A1T5

Descriptors: vicuna, semicaptive females, hormone treatment, progestogen-eCG, reproduction hormones.

Aller, J.F.; Cancino, A.K.; Rebuffi, G.E.; Alberio, R.H. **Transferencia de embriones vitrificados de llama (*Lama glama*) en el altiplano Argentino. [Transfer of vitrified embryos of the llama (*Lama glama*) on the altiplano of Argentina.]** *Veterinaria Argentina*. 2002; 19(185): 363-386. ISSN: 0326-4629. Note: In Spanish.

NAL call no.: 41.8 G112

Descriptors: llamas, 12 superovulated domestic animals, embryo preservation, cryopreservation, embryo transfer, vitrification techniques are simple, rapid and low cost, Argentina.

Andrew, Stacy E.; Willi, A. Michelle; Anderson, David. **Density of corneal endothelial cells, corneal thickness, and corneal diameters in normal eyes of llamas and alpacas.** *American Journal of Veterinary Research*. March, 2002; 63(3): 326-329. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: llamas, alpacas, eye measurements, non-contact, specular microscopy, thickness, ultrasonographic pachymetry, Jameson calipers, vertical and horizontal corneal diameters, sex differences, adult and young animals.

Aylan-Parker, J.; McGregor, B.A. **Optimising sampling techniques and estimating sampling variance of fleece quality attributes in alpacas.** *Small Ruminant Research*. April, 2002; 44(1): 53-64. ISSN: 0921-4488

NAL call no.: SF380.I52

Descriptors: Huacaya and Suri alpacas, males, females, fleece, models to predict fleece quality, sampling fleece from various body parts, Australia.

Abstract: Huacaya and Suri alpacas (n = 120) of varying age, live weight (LWT) and sex (female, male) were selected randomly from four farms in southern Australia. At shearing, fleeces were divided into four components: saddle (S), neck (N), pieces (P; front and back legs, belly, apron) and the midside sample (MS). Components were weighed, sampled using the grid sampling technique and fleece attributes measured: clean washing yield (CWY), mean fibre diameter (MFD), coefficient of variation of the MFD (CV(D)), incidence of medullated fibres (Med), mean medullated fibre diameter (MedMFD) and coefficient of variation of the MedMFD (MedCV(D)). The MS and saddle grid sample (SGS) were used to create models to predict the fleece attribute of the total fleece (TF), saddle and neck fibre. For each fleece attribute MS had lower values than SGS and TF (P < 0.005) and SGS, except for CWY, had lower values than the P and TF (P < 0.005). The means were: MFD MS 27.5 micrometer, S 28.8 micrometer, N 28.7 micrometer, P 37.6

micrometer, TF 31.2 micrometer; CV(D) MS 24.3%, S 27.0%, N 28.6%, P 30.6%, TF 28.1%; CWY MS 90.2%, S 91.4%, N 88.9%, P 92.8%; Med 24.4%, S 33.1%, P 44.5%, TF 35.2%; MedMFD MS 32.7 micrometer, S 34.4 micrometer, P 41.1 micrometer, TF 36.0 micrometer; MedCV(D) MS 19.4%, S 22.3%, P 25.9%, TF 23.4%. The MS was found to be an appropriate sample from which to predict the MFD and CWY CV(D) was only satisfactorily predicted by the SGS ($r = 0.88$), with the exception of the neck fleece, for which neither the MS nor SGS could provide an accurate predictive model. The MS did not sufficiently account for the variation in Med ($r = 0.73-0.79$). The SGS gave accurate prediction of Med ($r = 0.98$). Sex effects were detected in models for TFMFD, NMFD and TFCV(D). LWT effects were detected in models for NMFD, NCV(D) and TFMedMFD. SGS often gave a more accurate prediction of a fleece attribute but it requires the removal of the entire fleece, whereas MS can be removed by shearing a small area or can be removed during shearing with a minimum of effort. Sampling variance for SGS was generally two to four times greater than the sampling variance for MS with the 95% confidence limits (CLs) for SGS being about double those of MS for most parameters except for clean washing yield (CWY) which were similar. Sampling variance for the incidence of medullated fibres in SGS was very high. The large 95% CL for all the tested fibre attributes indicate that alpaca breeders and advisors need to consider taking suitable duplicate measurements and other precautions during breeding and animal selling programs.

Bank, Michael S.; Sarno, Ronald J.; Campbell, Nichole K.; Franklin, William L. **Predation of guanacos (*Lama guanicoe*) by southernmost mountain lions (*Puma concolor*) during a historically severe winter in Torres del Paine National Park, Chile.** *Journal of Zoology* (London). 2002 October; 258(2): 215-222. ISSN: 0952-8369.

Descriptors: guanacos, mountain lions, *Puma concolor*, prey/predator relationships, impact of severe winter conditions, Torres del Paine National Park, Chile.

Bedenice, D.; Mazan, M.R.; Kuehn, H.; Hoffman, A.M. **Diaphragmatic paralysis due to phrenic nerve degeneration in a llama.** *Journal of Veterinary Internal Medicine*. 2002 Sep/Oct; 16(5): 603-606. ISSN: 0891-6640.

NAL call no.: SF601.J65

Descriptors: llamas, phrenic nerve degeneration, diaphragm paralysis, nerve atrophy, clinical aspects, respiration rate, lung ventilation disfunction, diagnostic techniques, diagnostic value, respiratory inductive plethysmography, pneumotachography, diagnostic value.

Bildfell, Robert J.; Long, Patrick; Sonn, Robert. **Cryptococcosis in a llama (*Lama glama*).** *Journal of Veterinary Diagnostic Investigation*. 2002 Jul; 14(4): 337-339. ISSN: 1040-6387.

NAL call no.: SF774.J68

Descriptors: llama, male, case study, pathogenesis, *Cryptococcosis*, tissues affected.

Abstract: *Cryptococcosis* was diagnosed in a 17-year-old male llama that had been euthanatized following an acute onset of neurologic disease. Tissues affected included the brain, spinal cord, lung, and kidney. The character of the leukocytic response varied from minimal to pyogranulomatous. *Cryptococcosis* has not been previously reported in a llama, although the infection has been described in 2 other species of New World camelids. The pathogenesis of *Cryptococcosis* is briefly reviewed.

Bravo, P.W.; Moscoso, R.; Alarcon, V.; Ordonez, C. **Ejaculatory process and related semen characteristics.** *Archives of Andrology*. 2002 Jan-Feb; 48(1): 65-72. ISSN: 0148-5016.

NAL call no.: QP253.A54

Descriptors: llamas, alpacas, urethral contractions, semen characteristics, transrectal probe technique, artificial vagina, spermatic motility and concentration.

Abstract: South American camelids are dribble ejaculators, and urethral contractions occur throughout copulation, which may last 25 min. The urethral contractions and their association with semen characteristics during copulation were determined in llamas and alpacas. A transrectal probe was held in the rectum of the male while copulating an artificial vagina, which was accessed underneath the dummy through a hole. The semen collecting tube was changed every 5 min. Semen characteristics, color, volume, consistency, motility, concentration, and percentage of live sperm were determined at 5 min intervals. Urethral contractions were evenly distributed during copulation: 40 in alpacas and 63 in llamas ($p < .05$), with a general range of 11 to 132. Semen color was milky in 63%, and translucent in 36.5% for alpacas; and creamy (9.9%) milky (47%), and translucent (42%) for llamas. The mean volume of ejaculate was 0.3, 0.4, 0.6, 0.7, 0.6, 0.8, 0.3, and 3.0 mL for 5, 10, 15, 20, 25, and 30 min, respectively. Semen consistency was variable: viscous (65%) and semiviscous (34%) in alpacas; and viscous (57%) and semiviscous (42%) in llamas. Spermatic

motility varied between 60 and 80% for the llama, and 40 and 80% for the alpaca. Spermatic concentration varied between 60 and 188 x 10(3)/mm³ in llamas, and 30 and 170 x 10(3)/mm³ in alpacas. Percentage of live sperm varied the least: 81 to 90% in llamas and 65 to 90% in alpacas. The ejaculate of llamas and alpacas is not fractionated, urethral contractions are evenly distributed, during copulation, and semen characteristics are present throughout the copulatory period.

Buendia, P.; Soler, C.; Paolicchi, F.; Gago, G.; Urquieta, B.; Perez Sanchez, F.; Bustos Obregon, E. **Morphometric characterization and classification of alpaca sperm heads using the sperm-class analyzer computer-assisted system.** *Theriogenology*. 2002 Mar 1; 57(4): 1207-1218. ISSN: 0093-691X.

NAL call no.: QP251.A1T5

Descriptors: alpacas, sperm morphology, sperm fertility, standarised morphological criteria, sperm quality, Sperm Class Analyzer computer-aided image analysis system, sperm head size and shape.

Abstract: Sperm morphology has been identified as one characteristic which can be useful in the prediction of sperm fertility, therefore, we hope that this study aimed at establishing standardized morphological criteria might serve in future studies dealing with the search for sperm parameters which facilitate an estimation of sperm quality. For this purpose, ejaculates from fertile alpacas were used to evaluate sperm head morphometry by means of the Sperm-Class Analyzer (SCA) computer-aided image analysis system. We defined three morphological categories according to sperm head size (normal 50%, small 26%, large 24%) and five categories according to sperm head shape (normal 47%, pyriform 3%, short 20%, round 1%, long 29%). Sperm classification according to shape was performed by first morphometrically characterizing sperm heads clearly falling into each of the shape categories. Thereafter, discriminant analysis was performed on the data from these typical sperm heads and the resulting classification functions were used to categorize 2,200 spermatozoa from 11 alpacas. Classification of sperm heads by this method agreed in 88% of the cases with most of the misclassifications being due to pyriform heads classified as long heads. Morphometric values obtained from samples of 50, 100, 150, 175 and 200 sperm heads were compared. At least 150 sperm heads should be evaluated to overcome sample size influence on sperm measurements. Significant differences in sperm morphometry were found between individuals (CV for morphometric parameters ranging from 1.3 to 13.0) and there were marked differences in the sperm morphological composition of the ejaculates. Within-animal CV ranged from 4.7 to 17.8 thus showing the high degree of sperm polymorphism present in the alpaca ejaculate.

Bustamante, A.V.; Zambelli, A.; De Lamo, D.A.; von Thungen, J.; Vidal, Rioja L. **Genetic variability of guanaco and llama populations in Argentina.** *Small Ruminant Research*. May, 2002; 44(2): 97-101. ISSN: 0921-4488.

NAL call no.: SF380.I52

Descriptors: llama, guanacos, dinucleotide microsatellite loci markers, population parameters, allele size and distribution, heterozygosity, Hardy-Weinberg equilibrium, genetic distances, polyorphic information content. exclusion probability, high level of genetic variability, genetic stocks, conservation, sustainable use programs.

Butler, K.L.; McGregor, B.A. **A statistical approach for evaluating micron blowout, with Australian alpacas as an example.** *Wool Technology and Sheep Breeding*. 2002; 50(3): 383-389. ISSN: 0043-7875.

Descriptors: alpacas, sheep, Australian Merino, wool producing animals, age, animal fibers heritability, statistical analysis, Australia.

Cebra, C.K.; Watrous, B.J.; Cebra, M.L. **Transabdominal ultrasonographic appearance of the gastrointestinal viscera of healthy llamas and alpacas.** *Veterinary Radiology and Ultrasound*. 2002 Jul/Aug; 43(4): 359-366. ISSN: 1058-8183.

NAL call no.: SF757.8.A4

Descriptors: llamas, alpacas, ultrasonography, gastrointestinal diseases, abdomen, stomach motility, intestinal motility, small intestine, large intestine, colon, peritoneum, peritoneal fluids, normal values, diagnostic value, intestinal obstructio n.

Chaves, M.G.; Aba, M.; Agüero, A.; Egey, J.; Berestin, V.; Rutter, B. **Ovarian follicular wave pattern and the effect of exogenous progesterone on follicular activity in non-mated llamas.** *Animal Reproduction Science*. 2002 Jan 23; 69(1-2): 37-46 ISSN: 0378-4320.

NAL call no.: QP251.A5

Descriptors: secretory profiles of oestradiol-17beta, progesterone, follicular dynamics, non- ovulating animals,

exogenous progesterone effects, hormone production, adults, non-pregnant, transrectal ultrasonography.

Abstract: The aim of the present study was two-fold. First, to characterize the secretory profiles of oestradiol-17beta and progesterone in relation to the structural changes observed by ultrasonography during follicular dynamics in non-ovulating llamas. Second, to evaluate the effect of exogenous progesterone on follicular activity, in terms of follicle development and hormone production. In experiment one, six adult non-pregnant, non-lactating llamas were examined daily by rectal palpation and transrectal ultrasonography during 70 days. On day 54, intravaginal devices containing 0.33 g of progesterone (CIDR) were inserted and left in the vagina during 16 days. The mean duration of a follicular wave was 22.6+/-2.5 days. The follicular growth phase (follicles growing from 3mm to maximum size) averaged 9.2+/-2.8 days, the mature phase (follicles around maximum size) 5.2+/-1.4 days and regression phase (follicles with decreasing size) 8.2+/-2.2 days. Oestradiol-17beta plasma concentrations exhibited a similar wave pattern (P<0.05). In addition, oestradiol-17beta peak plasma concentrations (46.9+/-3.3 pmol(-1)) were attained approximately 12 days after the beginning of the growing phase in connection with maximum follicle size (11.8+/-1.6mm). After CIDR insertion, a rapid increase in plasma progesterone concentrations was observed, with peak concentrations attained on day 1 after insertion. Thereafter, concentrations decreased gradually. Mean follicle size steadily decreased from the day of CIDR insertion to day 11 post-insertion (10.3+/-1.6 and 3.3+/-0.8mm, respectively). In order to investigate the effect of follicle size at CIDR insertion on the outcome of progesterone treatment, experiment two was designed. Sixteen adult non-pregnant and non-lactating llamas were divided into four groups according to follicle development at the time of CIDR insertion (group I: follicles < or =6 mm; group II: follicles between 6 and 9 mm; group III: follicles between 10 and 14 mm and group IV, regressing follicles). In groups II, III and IV, a significant decrease in follicle size was observed after the insertion of the CIDR device. In group I, no further development of dominant follicles was observed until the device was withdrawn. In all cases, the smallest diameter was registered between days 5 and 7 after the beginning of treatment. In conclusion, a detailed characterization of follicular waves using ultrasound and hormone determinations simultaneously in non-ovulating llamas and after the insertion of progesterone releasing devices, is presented.

Chen, Zhigang; Narang, Saran; Ni, Feng. **Solution structure of a llama single-domain antibody with hydrophobic residues typical of the VH/VL interface.** *Biochemistry*. 2002 Jul 9; 41(27): 8570-8579. ISSN: 0006-2960.

NAL call no.: 381 B523

Descriptors: llama, antibody, BrucD4-4, NMR spectroscopy, VH, V(H)H, differentiating from murine and human VHs, molecular structure, surface characteristics, hydrophobicity.

Davis, C. **Alpacas as a retirement career.** *Small Farm Today*. 2002 Mar/Apr; 19(2): 39-40. ISSN: 1079-9729.

NAL call no.: S1.M57

Descriptors: alpacas, llamas, retirement income, fleece, conformation, breeding, care and management, llamas, United States.

Del Campo, M.R.; Toro, F.; von Baer, A.; Montecinos, S.; Donoso, X.; von Baer, L. **Morphology and physiology of llama (*Lama glama*) and alpaca (*Lama Paco*) embryos.** *Theriogenology*. January 2, 2002; 57(1): 581. ISSN: 0093-691X. Note: Proceedings of the Annual Conference of the International Embryo Transfer Society, Foz do Iguassu, Parana, Brazil, January 12-15, 2001.

NAL call no.: QP251.A1T5

Descriptors: llamas, alpacas, embryos, structure, morphology, biochemical physiology.

DuBois, W.R. **Injectable anesthesia in llamas and alpacas.** *Proceedings of the North American Veterinary Conference*. 2002; 16: 166-168. Note: In volume: *Large Animal*. Part of a three volume set. Meeting held January 12-16, 2002, Orlando, Florida.

NAL call no.: SF605.N672

Descriptors: llamas, alpacas, injectable anesthetics.

European College of Veterinary Surgeons. **Eleventh Annual Scientific Meeting of the European College of Veterinary Surgeons, Vienna, Austria, July 5-7, 2002.** *Veterinary Surgery*. May-June, 2002; 31(3): 285-302. ISSN: 0161-3499. Note: Includes abstracts of papers (55) and posters (25) on clinical studies and surgical topics. Animals include llamas, dogs, cats and horses.

NAL call no.: SF911.V43

Descriptors: veterinary surgical methods, clinical studies, various mammals, dogs, cats, llamas, horses.

Farrar, L.H. **Ready. Get set. Show! (Showing alpacas).** *Small Farm Today*. 2002 Mar/Apr; 19(2): 43-44. ISSN: 1079-9729.

NAL call no.: S1.M57

Descriptors: alpacas, competitive shows, conformation, preparing the animals, fleece and fibers quality.

Flores, P.; Garcia Huidobro, J.; Munoz, C.; Bustos Obregon, E.; Urquieta, B. **Alpaca semen characteristics previous to a mating period.** *Animal Reproduction Science*. 2002 Aug 15; 72(3-4): 259-266. ISSN: 0378-4320.

NAL call no.: QP251.A5

Descriptors: alpacas, males, fertility, sperm quality, artificial vagina, sperm color, volume, volume, morphology, protocol for selecting good breeding males.

Abstract: Increasing the knowledge of the semen characteristics in the alpaca will contribute to understanding one of the many factors that affect the poor fertility rate in this species. Ten adult male alpacas, 2.6-10 years of age, average weight 64.7+/-4.7kg were used. The animals were distributed randomly into two groups of five each and submitted alternatively to two semen collections, using an artificial vagina and sexually receptive females. For the first semen collection the animals had a sexual rest period of about 90 and 45 days before the second. Duration of semen collection, color and volume of ejaculate were recorded, and sperm concentration and morphology (light microscopy) were evaluated. Descriptive statistical analyses were used for each variable, considering all samples obtained (n=19). An analysis of variance for animal groups and opportunity of collection were used for quantitative variables. Most frequent color was opalescent white (84.2%). There were no statistical differences among male groups or between semen collections. The average values and standard deviations for the quantitative variables were: 12.3+/-7.2min for semen collection time, 1.8+/-0.8ml for ejaculate volume, $(17.6+/-26.1) \times 10^6$ sperm/ml for sperm concentration and $34.0+/-52.2 \times 10^6$ for total number of sperm per ejaculate. The percentage of normal spermatozoa was 51.0+/-12.4%. From the total abnormalities, that of mid piece segment (14.4%) was the most frequent. These results indicate that male alpaca have poor semen quality, when compared with other domestic species. Nevertheless, for the evaluation of male alpaca as breeders it would be necessary to create a protocol for the selection of them, where phenotypic, behavioral and seminogram aspects are considered. The values reported herein define the characteristics of the alpaca semen that could be considered as the initial base of the seminal analysis to select male alpacas before mating.

Frank, E.N.; Renieri, C.; Hick, M.V.H.; la Manna, V.; Gauna, C.D.; Lauvergne, J.J. **Segregation analysis of irregular spotting and full white in llama.** In: *Proceedings of the 7th World Congress on Genetics Applied to Livestock Production, Montpellier, France, August, 2002 Session 12*. 2002: 0-4. ISBN: 2738010520.

Descriptors: llamas, animal fibers, coat colors, phenotypic relationships, white, irregular spotted, self colored, alleles autosomes, chromosomes crossing, dominance, epistasis, inheritance, genetics, segregation.

Gauly, M.; Vaughan, J. **Endoparasite infections in alpacas (*Lama pacos*) in relation to their genetic background.**

In: *Proceedings of the 7th World Congress on Genetics Applied to Livestock Production, Montpellier, France, August, 2002 Session 7*. &n bsp; 2002: 0-3. ISBN: 2738010520.

Descriptors: 92 alpacas, crias, age differences, 5 different sires, feces survey for parasites, parasitoses, genetic based resistance, helminth ova, *Nematodirus* sp., Trichostrongylidae.

Genin, D.; Abasto, P.; Choque, S.; Magne, J. **Dung ash treatment of a native forage to improve livestock feeding in low-input Andean pastoral systems.** *Livestock Research for Rural Development*. 2002; 14(2): 1-7. ISSN: 0121-3784.

Descriptors: llamas, sheep, livestock feeding study, *Festuca orthophylla*, paja brava bunch grass, alkali treatment of sodium hydroxide + urea or dung ash + urea to improve nutrient digestibility, 4 comparative feeding and digestibility studies, alkali treatments improved nutritive value, feeding management for low-input substance farming, Andean Group.

Gionfriddo, Juliet R. **Cataracts in New World camelids (llamas, alpacas, vicunas, and guanacos).** *Veterinary Clinics of North America Exotic Animal Practice*. 2002 May; 5(2): 357-369. ISSN: 1094-9194.

NAL call no.: SF997.5.E95E97

Descriptors: llamas, alpacas, vicunas, guanacos, South American camelids, eye disorders, treatment, causes.

Gionfriddo, Juliet R.; Blair, Michael. **Congenital cataracts and persistent hyaloid vasculature in a llama (*Lama glama*)**. *Veterinary Ophthalmology*. 2002 Mar; 5(1): 65-70. ISSN: 1463-5216.

NAL call no.: SF891.V47

Descriptors: llama, young animals, case study, bilateral cataracts, surgical correction, tissue treatment, viscoelastic endothelial protectants, anti-inflammatories, irrigating solution.

Abstract: A 9-month-old llama was evaluated for apparent blindness. Bilateral cataracts were diagnosed and cataract surgery was performed on the right eye. At the time of surgery persistent hyperplastic primary vitreous, persistent hyperplastic tunica vasculosa lentis, and a persistent hyaloid artery were observed. Prior to surgery Power Doppler ultrasound revealed a patent tunica vasculosa lentis OS. Despite reports of a poor success rate for llama cataract surgery, through use of careful tissue handling, phacoemulsification, viscoelastic endothelial protectants, anti-inflammatories, and BSS-Plus irrigating solution, vision was successfully restored in both eyes of the llama.

Gomez, G.; Ratto, M.H.; Berland, M.; Wolter, M.; Adams, G.P. **Superstimulatory response and oocyte collection in alpacas**. *Theriogenology*. January 2, 2002; 57(1): 584. ISSN: 0093-691X. Note: Proceedings of the Annual Conference of the International Embryo Transfer Society, Foz do Iguassu, Parana, Brazil, January 12-15, 2001.

NAL call no.: QP251.A1T5

Descriptors: alpacas, females, egg collection, superovulation, hormone treatment, methods, techniques.

Hackenbroich, Ch.; Gerwing, M.; Litzke, L.F. **Chirurgische Therapie einer Femurspiralfraktur beim Lama (*Lama glama*)**. [Surgical repair of a femur spiral fracture in a llama (*Lama glama*).] *Tieraerztliche Praxis Ausgabe G Grosstiere Nutztiere*. 2002; 30(1): 58-62. ISSN: 1434-1220. Note: In German with an English summary.

Descriptors: llama, femur, spiral fracture, surgical repair, case study.

Hamir, A.N.; Smith, B.B. **Severe biliary hyperplasia associated with liver fluke infection in an adult alpaca**.

Veterinary Pathology. 2002 Sep; 39(5): 592-594. ISSN: 0300-9858.

NAL call no.: 41.8 P27

Descriptors: llamas, adult animal, internal parasitic diseases, *Fasciola hepatica*, liver fluke infection, biliary hyperplasia.

Heath, A.M.; Pugh, D.G.; Sartin, E.A.; Navarre, B.; Purohit, R.C. **Evaluation of the safety and efficacy of testicular biopsies in llamas**. *Theriogenology*. 2002 Oct; 58(6): 1125-1130. ISSN: 0093-691X.

NAL call no.: QP251.A1T5

Descriptors: llamas, reproductive function, needle biopsy of testes, histologic examination of tissue, safety and efficacy of the procedure, seminiferous tubules, scrotum, body temperature, thermography, histology.

Abstract: Evaluation of the reproductive function of *Lama glama* is generally considered to be a challenging task due to the difficulty of obtaining representative semen samples. One method that has been proposed for evaluation of testicular function in these animals is histologic examination of testicular needle biopsies. This study was undertaken to examine the safety and efficacy of using needle biopsies to assess testicular function in this species. One randomly selected testicle from each of 16 sexually mature llamas was biopsied with a 14-gauge self-firing biopsy instrument. The llamas were evaluated over a 6-week period with thermography for temperature changes of the scrotum. At the end of the 6-week trial, the llamas were castrated and sections of each testis were fixed in Bouin's solution for histologic examination. Immediately prior to castration, an additional biopsy was taken from each testis to compare the tissue obtained via biopsy with sections from the corresponding testis obtained after castration. A qualitative grading scale was used to compare the seminiferous tubules from each testis. No difference was found between the biopsied and the nonbiopsied testes ($P = 0.69$). The percentage of normal tubules between the biopsied and the nonbiopsied sides also did not differ ($P = 0.70$). Furthermore, the percentage of normal seminiferous tubules did not differ between the needle biopsy samples and the corresponding tissue samples obtained at castration ($P = 0.48$). The number of round seminiferous tubules counted in each biopsy section ranged from 3 to 67. There was no significant difference in the thermographic images of the scrotum between the biopsied and the nonbiopsied testes. This study supports testicular biopsies as a safe and useful procedure in the evaluation of testicular function.

Herrera, E.A.; Riquelme, R.A.; Sanhueza, E.M.; Raggi, L.A.; Llanos, A.J. **Use of fetal biometry to determine fetal age in late pregnancy in llamas**. *Animal Reproduction Science*. 2002 Nov; 4(1/2): 101-109. ISSN: 0378-4320.

NAL call no.: QP251.A5

Descriptors: llamas, fetal development, determination of fetal age, gestation period, pregnancy, reproduction biometry, weight, diameter, fetal length, fetal limbs, mathematical models, newborn animals.

Ivany, Jennifer M.; Anderson, David E.; Birchard, Stephen J.; Mattoon, John R.; Neubert, Brad G. **Portosystemic shunt in an alpaca cria.** *Journal of the American Veterinary Medical Association.* June 1, 2002; 220(11): 1652; 1696-1699. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: alpaca, 5 month old cria, diarrhea, poor growth, colonic vein shunt, surgical correction, case study.

Janis, Christine M.; Theodor, Jessica M.; Boisvert, Bethany. **Locomotor evolution in camels revisited: A quantitative analysis of pedal anatomy and the acquisition of the pacing gait.** *Journal of Vertebrate Paleontology.* 14 March, 2002; 22(1): 110-121. ISSN: 0272-4634.

Descriptors: llamas, camels, pacing gait, measurements, metapodials, phalanges, comparison to extinct camelids, Tertiary of North America, Oligocene, early Miocene, evolution.

Jarvinen, J.A.; Miller, J.A.; Oehler, D.D. **Pharmacokinetics of ivermectin in llamas (*Lama glama*).** *Veterinary Record* (London). Mar 2002; 150(11): 344-346. ISSN: 0042-4900.

NAL call no.: 41.8 V641

Descriptors: llamas, ivermectin, pharmacokinetics, pour on formulations, oral administration, controlled release, subcutaneous injection.

Jones, C.J.P.; Abd Elnaeim, M.; Bevilacqua, E.; Oliveira, L.V.; Leiser, R. **Comparison of uteroplacental glycosylation in the camel (*Camelus dromedarius*) and alpaca (*Lama pacos*).** *Reproduction.* 2002 Jan; 123(1): 115-126. ISSN: 1470-1626.

NAL call no.: QP251.J75

Descriptors: camels, alpacas, comparison study, glycosylation of fetal and maternal tissues, interspecies differences, camelid hybrids, placentae, viability of hybrid pregnancies, embryo transplantation.

Abstract: The recent birth of a camel-llama hybrid, after numerous failed attempts, has prompted an investigation into the glycosylation of apposing fetal and maternal tissues of pregnant camels and alpacas. This study was undertaken to determine whether interspecies differences in glycans are factors that may account in part for the difficulty in producing a viable hybrid. Specimens of camel placentae from day 60 to day 375 of gestation and alpaca placentae from day 22 to term (approximately 345 days) were fixed and embedded in resin, and sections were stained with a panel of 19 biotinylated lectins and an avidin--peroxidase revealing system. Several qualitative interspecies differences in tissue glycosylation were found, mainly in the trophoblast, and especially with respect to bi/tri-antennary bisected N-glycan, fucosylated structures, beta-galactosyl residues and sialyl termini. In the maternal uterine epithelium, differences were found mainly in bi/tri-antennary bisected complex N-glycan and beta-galactosyl residues, indicating that there is more conservation of glycosylation in maternal tissues compared with trophoblast. There were also many quantitative differences in the distribution of glycans. It is possible that a failure to effect the normal glycan--glycan complementation that occurs at the cell surface between maternal and fetal tissues during the implantation processes of apposition and adhesion may account in part for the difficulty in establishing a viable pregnancy between these two species.

Kuch, M.; Rohland, N.; Betancourt, J.L.; Latorre, C.; Stepan, S.; Poinar, H.N. **Molecular analysis of a 11,000-year-old rodent midden from the Atacama Desert, Chile.** *Molecular Ecology.* 2002; 11(5): 913-924. ISSN 0962-1083.

NAL call no.: QH540.M64

Descriptors: plants, animals, vicuna, birds, rodents.

Lattanzi, M.; Santos, C.; Chaves, G.; Miragaya, M.; Capdevielle, E.; Judith, E.; Aguero, A.; Baranao, L.

Cryopreservation of llama (*Lama glama*) embryos by slow freezing and vitrification. *Theriogenology.* January 2, 2002; 57 (1): 585. ISSN: 0093-691X. Note: Proceedings of the Annual Conference of the International Embryo Transfer Society, Foz do Iguassu, Parana, Brazil, January 12-15, 2001.

NAL call no.: QP251.A1T5

Descriptors: llamas, embryos, cryopreservation, slow temperature reduction, vitrification, methods and techniques.

Leoni, L.; Miragaya, M.H.; Lager, I.; Lomonaco, M.; Fondevila, N.; Agüero, A.; Baranao, L.; Schudel, A.A. **Bovine Herpes Virus-1 DNA detection in *Lama glama* embryos previously infected and washed.** *Theriogenology*. January 2, 2002; 57(1): 573. ISSN: 0093-691X. Note: Proceedings of the Annual Conference of the International Embryo Transfer Society, Foz do Iguassu, Parana, Brazil, January 12-15, 2001.

NAL call no.: QP251.A1T5

Descriptors: llama, embryos, infectious agent, Bovine Herpes Virus 1, bovine viral disease.

Llanos, Anibal J.; Riquelme, Raquel A.; Sanhueza, Emilia M.; Herrera, Emilio; Gertrudis; Giussani, Dino A.; Parer, Julian T. **Regional brain blood flow and hemispheric oxygen consumption during acute hypoxaemia in the llama fetus.** *Journal of Physiology*. 2002 Feb 1; 538(Pt. 3): 975-983. ISSN: 0022-3751.

NAL call no.: 447.8 J82

Descriptors: llamas, live fetuses, hypoxaemia, cerebral hemispheric oxygen, O₂, Frick principle, hemispheric metabolism.

Abstract: Unlike fetal animals of lowland species, the llama fetus does not increase its cerebral blood flow during an episode of acute hypoxaemia. This study tested the hypothesis that the fetal llama brain maintains cerebral hemispheric O₂ consumption by increasing cerebral O₂ extraction rather than decreasing cerebral oxygen utilisation during acute hypoxaemia. Six llama fetuses were surgically instrumented under general anaesthesia at 217 days of gestation (term ca 350 days) with vascular and amniotic catheters in order to carry out cardiorespiratory studies. Following a control period of 1 h, the llama fetuses underwent 3 x 20 min episodes of progressive hypoxaemia, induced by maternal inhalational hypoxia. During basal conditions and during each of the 20 min of hypoxaemia, fetal cerebral blood flow was measured with radioactive microspheres, cerebral oxygen extraction was calculated, and fetal cerebral hemispheric O₂ consumption was determined by the modified Fick principle. During hypoxaemia, fetal arterial O₂ tension and fetal pH decreased progressively from 24 +/- 1 to 20 +/- 1 Torr and from 7.36 +/- 0.01 to 7.33 +/- 0.01, respectively, during the first 20 min episode, to 16 +/- 1 Torr and 7.25 +/- 0.05 during the second 20 min episode and to 14 +/- 1 Torr and 7.21 +/- 0.04 during the final 20 min episode. Fetal arterial partial pressure of CO₂ (P(a,CO₂), 42 +/- 2 Torr) remained unaltered from baseline throughout the experiment. Fetal cerebral hemispheric blood flow and cerebral hemispheric oxygen extraction were unaltered from baseline during progressive hypoxaemia. In contrast, a progressive fall in fetal cerebral hemispheric oxygen consumption occurred during the hypoxaemic challenge. In conclusion, these data do not support the hypothesis that the fetal llama brain maintains cerebral hemispheric O₂ consumption by increasing cerebral hemispheric O₂ extraction. Rather, the data show that in the llama fetus, a reduction in cerebral hemispheric metabolism occurs during acute hypoxaemia.

Mariasegaram, M.; Pullenayegum, S.; Ali, M.J.; Shah, R.S.; Penedo, M.C.T.; Wernery, U.; Sasse J. **Isolation and characterization of eight microsatellite markers in *Camelus dromedarius* and cross-species amplification in *C. bactrianus* and *Lama pacos*.** *Animal Genetics*. 2002 Oct; 33(5): 385-387. ISSN: 0268-9146.

NAL call no.: QP98.A1A5

Descriptors: camels, dromedaries, alpacas, microsatellite repeats, genetic markers, molecular weight, genetic polymorphism, polymerase chain reaction, PCR, pedigree, molecular sequence data.

Marley, S.E.; Conder, G.A. **The use of macrocyclic lactones to control parasites of domesticated wild ruminants.** In: *Macrocyclic Lactones in Antiparasitic Therapy*. CAB International. Wallingford, UK. 2002: 371-393. ISBN: 0851996175.

NAL call no.: RM412.M33 2002

Descriptors: anthelmintics, disease control, macrocyclic lactones, ivermectin, drug therapy and residues, pharmacokinetics, many animals and parasites tested, alpacas, llamas, guanacos, buffalo, elk, Bactrian camels, dromedary camels, *Amblyomma americanum*, *Bison bonasus*, buffalos, goats, various species of deer, reindeer, *Bunostomum*, *Camelostrongylus mentulatus*, *Cephenemyia trompe*, *Chabertia ovina*, *Cooperia*, *Dictyocaulus viviparus*, *Elaphostrongylus rangiferi*, *Haematopinus tuberculatus*, *Haemonchus contortus*, *Haemonchus longistipes*, *Hypoderma bovis*, *Hypoderma diana*, *Hypoderma tarandi*, *Ixodes scapularis*, *Linguatula*, *Linognathus africanus*, *Nematodirus*, *Oesophagostomum columbianum*, *Oesophagostomum venulosum*, *Ostertagia ostertagi*, *Otobius megnini*, *Parelaphostrongylus tenuis*, *Psoroptes cuniculi*, *Stephanofilaria zaheeri*, *Strongyloides papillosus*, *Toxocara vitulorum*, *Trichostrongylus axei*, *Trichostrongylus colubriformis*, *Trichostrongylus probolurus*, *Trichostrongylus vitrinus*, *Trichuris discolor*, *Trichuris ovis*, *Impalpaia tuberculata*, *Lamanema chavezii*.

McGregor, B.A. **Comparative productivity and grazing behaviour of Huacaya alpacas and Peppin Merino sheep grazed on annual pastures.** *Small Ruminant Research*. June, 2002; 44(3): 219-232. ISSN: 0921-4488

NAL call no.: SF380.I52

Descriptors: Huacaya alpacas, Peppin Merino sheep, improved pasture, grazing preferences, nutrient values of pasture, seasonal affects on fiber characteristics, growth, diameter, curvature, staple strength, resistance to compression, staple crimp, Australia.

Abstract: Adult Huacaya alpaca (mixed sex, mean +/- S.D., age 5.2 +/- 2.7 years, live weight 72.0 +/- 9.5 kg) were grazed with Peppin Merino sheep (castrated male, age 3 +/- 0.1 years, live weight 54.0 +/- 3.9 kg) for 2 years on improved annual pasture at commercial grazing pressures (10-17 dry sheep equivalents/ha) near Melbourne, Australia. Alpacas and sheep gained weight during the first year and then lost weight (proportional loss: alpacas 22%, sheep 20%, NS) before commencing weight gain. Twice the alpacas gained when the sheep lost weight ($P < 0.001$). Alpacas lost weight when green pasture was < 0.5 t DM/ha and gained weight when green pasture exceeded 0.5 t DM/ha. The pasture was not grazed evenly. The behaviour of alpacas indicated a strong preference for short green grazed pasture and they generally avoided long dry grass. The alpacas did not increase the utilisation of the pasture until increased grazing pressure resulted in an expansion of the area utilised. Midside wool and alpaca fibre growth rates were depressed when animals lost weight and increased when animals gained weight. The effects of the adverse nutritional conditions on alpaca were: a significant reduction in clean fibre growth (CFW) 2.86 vs 1.91 kg, $P < 0.001$; clean washing yield (CWY) 95.2 vs 91.5%, $P < 0.001$; mean fibre diameter (MFD) 37.5 vs 35.2 micrometers, $P < 0.01$; staple length (SL) 94 vs 77 mm, $P < 0.001$; SL/MFD ratio 2.50 vs 2.20, $P < 0.001$; an increase in mean fibre diameter coefficient of variation (MFD CV) 23.3 vs 25.1%, $P < 0.05$; fibre curvature (FC) 24.6 vs 26.4 degrees/mm, $P < 0.1$ and no change in staple strength (SS) 54 vs 46 N/ktex; resistance to compression (Rc) 5.1 vs 5.1 kPa; staple crimp (SC) 1.2 vs 1.1 cm⁻¹. The effects on wool were: a significant reduction of CFW 4.12 vs 3.42 kg, $P < 0.001$; CWY 73.7 vs 69.1%, $P < 0.001$; MFD 22.4 vs 20.5 micrometers, $P < 0.001$; SL 96 vs 76 mm, $P < 0.001$; SS 54 vs 40 N/ktex, $P < 0.001$; an increase in MFD CV 16.1 vs 18.0%, $P < 0.005$; FC 97.9 vs 105.5 degrees/mm, $P < 0.005$ and little change in SL/MFD ratio 4.43 vs 4.17, $P < 0.1$; Rc 10.0 vs 10.4 kPa, ns; SC 5.8 vs 5.7 cm⁻¹, ns. The live weight, fibre productivity and fibre attributes of Huacaya alpacas and Merino sheep were substantially affected by seasonal nutritional conditions in a similar manner. The annual clean alpaca fibre growth was affected to a greater extent than the annual wool growth (decline of 33 vs 17%). Under conditions when green pasture availability was < 0.5 t DM/ha, alpacas utilised pasture more effectively than sheep. Managers can manipulate the provision of pasture to manage live weight change and manipulate alpaca productivity and fibre quality.

Messick, Joanne B.; Walker, Pamela G.; Raphael, William; Berent, Linda; Shi, Xun. '*Candidatus Mycoplasma haemodidelphidis*' sp. nov., '*Candidatus Mycoplasma haemolamae*' sp. nov. and *Mycoplasma haemocanis* comb. nov., haemotrophic parasites from a naturally infected opossum (*Didelphis virginiana*), alpaca (*Lama pacos*) and dog (*Canis familiaris*): Phylogenetic and secondary structural relatedness of their 16S rRNA genes to other mycoplasmas. *International Journal Systematic & Evolutionary Microbiology*. May, 2002; 52(3): 693-698. ISSN: 1466-5026.

NAL call no.: QR1.I577

Descriptors: alpaca, opossum, dog, hemotrophic bacteria, newly characterized species, new group of Mycoplasma, phylogenetic affiliation, molecular genetics.

Miragaya, M.H.; Chaves, M.G.; Capdevielle, E.F.; Ferrer, M.S.; Pinto, M.; Rutter, B.; Neild, D.M.; Agüero, A. **In vitro maturation of llama (*Lama glama*) oocytes obtained surgically using follicle aspiration.** *Theriogenology*. January 2, 2002; 57(1): 731. ISSN: 0093-691X. Note: Proceedings of the Annual Conference of the International Embryo Transfer Society, Foz do Iguassu, Parana, Brazil, January 12-15, 2001.

NAL call no.: QP251.A1T5

Descriptors: llama, eggs, oocytes, invitro development, surgical methods and techniques, follicle aspiration.

Nagy, D.W.; Chakwenya, J.; Tyler, J.W.; Holle, J. **A note on colostral immunoglobulin G concentrations vs. subsequent serum concentrations in naturally suckled llama (*Lama glama*) and alpaca (*Lama pacos*) crias.** *Journal of Camel Practice and Research*. 2002; 9(2): 171-172. ISSN: 0971-6777.

NAL call no.: SF997.5.C3J68

Descriptors: alpacas, llamas, newborn animals, colostral immunity, colostrums, IgG, immune serum, immunity.

Nagy, D.W.; Lakritz, J.; Tyler, J.W.; Jarboe, J.; Loiacono, C.M.; Haddad, M.F. **The treatment of suspected cerebrospinal nematodiasis with moxidectin in 3 llamas (*Lama glama*).** *Journal of Camel Practice and Research*. 2002; 9(2): 145 -149. ISSN: 0971-6777.

NAL call no.: SF997.5.C3J68

Descriptors: llamas, suspected cerebrospinal nematodiasis, parasitic nematodes, *Paralaphostrongylus tenuis*, clinical aspects, blood chemistry, blood picture, leukocyte counts, cerebrospinal fluid analysis, drug therapy, moxidectin, case reports, *Paralaphostrongylus*, Illinois, United States.

Neyra, Victor; Chavarry, Elizabeth; Espinoza, Jose R. **Cysteine proteinases Fas1 and Fas2 are diagnostic markers for *Fasciola hepatica* infection in alpacas (*Lama pacos*).** *Veterinary Parasitology*. 2002 Apr 19; 105(1): 21-32. ISSN: 0304-4017.

NAL call no.: SF810.V4

Descriptors: alpacas, antibodies, ELISA, *Fasciola hepatica*, serological assay parameters, immunodiagnostic technique.

Abstract: Circulating antibody against *Fasciola hepatica* antigens was determined by enzyme-linked immunosorbent assay (ELISA) and immunoelectrophoresis in alpacas naturally exposed to *F. hepatica*. Serological assay parameters were established by using sera from eight infected animals and seven controls with no record of this parasitic infection. Excretory--secretory (ES-) products, Fas1- and Fas2-ELISA were used to survey 307 alpacas from a *F. hepatica* endemic area in the Peruvian Andes. Seroprevalence of *F. hepatica* infection varied from 56.7, 64.8 and 66.8% measured by Fas1-, Fas2- and ES-ELISA, respectively. The sensitivity for ES-ELISA was 95%, corresponding Fas1- and Fas2-ELISA sensitivity values were 90 and 95%. In this population, 7% of animals were positive for *F. hepatica* eggs in faeces, other parasites detected were *Trichuris* sp. (40%), *Nematodirus* sp. (34.6%), *Lamanema* sp. (12.8%) and *Eimeria* sp. (11.8%). The results show that *F. hepatica* infected animals elicit circulating antibodies against ES, Fas1 and Fas2. Fas2-ELISA may be proposed as a sensitive assay for the immunodiagnosis of fasciolosis in alpacas.

Parker, Jill E.; Timm, Karen I.; Smith, Bradford B.; Van Saun, Robert J.; Winters, Kerri M.; Sukon, Peerapol; Snow, Christine M. **Seasonal interaction of serum vitamin D concentration and bone density in alpacas.** *American Journal of Veterinary Research*. 2002 Jul; 63(7): 948-953. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: alpacas, males, seasonal variations, serum analysis, calcium, phosphorus, vitamin D, feed concentrations, bone mineral density.

Abstract: **OBJECTIVE:** To evaluate temporal changes in bone mineral density associated with seasonal variation in serum vitamin D, calcium, and phosphorus concentrations in alpacas. **ANIMALS:** 5 healthy mature neutered male alpacas. **PROCEDURE:** Metacarpal bone mineral density was measured at 4 times during a year. Each time alpacas were weighed, blood was collected for determination of serum calcium, phosphorus, and vitamin D concentrations, and samples of feed were analyzed for nutrient content. Vitamin D status was determined by use of an assay that measured serum 25-hydroxycalciferol concentration. Effects of changes in serum vitamin D, calcium, and phosphorus concentration and body weight with season on bone mineral density were determined. **RESULTS:** Bone mineral density, body weight, and serum vitamin D and phosphorus concentrations varied with season. Bone mineral density, serum vitamin D concentration, and body weight also varied among individual alpacas. Serum vitamin D concentration was lower in January than the previous October and increased from May to the following September. The decrease in bone mineral density lagged behind the decrease in serum vitamin D concentration and was lower in May, compared with the previous October. Body weight was lower in May than the previous October or following September. Solar radiation was highest in July and lowest in December. **CONCLUSIONS AND CLINICAL RELEVANCE:** Seasonal changes in bone mineral density are associated with changes in serum vitamin D concentrations in alpacas. Changes in bone mineral density associated with a decline in serum vitamin D concentration may predispose some alpacas to developing fractures minimal trauma.

Parker, Jill E.; Semevolos, Stacy A. **Use of a parainguinal approach for cryptorchidectomy in alpacas.** *Journal American Veterinary Medical Association*. 2002 Jun 15; 220(12): 1835-6, 1797-1798. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, alpacas, cryptorchidism, surgical treatment, parainguinal incision, case study.

Abstract: Cryptorchidism, is an uncommon condition in llamas and alpacas, and there are no reports detailing surgical management of this condition in llamas or alpacas; however, flank or ventral midline approaches have been mentioned.

Cryptorchid castration was performed by use of a parainguinal approach in 2 alpacas. The retained testicle of each alpaca was found on the ventral aspect of the abdomen, just caudal to the incision in 1 alpaca and at the cranial edge of the incision in the other. The testicle was approximately 1 X 0.5 cm in 1 alpaca and 2 X 1 cm in the other. In an alpaca or llama with a single abdominal testicle and no history of surgery, the parainguinal approach has several advantages, including the likely proximity of the testicle to the incision; the small incision, which can be extended if needed; ease of closure; and minimal aftercare. The retained testicles were small and could be difficult to find from a more distant midline, paramedian, or flank incision.

Pidre, G.A.; Eguinoa, G.; Iribarren, F.E. **Sarcocystosis en llamas (*Lama glama*) en el norte argentino. [Sarcocystosis in llamas (*Lama glama*) in northern Argentina.]** *Veterinaria Argentina*. 2002; 19(186): 430-433. ISSN: 0326-4629. Note: In Spanish with an English summary.

NAL call no.: 41.8 G112

Descriptors: llamas, domesticated animals, sudden deaths, post mortem examination, *Sarcocystis* sp., intercostal muscles, myocardium had parasites, clinical aspects, protozoal infections, Argentina.

Powell, Cynthia C.; Nuhsbaum, Tanja M.; Gionfriddo, Juliet R. **Aqueous misdirection and ciliary block (malignant) glaucoma after cataract removal in a llama.** *Veterinary Ophthalmology*. 2002 Jun; 5(2): 99-101. ISSN: 1463-5216.

NAL call no.: SF891.V47

Descriptors: llama, ciliary block glaucoma, cataract surgery, vitrectomy, surgical complications of cataract surgery, case report.

Abstract: Ciliary block (malignant) glaucoma is caused by the posterior flow of aqueous humor into or behind the vitreous. It is a rare complication of anterior segment surgery in humans. This is a report of ciliary block glaucoma occurring as a postoperative complication of cataract surgery in a llama. Medical management was ineffective in lowering intraocular pressure (IOP). Posterior capsulotomy and anterior hyaloid disruption with a 22-gauge needle, in addition to medical management maintained IOP in the normal range until anterior vitrectomy could be performed. After vitrectomy, glaucoma resolved and medical treatment was no longer necessary.

Prado, Tulio M.; Morgan, Gregor L.; Prado, Maria E.; Bahr, Robert J.; Streeter, Robert N.; Emmett, Gregory. **Case report: Urethrovaginal fistula in a llama.** *Bovine Practitioner*. February, 2002; 36(1): 22-26. ISSN: 0524-1685

NAL call no.: SF779.5.A1B6

Descriptors: llama, female, adult, case study, urinary incontinence, scalding of the perineum and rear limbs, urethrovaginal fistula, surgical correction.

Pugh, D.G. **Care of the pregnant llama.** *Proceedings of the North American Veterinary Conference*. 2002; 16: 188-190. Note: In volume *Large Animal*. Part of a three volume set. Meeting held January 12-16, 2002, Orlando, Florida.

NAL call no.: SF605.N672

Descriptors: *Lama* species, care and management of pregnant females, reproduction in captivity.

Pugh, D.G. **Pregnancy diagnosis using ultrasound in sheep, goats, and llamas.** *Proceedings of the North American Veterinary Conference*. 2002; 16: 193. Note: In volume *Large Animal*. Part of a three volume set. Meeting held January 12-16, 2002, Orlando, Florida.

NAL call no.: SF605.N672

Descriptors: sheep, goats, llamas, ultrasound for pregnancy diagnosis.

Pugh, D.G. **Small ruminant and llama parasite management.** *Proceedings of the North American Veterinary Conference*. 2002; 16: 191-192. Note: In volume *Large Animal*. Part of a three volume set. Meeting held January 12-16, 2002, Orlando, Florida.

NAL call no.: SF605.N672

Descriptors: sheep, goats, llamas, parasites.

Ramos Vara, Jose A.; Miller, Margaret A. **Metastatic pulmonary adenocarcinoma in a llama (*Lama glama*).** *Journal of Veterinary Diagnostic Investigation*. 2002 Jul; 14(4): 328-31 ISSN: 1040-6387.

NAL call no.: SF774.J68

Descriptors: llama, adult female, case study, pulmonary adenocarcinoma, neoplastic tissue.

Abstract: An adult female llama with a comminuted fracture of the left femoral head was necropsied. A firm multinodular mass infiltrated skeletal muscle adjacent to the fracture. Multiple, firm, white nodules were in the pulmonary parenchyma and pleura. A single nodule was in the liver. Microscopically, transition from nonneoplastic bronchiolar epithelium to neoplastic epithelium that formed acinar structures was evident at bronchioloalveolar junctions. A diagnosis of pulmonary adenocarcinoma was made. Similar neoplastic tissue was in the liver and in the perifemoral mass. Immunohistochemically, neoplastic cells were positive for pan-cytokeratin, cytokeratin 7, and cytokeratin 5/6 antibodies and negative for vimentin and cytokeratins 8/18 and 20.

Ratto, M.H.; Berland, M.; Adams, G.P. **Ovarian superstimulation and ultrasound-guided oocyte collection in llamas.** *Theriogenology*. January 2, 2002; 57(1): 590. ISSN: 0093-691X. Note: Proceedings of the Annual Conference of the International Embryo Transfer Society, Foz do Iguassu, Parana, Brazil, January 12-15, 2001.

NAL call no.: QP251.A1T5

Descriptors: llamas, egg collection, super ovulation, ultrasound techniques, oocyte recovery method.

Renieri, C.; Frank, E.N.; Hick, M.V.H.; la Manna, V.; Gauna, C.D.; Lauvergne, J.J. **Segregation analysis of coat colour phenotypes in llama.** In: *Proceedings of the 7th World Congress on Genetics Applied to Livestock Production, Montpellier, France, August, 2002-Session 12.* 2002; 0-4. ISBN: 2738010520.

Descriptors: llamas, alleles, animal fibers, natural colors, color inheritance, autosomes, chromosomes, crossing, dominance, loci, phenotypic segregations, recessiveness.

Renisio, Jean Guillaume; Perez, Janice; Czisch, Michael; Guenneugues, Marc; Bornet, Olivier; Frenken, Leon; Cambillau, Christian; Darbon, Herve. **Solution structure and backbone dynamics of an antigen-free heavy chain variable domain (VHH) from llama.** *Proteins*. 2002 Jun 1; 47(4): 546-55. ISSN: 1097-0134.

Descriptors: dromedaries, camels, llamas, heavy chain antibody types, VHH, NMR spectroscopy, structure.

Abstract: Camelids, (dromedaries, camels, and llamas) produce heavy-chains antibodies, with their antigen recognition sites composed of a single VH-like domain, referred to as VHH. The solution structure of one of these VHHs domains (VHH-H14), raised against the alpha subunit of the human chorionic gonadotropin hormone (hCG), has been determined by (15)N heteronuclear three-dimensional NMR spectroscopy. The framework is well resolved within the set of 20 best-calculated NMR structures and is close to that of classical VH domains from vertebrate antibodies, consisting of two antiparallel beta-sheets organized in a beta-barrel. Loops display a lower precision, especially the Complementarity Determining Regions (CDRs), involved in antigen recognition. Comparison of the three-dimensional VHH-H14 solution structure with its previously solved crystal structure (Spinelli et al., *Nature Struct. Biol.* 1996;3:752-757) reveals a high similarity to the framework, whereas significant conformational differences occur on CDRs, leading to the assumption that the antigen recognition site is a more mobile part. In order to deepen our insights into the dynamics of VHH-H14 in solution, (15)N relaxation was measured with longitudinal R1 and transverse R2 self-relaxation rates, and (15)N steady-state heteronuclear nuclear Overhauser enhancements (NOE), making it possible to probe picosecond-to-millisecond internal motions. Determination of dynamic parameters (S(2), tau(e), and Rex) through the Lipari-Szabo Model-free approach enables the identification of several regions with enhanced dynamics. Especially, the mobility measurements from NMR confirm that the antigen recognition site is the most mobile part of the VHH-H14 domain on picosecond-to-nanosecond fast time scales. Several residues belonging to the three CDRs are submitted to chemical exchange processes occurring on slow microsecond-to-millisecond time scales, suggesting that the formation of the VHH/antigen complex should be accompanied by structural changes.

Su, Chen; Nguyen, Viet Khong; Nei, Masatoshi. **Adaptive evolution of variable region genes encoding an unusual type of immunoglobulin in camelids.** *Molecular Biology and Evolution*. 2002 Mar; 19(3): 205-215. ISSN: 0737-4038.

NAL call no.: QH506.M642

Descriptors: Camelidae, llamas, dimeric immunoglobulin (Ig) structure, evolution, adaptations, VHH genes, immune function.

Abstract: A typical immunoglobulin (Ig) molecule is composed of four polypeptide chains: two identical heavy (H) chains and two identical light (L) chains. This tetrameric structure is conserved in almost all jawed vertebrate species. However, it has been discovered that camels and llamas (family: Camelidae) possess a type of dimeric Ig that consists of two H chains only. These H chains do not associate with L chains, and they do not have the first constant region (CH1), which is present in the conventional Ig. In spite of these changes, the dimeric Ig maintains the normal immune function. To understand the evolution of the dimeric Ig, we studied the phylogenetic relationships of the variable region

24(1): 23-33. ISSN: 0140-7783.

NAL call no.: SF915.J63

Descriptors: llamas, gastrointestinal pharmaceutical agents, pharmacokinetics, drug half-life, pharmacodynamics, hydrochloric acid secretion, intravenous administration, oral administration, drug dosage, adverse effects, ranitidine, omeprazole, misoprostol.

Abstract: Plasma concentration time curves following intravenous (i.v.) administration of 1.5 mg/kg of ranitidine, 0.2 mg/kg, 0.4 mg/kg and 0.8 mg/kg of omeprazole, respectively, were analysed in six llamas. Plasma profiles after i.v. administration of both drugs showed plasma concentrations declining in a biexponential manner with a rapid distribution phase. Pharmacokinetics parameters after ranitidine administration to six llamas showed a mean elimination half-life of 1.53 +/- 0.26 h. The mean volume of distribution (V(dss)) in llamas was 1.77 +/- 0.31 L/kg, and mean body clearance in llamas was 0.778 +/- 0.109 L/kg/h. Ranitidine produced only a small transitory (<1 h) decline in acid production when administered i.v. at a dose of 1.5 mg/kg. Omeprazole showed dose-dependent nonlinear pharmacokinetics. The mean half-life of 0.2 mg/kg i.v. omeprazole was shorter than that of 0.4 and 0.8 mg/kg i.v. omeprazole, i.e. 0.61, 0.72 and 1.07 h, respectively. The area under the curve (AUC) and mean residence time (MRT) increased with increasing dose, while clearance decreased as dose increased. The decline in acid production following 0.2 mg/kg i.v. omeprazole was highly variable and did not produce a clinically useful suppression of third compartment acid production. In contrast, both 0.4 mg/kg and 0.8 mg/kg omeprazole i.v. administration significantly reduced third compartment acid production. The reduction in acid production following 0.8 mg/kg omeprazole was not significantly greater than the reduction observed following 0.4 mg/kg dosage. Misoprostol (10 micrograms/kg) was administered i.v. in an absolute alcohol solution. Two animals collapsed following drug administration. While the side-effects could have been produced by either misoprostol or the alcohol vehicle, the clinical changes were more consistent with an adverse drug reaction. Unfortunately, the limitation of UV detection did not provide the sensitivity needed to quantify the amount of misoprostol in llama plasma, and the pharmacokinetics could not be evaluated.

Curtis, C.F.; Chappell, S.J.; Last, R. **Concurrent sarcoptic and chorioptic acariasis in a British llama (*Lama glama*).** *Veterinary Record* (London). Aug 18, 2001; 149(7): 208-209. ISSN: 0042-4900.

NAL call no.: 41.8 V641

Descriptors: llamas, scabies, *Sarcoptes scabiei*, *O Chorioptes*, mange, concurrent infections, symptoms, diagnosis, treatment, case reports, United Kingdom.

Dugdale, A. **Anaesthesia of a pregnant alpaca (*Lama pacos*).** *Veterinary Record* (London). July 7, 2001; 149(1): 28. ISSN: 0042-4900.

NAL call no.: 41.8 V641

Descriptors: alpacas, pregnancy, anesthesia, anesthetics, case reports.

Galleguillos, M.; Valenzuela, M.A.; Riquelme, R.; Sanhueza, E.; Sanchez, G.; Figueroa, J.P.; Llanos, A.J. **Nitric oxide synthase activity in brain tissues from llama fetuses submitted to hypoxemia.** *Comparative Biochemistry and Physiology. Part A. Molecular and Integrative Physiology*. June 2001; 129A (2/3): 605-614. ISSN: 1095-6433.

NAL call no.: QP1.C6

Descriptors: llamas, chronic hypoxia, altitude, Andes highlands, NO, nitric oxide synthase, fetal response.

Abstract: The fetal llama (*Lama glama*; a species adapted to live in chronic hypoxia in the highlands of the Andes) did not increase cerebral blood flow and reduce the brain oxygen uptake during hypoxemia. Although nitric oxide (NO) is a normal mediator in the regulation of vascular tone and synaptic transmission, NO overproduction by hypoxemia could produce neuronal damage. We hypothesized that nitric oxide synthase (NOS) activity is either maintained or reduced in the central nervous system of the llama fetuses submitted to chronic hypoxemia. Approximately 85% of the Ca(2+)-dependent NOS activity was soluble, at least 12% was associated with the mitochondrial fraction, and less than 5% remains associated with microsomes. To understand the role of NO in chronic hypoxemia, we determined the effect of 24-h hypoxemia on NOS activity in the central nervous system. No changes in activity or the subcellular distribution of NOS activity in brain tissues after hypoxemia were found. We proposed that the lack of changes in NOS activity in the llama under hypoxemia could be a cytoprotective mechanism inherent to the llama, against possible toxic effects of NO.

Gazitua, F.J.; Corradini, P.; Ferrando, G.; Raggi, L.A.; Parraguez, V.H. **Prediction of gestational age by ultrasonic fetometry in llamas (*Lama glama*) and alpacas (*Lama pacos*).** *Animal Reproduction Science*. Apr 30, 2001; 66(1/2):

81-92. ISSN: 0378-4320.

NAL call no.: QP251.A5

Descriptors: llamas, alpacas, prediction, gestation period duration, fetal age prediction, diameter, height, pregnancy, developmental stages, fetometry, ultrasound.

George, J.W.; O'Neill, S.L. **Comparison of refractometer and biuret methods for total protein measurement in body cavity fluids.** *Veterinary Clinical Pathology*. 2001; 30(1): 16-18. ISSN: 0275-6382.

NAL call no.: SF601.A54

Descriptors: horses, cattle, dogs, llamas, cats, body fluids, refractometry, biuret, techniques evaluation, protein content, measurement, conversion tables, mathematical models, quantitative analysis.

Gilsdorf, M.J.; Thoen, C.O.; Temple, R.M.S.; Gidlewski, T.; Ewalt, D.; Martin, B.; Henneger, S.B. **Experimental exposure of llamas (*Lama glama*) to *Brucella abortus*: humoral antibody response.** *Veterinary Microbiology*. July 3, 2001; 81(1): 85-91. ISSN: 0378-1135.

NAL call no.: SF601.V44

Descriptors: llamas, *Brucella abortus*, immune response, experimental infections, humoral immunity, blood chemistry, ELISA, serology, antibodies, virulence, diagnostic techniques.

Abstract: Positive antibody reactions to brucella were observed in the sera of four llamas receiving *Brucella abortus* Strain 19 subcutaneously at 2-3 weeks post-exposure (PE) using five of eight conventional brucella serologic tests and an ISU-ELISA. Positive brucella antibody reactions were detected in sera of four llamas exposed by intraocular instillation (IOI) of 1.02×10^8 (high dose) *B. abortus* Strain 2308 at 16-35 days PE using seven of eight serologic tests or an ISU-ELISA. Brucella antibody was also detected in sera of four llamas exposed by IOI of 9×10^5 (low dose) *B. abortus* using each of four agglutination tests, Complement Fixation test, PCFIA, the rivanol test and the ISU-ELISA at 16-35 days PE. Positive reactions were observed using the Card test, BAPA, SPT, STT, the rivanol test, the PCFIA, and the ISU-ELISA on sera collected on days 42-70 PE, except on one llama, given the low dose; that llama was negative on the PCFIA on day 42. Positive or suspicious reactions were not detected in sera of controls, receiving saline subcutaneously, using the routine tests, with the exception of the CFT. The *B. abortus* Strain 2308 was isolated from tissues of seven of eight llamas exposed to virulent *B. abortus* Strain 2308.

Gonzalez Sch., F.; Islas L., A.; Lopez Rivero, J.L.; Quezada O., M.; Gonzalez H., H. **Histochemical and morphological characterization of Gluteus medius muscle fibres in guanaco (*Lama guanicoe*).** *Lucrai Stiinfice Medicina Veterinara, Universitatea de Stiinte Agricole si Medicina Veterinara "Ion Ionescu de la Brad" Iasi*. 2001; 44(3(1): 12-20. ISSN: 1454-7406. Note: In English with a Rummanian summary.

Descriptors: guanacos, skeletal muscle composition, fibrillar composition by NADH-TR test, oxidative capacity of fibers, Type I, IIA, IIB found, diameter, histochemistry, morphology, muscle fibers, muscles, skeletal muscle.

Healy, Kevin; Helen Kellogg Institute for International Studies. **Llamas, Weavings, and Organic Chocolate: Multicultural Grassroots Development in the Andes and Amazon of Bolivia.** University of Notre Dame Press, Notre Dame, Ind. c2001. xiv, 485 p., [16] p. of plates: ill., maps. Includes bibliographic references p. 447-471 and an index. ISBN: 0268013268.

NAL call no.: HN280.Z9.C644 2001

Descriptors: rural development projects, culture, social conditions, economic conditions, indigeneous peoples, Bolivia.

Heath, A.M.; Navarre, C.B.; Simpkins, A.; Purohit, R.C.; Pugh, D.G. **A comparison of surface and rectal temperatures between sheared and non-sheared alpacas (*Lama pacos*).** *Small Ruminant Research*. Jan 2001; 39(1): 19-3. ISSN: 0921-4488.

NAL call no.: SF380.I52

Descriptors: alpacas, heat stress, summer, effects of whole body shearing, body temperature, environmental temperature, relative humidity, body temperature regulation, skin temperature, rectal temperatures, thermoregulation, Alabama.

Abstract: The objective of this research was to determine if whole-body shearing would effect gross thermoregulation in alpacas. Eight mature, intact male alpacas were randomly assigned to one of two groups and maintained in outdoor pastures with adequate artificial shade from June through August (summer climate) in east central Alabama, USA. Group one animals (N = 4) were sheared to remove all fiber to within 2 cm of their skin. Group 2 animals (N = 4) were

left non-sheared. Sheared alpacas tended to have lower rectal temperatures during high ambient temperatures than did non-sheared alpacas ($P = 0.06$). Thermographic studies of the scrotum revealed cooler surface temperatures in sheared versus non-sheared alpacas ($P = 0.05$). Temperatures in the right medial thigh of sheared animals were 0.9 degree C cooler than the thigh region of non-sheared animals in the morning ($P < 0.03$). Right medial thigh temperatures were 1.6 degrees C cooler in sheared alpacas in the afternoon ($P < 0.01$). Significant positive correlations were found in non-sheared animals between ambient temperature and rectal temperature in the morning ($r = 0.612$, $P = 0.014$). In sheared animals during the morning significant positive correlations were established between the Heat Stress Index (HSI) and the right medial thigh surface temperatures ($r = 0.648$, $P = 0.003$), the HSI and rectal temperature ($r = 0.729$, $P = 0.0003$), the ambient temperature and right medial thigh surface temperature ($r = 0.485$, $P = 0.04$), and the ambient temperature and the rectal temperature ($r = 0.823$, $P < 0.0001$). In the afternoon a significant positive correlation was found in the sheared alpacas between the HSI and the right medial thigh surface temperature, rectal temperature and surface scrotal temperature ($r = 0.538$, $P = 0.02$, $r = -0.543$, $P = -0.019$ and $r = 0.522$, $P = 0.045$), respectively. These data indicate that whole-body shearing of alpacas could have a beneficial effect on thermoregulation when used as a preventative measure against heat stress. Shearing may assist heat dissipation resulting in a cooler surface body temperature and rectal temperature in alpacas when challenged by the heat and humidity experienced in the summer months in the southeastern United States.

Hewson, J.; Cebra, C.K. **Peritonitis in a llama caused by *Streptococcus equi* subsp. *zooepidemicus*.** *Canadian Veterinary Journal*. June 2001; 42(6): 465-467.

NAL call no.: 41.8 R3224

Descriptors: llamas, *Streptococcus equi*, intestinal infections, testing, diagnosis, disease monitoring and control.

Irwin, J.A. **Lymphosarcoma in an alpaca.** *Canadian Veterinary Journal*. Oct 2001; 42(10): 805-806. Note: In English with a French summary. ISSN: 0008-5286.

NAL call no.: 41.8 R3224

Descriptors: alpacas, lymphosarcoma, symptoms, histopathology, lesions, hematology, blood chemistry, case reports.

Ivany, J.M.; Anderson, D.E. **Propylene glycol toxicosis in a llama.** *Journal of the American Veterinary Medical Association*. Jan 15, 2001; 218(2): 243-244. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, propylene glycol poisoning, ketosis, microbial flora, case reports.

Kadwell, Miranda; Fernandez, Matilde; Stanley, Helen F.; Baldi, Ricardo; Wheeler, Jane C.; Rosadio, Raul; Bruford, Michael W. **Genetic analysis reveals the wild ancestors of the llama and the alpaca.** *Proceedings of the Royal Society Biological Sciences. Series B*. 2001 Dec; 268(1485): 2575-2584. ISSN: 0962-8452.

NAL call no.: 501 L84B

Descriptors: llamas, alpacas, taxonomy, evolution, phylogeny, genetic analysis, microsatellite DNA, mitochondrial DNA, genetic variation, wild ancestors, South America.

Koenig, J.B.; Watrous, B.J.; Kaneps, A.J.; Adams, J.G.; Parker, J.E. **Otitis media in a llama.** *Journal of the American Veterinary Medical Association*. May 15, 2001; 218(10): 1619-1623. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, otitis media, *Actinomyces pyogenes*, treatment, case report.

Kreil, V.; Luders, C.; Hallu, R.; Reuelto, M.; Betancourt, L. **Farmacocinetica de la ampicilina en alpacas (*Lama pacos*). [Pharmacokinetics of ampicillin in alpacas (*Lama pacos*)]** *Archivos de Medicina Veterinaria (Valdivia)*. 2001; 33(2): 241-246. ISSN: 0301-732X. Note: In Spanish with an English summary.

NAL call no.: SF604.A75

Descriptors: alpacas, antibiotics, ampicillin, pharmacokinetics, drug safety.

Laraway, W. **"It" happens! Selling llama manure.** *Small Farm Today*. Mar/Apr 2001; 18(2): 42-43. ISSN: 1079-9729.

NAL call no.: S1.M57

Descriptors: llamas, animal manures, marketing.

Leichner, T.L.; Turner, O.; Mason, G.L.; Barrington, G.M. **Cutaneous metastases of a mammary carcinoma in a llama.** *Canadian Veterinary Journal*. Mar 2001; 42(3): 204-206. ISSN: 0008-5286. Note: In English with a French summary.

NAL call no.: 41.8 R3224

Descriptors: llamas, mammary gland neoplasms, adenocarcinoma, metastasis, skin lesions, case reports.

Livingston, C.K.; Dart, A.J.; Dowling, B.A.; Dart, C.M.; Hodgson, D.R. **Surgical correction of carpal valgus deformity in three alpacas.** *Australian Veterinary Journal*. 2001 Dec; 79(12): 821-824. ISSN: 0005-0423.

NAL call no.: 41.8 AU72

Descriptors: alpacas, forelimb deformity, carpal valgus, surgical correction, case reports.

Lopez V., A.; Morales S., M.S.; Cabrera C., R.; Arias, M. **Ingestion y digestibilidad aparente de forrajes por la llama (*Lama glama*). II. Heno de trebol rosado (*Trifolium pratense*), heno de ballica (*Lolium multiflorum*), paja de poroto (*Phaseolus vulgaris*) y paja de avena (*Avena sativa*). [Intake and apparent digestibility of forages in llamas (*Lama glama*). II. Clover hay (*Trifolium pratense*), ryegrass hay (*Lolium multiflorum*), bean straw (*Phaseolus vulgaris*) and oat straw (*Avena sativa*).] *Archivos de Medicina Veterinaria* (Valdivia). 2001; 33(2): 145-153. ISSN: 0301-732X. Note: In Spanish with an English summary.**

NAL call no.: SF604.A75

Descriptors: llamas, intake and digestibility of forages, forage plant choices, clover hay, ryegrass hay, bean straw.

Marguet, E. **Yenneveldt llama farm.** *Small Farm Today*. July/Aug 2001; 18(4): 68. ISSN: 1079-9729.

NAL call no.: S1.M57

Descriptors: llamas, livestock farming.

Mattoon, J.S.; Gerros, T.C.; Brimacombe, M. **Thoracic radiographic appearance in the normal llama.** *Veterinary Radiology and Ultrasound*. Jan/Feb 2001; 42(1): 28-37. ISSN: 1058-8183.

NAL call no.: SF757.8.A4

Descriptors: llamas, thorax, radiography, animal anatomy, dimensions, height, width, spine, ratios, pulmonary artery, veins, trachea.

Murray, S.L.; Lau, K.W.; Begg, A.; Jacobs, K. **Myelodysplasia, hypophosphataemia, vitamin D, and iron deficiency in an alpaca.** *Australian Veterinary Journal*. May 2001; 79(5): 328-331. ISSN: 0005-0423.

NAL call no.: 41.8 Au72

Descriptors: alpacas, blood disorders, hypophosphatemia, vitamin D, vitamin deficiencies, iron deficiency, anemia, leukopenia, hypocalcemia, case reports.

Navarre, C.B.; Heath, A.M.; Wenzel, J.; Simpkins, A.; Blair, E.; Belknap, E.; Pugh, D.G. **A comparison of physical examination and clinicopathologic parameters between sheared and non-sheared alpacas (*Lama pacos*).** *Small Ruminant Research*. Jan 2001; 39(1): 11-17. ISSN: 0921-4488.

NAL call no.: SF380.I52

Descriptors: alpacas, intact males, heat stress, shearing, summer, environmental temperatures, relative humidity, body temperature, body weight, body condition, thermoregulation, blood chemistry, blood serum. urea levels, electrolytes values, sodium, selenium, hydrocortisone, effects of shearing, Alabama.

Abstract: The purpose of this study was to determine the physiological changes associated with chronic heat stress in sheared versus non-sheared alpacas. Fourteen intact male adult alpacas were randomly assigned to one of the two groups: Group S alpacas were sheared to within 2 cm of their skin; Group NS alpacas were not sheared. These animals were maintained from June through August in east central Alabama. Data collected in the morning, every two weeks, included vital signs, body weight, body condition score, complete blood counts, serum chemistries and electrolytes, whole blood selenium, and plasma cortisol. S and NS groups were contrasted using the repeated measures analysis of variance, and pertinent correlations with weather parameters were calculated. Clinical heat stress was not evident in any animals during the study. Significant differences between treatment groups were seen in rectal temperature ($P = 0.0095$), sodium concentration ($P = 0.0219$), and blood urea nitrogen (BUN) ($P = 0.0189$). The mean rectal temperature of the NS group was above the normal range on five sampling times compared to only once for the S group. However, mean sodium and serum urea nitrogen levels were within normal limits in both groups at all sampling times. Rectal

temperature of only the S group was positively correlated to weather parameters. Sodium of both S and NS groups and BUN of the NS group were negatively correlated with weather parameters. This study indicates that there are differences between sheared and non-sheared alpacas in physical examination and clinicopathologic parameters that can be correlated with changes in ambient conditions. These differences suggest that non-sheared alpacas are less heat tolerant than sheared alpacas. Therefore, shearing is recommended for animals exposed to similar conditions.

Navarre, C.B.; Ravis, W.R.; Nagilla, R.; Simpkins, A.; Duran, S.H.; Pugh, D.G. **Pharmacokinetics of phenylbutazone in llamas following single intravenous and oral doses.** *Journal of Veterinary Pharmacology and Therapeutics*. June 2001; 24(3): 227-231. ISSN: 0140-7783.

NAL call no.: SF915.J63

Descriptors: llamas, phenylbutazone, pharmacokinetics, intravenous injection, oral administration.

Navarre, C.B.; Ravis, W.R.; Campbell, J.; Nagilla, R.; Duran, S.H.; Pugh, D.G. **Stereoselective pharmacokinetics of ketoprofen in llamas following intravenous administration.** *Journal of Veterinary Pharmacology and Therapeutics*. June 2001; 24(3): 223-226. ISSN: 0140-7783.

NAL call no.: SF915.J63

Descriptors: llamas, ketoprofen, intravenous injection, pharmacokinetics, isomers.

Pelliza, A.; Willems, P.; Manacorda, M. **Dietary structural types of polygastric herbivores at different environments and seasons.** *Journal of Range Management*. July 2001; 54(4): 330-337. ISSN: 0022-409X. Note: In English with a Spanish summary.

NAL call no.: 60.18 J82

Descriptors: cattle, sheep, goats, *Lama guanicoe*, seasonal variation, feeds, selective grazing, forage, feces composition, forage digestibility, vegetation, botanical composition, pastures, species differences, Argentina.

Abstract A classification of dietary structural types that represents different arrangements of forage classes is proposed. It may be especially useful for interpreting and comparing herbivore diets from different environments. As an example, a data set with the botanical composition of 55 pooled fecal samples determined by microhistological analysis was analyzed. These samples came from 4 species of range herbivores (cattle, sheep, goat, and guanaco -*Lama guanicoe* -), from 9 different environments of Northern Patagonia (Argentina) during 3 seasons. Based on plant characteristics related with the capacity of the animals to eat and digest each plant and with the occasional or permanent presence of them in the vegetation, the information was grouped into 5 forage classes: woody plants, perennial grasses, annual grasses, grasslikes, and forbs. A principal component analysis of the grouped data was conducted. The graphic representations evidenced the gradual changes in the structure of the data. Later, working over the subspace defined by the 3 first principal component axes, a hierarchical classification was performed that resulted in 9 dietary structural types. These types represented variation that resulted from the interaction of pasture differences, species of herbivore and season. This concept is an abstraction developed from the experience, to extend its utility beyond the particular cases.

Rulofson, F.C.; Atwill, E.R.; Holmberg, C.A. **Fecal shedding of *Giardia duodenalis*, *Cryptosporidium parvum*, *Salmonella* organisms, and *Escherichia coli* O157:H7 from llamas in California.** *American Journal of Veterinary Research*. Apr 2001; 62(4): 637-642. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: llamas, *Escherichia coli*, *Giardia duodenalis*, *Cryptosporidium parvum*, *Salmonella*, feces shedding, incidence, age differences, animal husbandry, risk factors, California.

Sarno, R.J.; Franklin, W.L.; O'Brien, S.J.; Johnson, W.E. **Assessing genetic differentiation between an island and mainland population of guanacos in southern Chile utilizing mtDNA and microsatellite markers.** *Animal Conservation*. 2001; 4(2): 93-101. ISSN: 1367-9430.

NAL call no.: QH75.A1 A54

Descriptors: guanacos, blood sampling, genetic assessment, genetic drift in inbreed populations, genetic diversity in mainland populations, mitochondrial DNA, comparison study, 15 microsatellite loci amplified, Terra del Fuego, Torres del Paine, Chile.

Saskatchewan. Agriculture Development Fund and the Saskatchewan Llama Association Wool Pool. **Phase II: Wool**

Pool Membership. Published by the Fund., [2001] [5] p. Note: "Agriculture Development Fund; Final report; 20000153." "Prepared by: Saskatchewan Llama Association Wool Pool."

NAL call no.: HD9430.C23S24 2001

Descriptors: camelids, llamas, fiber industry, Saskatchewan, Canada.

Skidmore, Julian A.; Billah, M.; Short, R.V.; Allen, W.R. **Assisted reproductive techniques for hybridization of camelids.** *Reproduction Fertility and Development.* 2001; 13(7-8): 647-652. ISSN: 1031-3613.

NAL call no.: QP251.R47

Descriptors: camelids, animal hybrids, hybridization techniques, assisted reproduction techniques.

Smith, B.B.; Van Saun, R.J. **Seasonal changes in serum calcium, phosphorus, and vitamin D concentrations in llamas and alpacas.** *American Journal of Veterinary Research.* Aug 2001; 62(8): 1187-1193. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: llamas, alpacas, seasonal variation, blood serum, calcium, phosphorus, cholecalciferol, age and sex differences.

Tornquist, S.J.; Cebra, C.K.; Van Saun, R.J.; Smith, B.B.; Mattoon, J.S. **Metabolic changes and induction of hepatic lipidosis during feed restriction in llamas.** *American Journal of Veterinary Research.* July 2001; 62(7): 1081-1087.

IS2001SN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: llamas, liver diseases, lipidosis, restricted feeding, clinical aspects, blood chemistry, liver, biopsy, lactation, weight losses, fat mobilization, bile acids, aspartate aminotransferase, l-iditol-dehydrogenase, gamma glutamyltransferase, insulin, hydrocortisone.

Wensvoort, J.; Kyle, D.J.; Orskov, E.R.; Bourke, D.A. **Biochemical adaptation of camelids during periods where feed is withheld.** *Rangifer.* 2001; 21(1): 45-48. ISSN: 0333-256X.

Descriptors: camelids, adaption to feed restriction, starvation, fasting metabolic mechanisms, dietary requirements.

2000

Aba, M.A.; Kindahl, H.; Forsberg, M.; Quiroga, M.; Auza, N. **Levels of progesterone and changes in prostaglandin F₂alpha release during luteolysis and early pregnancy in llamas and the effect of treatment with flunixin meglumine.** *Animal Reproduction Science.* Apr. 28, 2000; 59(1/2): 87-97. ISSN: 0378-4320.

NAL call no.: QP251.A5

Descriptors: llamas, progesterone, prostaglandins, luteolysis, pregnancy, flunixin, hormone secretion, blood chemistry, dosage, intravenous injection, metabolites, estradiol.

Anderson, David E. *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000] 348 p., ill. (some col.).

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, alpacas, conference proceedings, Camelidae, diseases, surgery, reproduction.

Anderson, D.E. **Assessment of fetal well-being in the camelid.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 312-316.

NAL call no.: SF997.5.C3O35 2000

Descriptors: ultrasonography, fetal ECG, fetal cardiocography, fetal distress, diagnosis, prevention.

Anderson, D.E. **Camelid vaccination protocol.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 109-110.

NAL call no.: SF997.5.C3O35 2000

Descriptors: camelid, disease protection, vaccination, *Clostridium*, rabies, leptospira, equine rhinovirus and influenza,

E. coli, North America.

Anderson, D.E. **Common surgical procedures in camelids.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 90-100.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, alpacas, common surgical procedures, castration, gastrointestinal surgery, anesthesia, cesarean section, tooth root abscess, angular limb deformities.

Anderson, D.E. **Diagnosis of infertility in camelids.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 302-306.

NAL call no.: SF997.5.C3O35 2000

Descriptors: camelids, body condition, sexual maturity, reproductive diseases, infertility, breeding management, effects of heat stress, breeding behavior.

Anderson, D.E. **Diagnostic tools in practice.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 321-324.

NAL call no.: SF997.5.C3O35 2000

Descriptors: gastrointestinal anatomy, laparoscopy, llamas, alpacas, physical examination, ultrasound, radiographs, fluid analysis.

Anderson, D.E.; Silveira, F. **Effects of percutaneous liver biopsy in alpacas and llamas.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 120-127.

NAL call no.: SF997.5.C3O35 2000

Descriptors: alpacas, llamas, percutaneous liver biopsy, effects, serum biochemical analysis, diagnosis of liver disease, clinical trial.

Anderson, D.E. **Field anesthetic techniques for camelids.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 309-311.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, alpacas, anesthetics, epidural, sedation, lidocaine, xylazine, butorphanol, ketamine, yohimbine, tolazoline, atapamezole.

Anderson, D.E. **Heat stress in llamas and alpacas.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 343-347.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, alpacas, clinical signs, 10 recommended prevention measures, North America.

Anderson D.E. **Hypothyroidism: What is it and does it exist in llamas and alpacas.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 338-340.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, alpacas, hypothyroidism, thyroid hormone levels, normal ranges of TT4, TT3.

Anderson, D.E.; Gerken, D. **Investigation of hepatotoxic effects of Fumonisin (Mycotoxin) ingestion in alpacas.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 128-129.

NAL call no.: SF997.5.C3O35 2000

Descriptors: alpacas, liver diseases, biliary hyperplasia, Fumonisin, overstocking, nutrition imbalance, chronic stress, research needs, North America.

Anderson, D.E. **Liver disease, metabolism, and digestion in llamas and alpacas.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 111-119.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, sheep, alpacas, metabolism, digestion, liver disease, anamnesis, etiology, Oregon, feeding, case study, lipidasis, diagnosis.

Anderson, D.E. **Management of dystocia in small ruminants including camelids.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 282-293.

NAL call no.: SF997.5.C3O35 2000

Descriptors: camelids, dystocia, surgical treatment, cesarean section, uterine torsion, birthing problems, post-operative care.

Anderson, D.E. **Periapical tooth root infections in South American camelids.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 87-89.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, alpacas, facial swellings, diagnosis, treatment options, teeth roots, radiograph, tooth removal.

Anderson, D.E.; Silveira, F. **Prolactin study.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 280: ill.

NAL call no.: SF997.5.C3O35 2000

Descriptors: prolactin, llamas, 5 day treatment, graph, case study.

Anderson, D.E. **Rickets - What's that?** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 179-182.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, alpacas, rickets, vitamin D crias, North America, research needs.

Anderson, D.E. **Trouble-shooting nutrition for camelids.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 325-328.

NAL call no.: SF997.5.C3O35 2000

Descriptors: camelids, local geography, feeding practices, nutritional status, pasture, water quality, social behavior, hay.

Aubry, P.; Swor, T.M.; Lohr, C.V.; Tibary, A.; Barrington, G.M. **Septic orchitis in an alpaca.** *Canadian Veterinary Journal.* Sept 2000; 41(9): 704-706. ISSN: 0008-5286. Note: Summary in French.

NAL call no.: 41.8 R3224

Descriptors: alpacas, orchitis, testes, *Streptococcus zooepidemicus*, sepsis, histopathology, case report.

Bank, M.S.; Franklin, W.L.; Sarno, R.J. **Assessing the effect of radiocollars on juvenile guanaco survival.** *Oecologia.* 2000; 124(2): 232-234. ISSN 0029-8549.

NAL call no.: QL750.O3

Descriptors: guanacos, young animals, radio collars tracking devices, behavior, monitoring of movement of animals, effects of device on survival, no adverse effects seen.

Beier, E. III.; Lehenbauer, T.W.; Sangiah, S. **Clinical efficacy of fenbendazole against gastrointestinal parasites in llamas.** *Small Ruminant Research.* Apr 2000; 36(1): 17-23. ISSN: 0921-4488.

NAL call no.: SF380.I52

Descriptors: llamas, nematodirus, *Strongyloides*, *Trichuris*, *Capillaria*, nematode infections, helminth ova, feces

composition, fenbendazole, oral administration, efficacy.

Beier, E. III.; Lehenbauer, T.W.; Sangiah, S. **Oral pharmacokinetics of fenbendazole in llamas, South American Camelids.** *Small Ruminant Research.* Aug 2000; 37(3): 209-214. ISSN: 0921-4488.

NAL call no.: SF380.I52

Descriptors: llamas, fenbendazole, pharmacokinetics, oral administration, blood plasma, absorption, drug excretion, species differences.

Belknap, E.B.; Collins, J.K.; Larsen, R.S.; Conrad, K.P. **Bovine viral diarrhea virus in New World camelids.** *Journal of Veterinary Diagnostic Investigation.* Nov 2000; 12(6): 568-570. ISSN: 1040-6387.

NAL call no.: SF774.J68

Descriptors: llamas, bovine diarrhea virus, detection, herds, case report.

Belknap, E.B.; Larsen, R.S.; Navarre, C.; Heath, A.M.; Pugh, D.G. **Complications of recumbency in New World camelids.** *Compendium on Continuing Education for the Practicing Veterinarian.* Feb 2000; 22(2): s42-s47. ISSN: 0193-1903.

NAL call no.: SF601.C66

Descriptors: llamas, trauma, duration, ulcers, eyes, anorexia, rumen flora, blood picture, blood chemistry, metabolic disorders, respiration, therapy.

Belknap, E.B.; C.B. Navarre; D.G. Pugh; R.S. Larsen; C.K. Cebra. **Recumbent New World camelids: General diagnostics and types of recumbency.** *Compendium on Continuing Education for the Practicing Veterinarian.* Jan 2000; 22(1): 36-55. ISSN: 0193-1903.

NAL call no.: SF601.C66

Descriptors: llamas, alpacas, guanaco, *Lama guanicoe*, vicunas, symptoms, clinical examination, differential diagnosis, treatment, septicemia, congenital abnormalities, cardiac insufficiency, tick paralysis, gastrointestinal diseases.

Bennett, M.M. **Veterinary handling for llamas and alpacas.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 183-190.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, training, restraint, containment, catch pens, handling, behavior, chutes, injections.

Bickers, R.J.; Templer, A.; Cebra, C.K.; Kaneps, A.J. **Diagnosis and treatment of torsion of the spiral colon in an alpaca.** *Journal of the American Veterinary Medical Association.* Feb 1, 2000; 216(3): 380-382. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: alpacas, colon, torsion, colic, diagnosis, treatment, case reports.

Bonacic, C.; Gimpel, J.; Bas, F. **Conservation and sustainable use of the guanaco (*Lama guanicoe*) in Chile.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 212-232.

NAL call no.: SF997.5.C3O35 2000

Descriptors: sustainable use, captive farming, guanaco hematology, C3 ulcers, Chile, Patagonia, wild animal population, conflicts with sheep herding.

Bonacic, C. **Sustainable use of the vicuna (*Vicugna vicugna*) in Chile.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 191-211.

NAL call no.: SF997.5.C3O35 2000

Descriptors: sustainable use for fiber, captive farming, puna, Aymaras, natural history, conservation and management, Chile.

Bravo, P.W. **Breeding soundness examination of the male lamoid.** *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 247-251.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, alpacas, reproductive organs, breeding history, clinical evaluation of males for breeding.

Bravo, P.W.; Callo, M.; Garnica, J. **The effect of enzymes on semen viscosity in llamas and alpacas.** *Small Ruminant Research.* Sept 2000; 38(1): 91-95. Includes refs. ISSN: 0921-4488.

NAL call no.: SF380.I52

Descriptors: llamas, alpacas, collagenase, plasmin, hyaluronidase, trypsin, semen characteristics, viscosity, spermatozoa, viability, motility, acrosomes.

Abstract: The effect of four enzymes: collagenase, fibrinolysin, hyalurodinase, and trypsin were recorded on the viscosity, motility, percent live spermatozoa and acrosome integrity of llama and alpaca semen. Semen samples were collected using a modified artificial vagina for each of the five llamas and five alpacas. A 25% solution of the of enzyme at a concentration of 1 mg/ml was added to the ejaculate. Analysis of variance was used to determine differences in eliminating viscosity and alterations in motility, percent live spermatozoa and the acrosomal integrity at 0 (time of semen collection), 2 and 5 min. In llama and alpaca semen, collagenase eliminated viscosity in 100 and 99% of the samples, respectively. Correspondingly, fibrinolysin in 89 and 59%; hyalurodinase in 88 and 36%; and trypsin in 55 and 68% of the samples ($p < 0.05$). In the llama sperm, motility decreased ($p < 0.05$) with the addition of fibrinolysin (28%), trypsin (13%), hyalurodinase (12%), and collagenase (4%). In alpaca semen, the enzymes used had no effect on sperm motility. Percent live spermatozoa variably decreased after the addition of fibrinolysin, hyalurodinase and trypsin. There was no significant difference in the acrosome integrity in llama and Alpaca males following the addition of the enzymes. Overall, collagenase had little or no influence in decreasing motility, percent live spermatozoa and acrosome integrity, whereas, it was effective in eliminating semen viscosity.

Bravo, P.W.; Mayta, M.M.; Ordonez, C.A. **Growth of the conceptus in alpacas.** *American Journal of Veterinary Research.* Dec 2000; 61(12): 1508-1511. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: alpacas, conceptus growth, ultrasonography, embryonic development, progesterone, blood serum, twinning.

Bravo, P.W. **The post-partum interval of the female lamoid.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 20 00.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 307-308.

NAL call no.: SF997.5.C3O35 2000

Descriptors: alpacas, llamas, uterine involution, resumption of ovarian activity, sexual receptivity, postpartum, reproductive cycle.

Bravo, P.W. **Induction of parturition in the female lamoid.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 273.

NAL call no.: SF997.5.C3O35 2000

Descriptors: alpacas, llamas, reproductive, management, PGF treatment.

Bravo, P.W. **Male lamoid semen evaluation.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 252-256.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, alpacas, male reproductive tract, preputial trauma, testicular abnormalities, cryptorchidism, heat stress, artificial vagina, semen characteristics.

Bravo, P.W. **Pregnancy diagnosis of the female lamoid.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 268-272.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, alpacas, sexual behavior, rectal palpitation, progesterone levels, ballotment, ultrasonography, laparoscopy, pregnancy diagnosis.

Brown, B.W. **A review on reproduction in South American camelids.** *Animal Reproduction Science*. Mar 15, 2000; 58(3/4): 169-195. ISSN: 0378-4320.

NAL call no.: QP251.A5

Descriptors: llamas, alpacas, vicunas, guanaco, sexual reproduction, mating behavior, physiology, endocrinology, embryo mortality, conception rate, histology, luteolysis, ovarian follicles, ovulation, corpus luteum, ova viability, libido, artificial in semination, semen quality, freezing, animal breeding, literature reviews.

Cebra, C.K. **Hyperglycemia, hyponatremia, and hyperosmolarity in 6 neonatal llamas and alpacas.** *Journal of the American Veterinary Medical Association*. Dec 1, 2000; 217(11): 1701-1704. Includes refs. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, alpacas, newborn animals, hyperglycemia, hyponatremia, osmolarity, clinical aspects, diagnosis and treatment case report.

Cebra, C.K.; Heidel, J.R.; Cebra, M.L.; Tornquist, S.J.; Smith, B.B. **Pathogenesis of *Streptococcus zooepidemicus* infection after intratracheal inoculation in llamas.** *American Journal of Veterinary Research*. Dec 2000; 61(12): 1525-1529. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: llamas, *Streptococcus zooepidemicus*, bacteremia, pathogenesis, experimental infection, trachea, inoculum density, disease models, clinical aspects, lesions.

Coleby, Pat. ***Natural Goat & Alpaca Care***. 2nd ed. Landlinks Press, Collingwood, Vic. c2000. viii, 352 p., ill. ISBN: 0643065253.

NAL call no.: SF383.C65 2000

Descriptors: goats, alpaca, general care and management, diseases, nutrition.

Costarella, C.E.; Anderson, D.E. **Ileocecolic intussusception in a one month old female llama.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000*. Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 329-334.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llama, female cria, abdominal pain, case study.

Cousins, D.V.; Williams, S.N.; Hope, A.; Eamens, G.J. **DNA fingerprinting of Australian isolates of *Mycobacterium avium* subsp. *paratuberculosis* using IS900 RFLP.** *Australian Veterinary Journal*. Mar 2000; 78(3): 184-190. ISSN: 0005-0423.

NAL call no.: 41.8 Au72

Descriptors: *Mycobacterium paratuberculosis*, DNA fingerprinting, restriction fragment length polymorphism, restriction endonucleases, genetic diversity, sheep, cattle, goats, alpacas, Rhinocerotidae.

Davis, W.C.; Heirman, L.R.; Hamilton, M.J.; Parish, S.M.; Barrington, G.M.; Loftis, A.; Rogers, M. **Flow cytometric analysis of an immunodeficiency disorder affecting juvenile llamas.** *Veterinary Immunology and Immunopathology*. Apr 19, 2000; 74(1/2): 103-120. ISSN: 0165-2427.

NAL call no.: SF757.2.V38

Descriptors: llamas, alpacas, flow cytometry, immunological deficiency, immune system, monoclonal antibodies, leukocytes, monocytes, immunoglobulins B lymphocytes, T lymphocytes, development.

Domina, F.; Venza, M.; di Pietro, S.; Caja, A.; de Majo, M.; Morgante, M. **Aspetti morfologici delle cellule ematiche di alpaca (*Lama pacos*) allevati allo stato semibrado. [Haematological patterns of semifree-ranging alpacas (*Lama pacos*.)]** *Selezione Veterinaria*. 2000; (Supplemento): 1195-1200. ISSN: 0037-1521. Note: In Italian with an English summary.

Descriptors: alpacas, blood components, hemoglobin, cell types, cell ultrastructure, cell morphology, cell descriptions, basophils, eosinophils, erythrocytes, lymphocytes, monocytes, neutrophils, platelets.

Evans, C.N. **Domperidone field study.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000*. Ohio State University. College of Veterinary Medicine.

Columbus, Ohio. [2000]: 276-279.

NAL call no.: SF997.5.C3O35 2000

Descriptors: camelid, gestation, domperidone, drug effects, fescuetoxicosis, lactation.

Fowler, M.E. **Diagnostic methods for alpacas & llamas.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 20-32. Includes a letter (p. 31-32) with a questionnaire requesting conferees fill out the incidence of certain diseases they may have encountered in these species.

NAL call no.: SF997.5.C3O35 2000

Descriptors: alpacas, llamas, diagnostic procedures, monoclonal antibodies, rabies, enterotoxins, *Clostridium perfringens*, polymerase chain reaction, antigen identification, DNA probes, serologic tests, tuberculosis, paratuberculosis, foot and mouth disease, vesicular stomatitis, rabies, brucellosis, other bacteria, ultrasonography, endoscopy, CT scans, blood typing, immunocompetency.

Fowler, M.E. **Hematology and biochemistry of South American Camelids.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 14-19.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, alpacas, vicunas, blood, sera, chemical values, hemoglobin, erythrocytes, leucocytes, oxygen carrying capacity, serum chemistry, glucose, urea nitrogen, creatinine, calcium, phosphorus, albumin, globulin fibrinogen, comparative charts.

Fowler, M.E.; Frost, B. **Prevalence of selected diseases of llamas and alpacas.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 38-46.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, alpacas, cases diagnosed, zoonoses, 16 diseases, rabies, FMD, vesicular stomatitis, blue tongue, bovine virus, retinal degeneration, leptospirosis, TB, Johne's disease, brucellosis, caseous lymphadenitis.

Fowler, M.E. **Restraint and behavior of camels.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 143-153.

NAL call no.: SF997.5.C3O35 2000

Descriptors: camels, offensive/defensive behaviors, restraint, chemical restraint.

Frezzio, M.K.; Anderson, D.E. ***Parelaphostrongylus tenuis* (miningal work infection in camelids.)** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 155-161.

NAL call no.: SF997.5.C3O35 2000

Descriptors: conference proceedings, Camelidae, diseases, llamas, alpacas, life cycle, clinical disease, diagnoses, therapy, prognosis, prevention, meningeal brain worm.

Gionfriddo, J.R.; Davidson, H.; Asem, E.K.; Krohne, S.G. **Detection of lysozyme in llama, sheep, and cattle tears.** *American Journal of Veterinary Research.* Oct 2000; 61(10): 1294-1297. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: llamas, sheep, cattle, tears, lysozyme, species differences.

Gionfriddo, J.R.; Melgarejo, T.; Morrison, E.A.; Alinovi, C.A.; Asem, E.K.; Krohne, S.G. **Comparison of tear proteins of llamas and cattle.** *American Journal of Veterinary Research.* Oct 2000; 61(10): 1289-1293. ISSN: 0001-9645.

NAL call no.: 41.8 Am3A

Descriptors: llamas, cattle, tears, protein analysis, pH, protein content, proteinases, species differences.

Glewski, T.; Cheville, N.F.; Rhyan, J.C.; Miller, L.D.; Gilsdorf, M.J. **Experimental *Brucella abortus* induced abortion in a llama: pathologic effects.** *Veterinary Pathology.* Jan 2000; 37(1): 77-82. ISSN: 0300-9858.

NAL call no.: 41.8 P27

Descriptors: llamas, *Brucella abortus*, experimental infection, brucellosis, abortion, pathology, fetus.

Hamir, A.N.; Timm, K.I.; Smith, B.B. **Thrombosis of the splenic vein in llamas (*Lama glama*).** *Veterinary Record* (London). Feb 19, 2000; 146(8): 226-228. ISSN: 0042-4900.

NAL call no.: 41.8 V641

Descriptors: llamas, thrombosis, veins, spleen, age differences.

Heller, M.; Anderson, D.; Silveira, F. **Streptococcal peritonitis in a young dromedary camel.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 335-337.

NAL call no.: SF997.5.C3O35 2000

Descriptors: dromedary camels, case report, *Streptococcus zooepidemicus*.

Hendrix, D.V.H.; Bochsler, P.N.; Saladino, B.; Cawrse, M.A.; Thomas, J. **Malignant teratoid medulloepithelioma in a llama.** *Veterinary Pathology*. Nov 2000; 37(6): 680-683. ISSN: 0300-9858.

NAL call no.: 41.8 P27

Descriptors: llamas, neoplasms, eyes, clinical aspects, histopathology, case report, immunohistochemistry.

Holland, M.S.; Kennedy, F.A.; Holland, R.E. **Companion animals as reservoirs of eaeA+ *Escherichia coli*.** *Journal of Veterinary Diagnostic Investigation*. Jan 2000; 12(1): 78-80. ISSN: 1040-6387.

NAL call no.: SF774.J68

Descriptors: puppies, kittens, kids, alpacas, iguana, miniature pigs, *Escherichia coli*, reservoir hosts, diarrhea.

Jakes, K.A. **Fiber research at the Ohio State University.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 62-72.

NAL call no.: SF997.5.C3O35 2000

Descriptors: alpacas, llamas, sheep fleece, wool fibers, quality, fiber industry development.

Jasper, C.; Jasper, J.; Holdmeyer, R. **River bluff alpacas: a division of Wildlife Farms, Inc.** *Small Farm Today*. Mar/Apr 2000; 17(2): 43-45. ISSN: 1079-9729.

NAL call no.: S1.M57

Descriptors: alpacas, family farms, Missouri.

Jianlin, H.; Mburu, D.; Ochieng, J.; Kaufmann, B.; Rege, J.E.O.; Hanotte, O. **Application of new world camelidae microsatellite primers for amplification of polymorphic loci in Old World camelids.** *Animal Genetics*. Dec 2000; 31(6): 404-406. Refs. ISSN: 0268-9146.

NAL call no.: QP98.A1A5

Descriptors: llamas, alpacas, dromedaries camels, microsatellites, genetic polymorphism. loci evaluation, biochemical techniques, DNA, polymerase chain reaction. nucleotide sequences, molecular sequence data.

Johnson, C.R.; Baird, A.N.; Baird, D.K.; Wenzel, J.G.W. **Long-bone fractures in llamas: six cases (1993-1998).** *Journal of the American Veterinary Medical Association*. Apr 15, 2000; 216(8): 1291-1293. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, bone fractures, tibia, radius, femur, humerus, clinical aspects, radiography, treatment, prognosis, fracture fixation, postoperative complications, age differences, case report.

Johnson, L. **Llama herd health.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [20 00]: 47-56.

NAL call no.: SF997.5.C3O35 2000

Descriptors: neonatal care, immunization options, nutrition, parasite control, model program, reproduction, various care procedures.

Johnson, L.W. **Clinical examination of llamas and alpacas.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 1-19.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, alpacas, body size/weight, wool quality, body confirmation, temperament, restraint, veterinary exam, physical exam, skin, face, rectal and oral exams, body fluid sampling.

Johnson, L.W. **EPE: What's it all about?** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 82-83.

NAL call no.: SF997.5.C3O35 2000

Descriptors: eperythrozoonosis, red blood cell rickettsial parasite, hemolytic anemia, diagnosis, treatment, oxytetracycline.

Kramsky, J.A.; Miller, D.S.; Hope, A.; Collins, M.T. **Modification of a bovine ELISA to detect camelid antibodies to *Mycobacterium paratuberculosis*.** *Veterinary Microbiology.* Dec 20, 2000; 77(3/4): 333-337. ISSN: 0378-1135. Note: In the special issue: *Paratuberculosis (Johne's Disease)* / edited by R. Chiodini. Paper presented at a colloquium held February 14-18, 1999, Melbourne, Australia.

NAL call no.: SF601.V44

Descriptors: alpacas, llamas, *Mycobacterium avium paratuberculosis*, detection methods, ELISA, diagnosis disease outbreaks, IgG, herds, assays.

Abstract: *Mycobacterium avium* subsp. *paratuberculosis* infection, or Johne's disease, reportedly has a low prevalence in South American camelid populations. Recently, however, single cases in the United States as well as an outbreak of the disease in Australian alpacas (*Lama pacos*) have been described. To provide a rapid and cost-effective method of diagnosing Johne's disease in this species, the bovine Parachek Johne's Absorbed EIA (CSL, Vic., Australia) was modified to create a camelid-specific serum antibody assay. An anti-llama IgG conjugated to horseradish peroxidase replaced the anti-bovine immunoglobulin. Checkerboard titration of principal reagents was performed using serum from nine tissue and/or fecal culture-positive camelids. Optimal dilutions of key components were determined in order to provide clear discrimination between positive and negative controls. Completion of a kinetic assay determined the optical density at which the enzyme-substrate reaction should be stopped. A herd of 100 camelids with no history of disease or exposure to *M. a. paratuberculosis*, a subset of which were tissue and/or fecal culture-negative, was tested to establish a cut-off value. Sample results were expressed as a percentage of the results for control sera by transforming optical density values to ELISA values (EV%). A preliminary EV% cut-off of 20 was established. Using this prototype assay, culture-positive animals showed significantly different antibody responses from culture-negative animals. These results indicate that this camelid-specific ELISA, once refined, may be a useful tool for screening camelid herds for *M. a. paratuberculosis* infection.

Leveille, R. **Tendon ultrasonography in llama/alpacas.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 177-178.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llama, alpacas, anatomy, ultrasonography, procedures, linear-array, 7.5MHz transducer, tendon descriptions.

Levot, G. **Resistance and the control of lice on humans and production animal.** *International Journal of Parasitology.* Mar 2000; 30(3): 291-297. Includes refs. Note: Paper presented at the Annual Conference of the Australian Society for Parasitology held September 26-30, 1999, Yeppoon, Queensland, Australia.

NAL call no.: QH547.I55

Descriptors: man, cattle, sheep, poultry, goats, alpacas, *Bovicola ovis*, *Phthiraptera*, ectoparasitoses, pest resistance, insect control, insecticides, ectoparasiticides, insecticide resistance.

Abstract: *Phthiraptera* (lice) are specialised insects adapted to parasitise many warm-blooded vertebrates, including domestic animals and humans. Often, attempts by the host to alleviate the irritation created by lice, causes derangement of the hair/fur coat. Unless treated, this derangement may cause economic losses due to hide damage and/or downgrading of wool/hair/fur. In 1981, application of aqueous insecticide solutions (dipping) for the control of sheep

body lice (*Bovicola ovis*) was largely superseded by off-shears pyrethroid "pour-on" treatments. By 1985, several field failures with these products were found to be due to low-level (20x) insecticide resistance. In 1990, high-level (640x) resistance was diagnosed in a New South Wales population. However, despite 30+ years use, organophosphate-based products are still usually effective. Until recently, cattle lice caused little concern. Treatments were applied mainly for aesthetic reasons when cattle were to be presented for sale, and also to prevent damage to fences by rubbing cattle. However, the introduction of quality-management programmes have raised awareness of the economic losses due to hide damage associated with lice infestations. Emerging industries such as emu and alpaca farming have raised the pest status of other louse species, and necessitated insecticidal intervention. In humans, attempts to control head lice, *Pediculus humanus capitis*, infestations have repeatedly failed around the world.

Linden, R.H.J. van der; Geus, B. de; Frenken, L.G.J.; Peters, H.; Verrips, C.T. **Improved production and function of llama heavy chain antibody fragments by molecular evolution.** *Journal of Biotechnology*. July 14, 2000; 80(3): 261-270. ISSN: 0168-1656.

NAL call no.: QH442.J69

Descriptors: llamas, recombinant proteins, biochemical techniques, *Saccharomyces cerevisiae*, yeasts, recombinant antibodies, DNA shuffling.

Macher, R. **Llamas at the Grand National.** *Small Farm Today*. Mar/Apr 2000; 17(2): 46-48. ISSN: 1079-9729.

NAL call no.: S1.M57

Descriptors: llamas, alpacas, agricultural shows, competitions.

March, P.A. **Congenital deafness.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000*. Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 141-142.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, alpacas, phenotypic characteristics, deafness, BAER headphone method, criar.

Mattoon, J.; Adams, J.G.; Brimacombe, M. **Echocardiography in normal llamas and alpacas: A preliminary study.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000*. Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 84-86.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, alpacas, echocardiography, normal animal data.

Mattoon, J.S.; Gerros, T.C.; Brimacombe, M. **Thoracic radiographic appearance in the normal llama.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000*. Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 73-81.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llama, normal animals, radiography, descriptions of normal parameters, measurements data table.

McCauley, C.T.; Campbell, G.A.; Cummings, C.A.; Drost, W.T. **Ossifying fibroma in a llama.** *Journal of Veterinary Diagnostic Investigation*. Sept 2000; 12(5): 473-476. ISSN: 1040-6387.

NAL call no.: SF774.J68

Descriptors: llamas, fibroma, skull, nose, asphyxia, clinical aspects, diagnosis, case report.

Meadows, L.E.; Knowlton, F.F. **Efficacy of guard llamas to reduce canine predation on domestic sheep.** *Wildlife Society Bulletin*. Fall 2000; 28(3): 614-622. ISSN: 0091-7648.

NAL call no.: SK357.A1W5

Descriptors: llamas, sheep, coyotes predation, predator control, guard animals, Utah.

Miller, D.S.; Collins, M.T.; Smith, B.B.; Anderson, P.R.; Kramsky, J.; Wilder, G.; Hope, A. **Specificity of four serologic assays for *Mycobacterium avium* ss *paratuberculosis* in llamas and alpacas: a single herd study.** *Journal of Veterinary Diagnostic Investigation*. July 2000; 12(4): 345-353. ISSN: 1040-6387.

NAL call no.: SF774.J68

Descriptors: llamas, alpacas, *Mycobacterium paratuberculosis*, serology, ELISA, antibody testing, immunodiffusion tests, diagnostic value, diagnostic test accuracy.

Monahan, C. ***Parelaphostrongylus tenuis* in the Ohio River Valley and parasitology in llamas and alpacas.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 154.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, alpacas, *Parelaphostrongylus tenuis*, parasitic nematode, diagnostic tests, fecal samples, sugar centrifugation, albendazoles.

Nuhsbaum, M.T.; Gionfriddo, J.R.; Powell, C.C.; Aubin, M.L. **Intraocular pressure in normal llamas (*Lama glama*) and alpacas (*Lama pacos*).** *Veterinary Ophthalmology.* 2000; 3(1): 31-34. Includes refs. ISSN: 1463-5216.

URL: www.blackwell-science.com/products/journals/jnltitle.htm

NAL call no.: SF891.V47

Descriptors: llamas, alpacas, eyes, pressure, measurement, species differences, age differences, spatial variation, age groups, statistical analysis.

Orlandi, C. **Ovarian physiology.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 263-267.

NAL call no.: SF997.5.C3O35 2000

Descriptors: anatomy, ovulation, follicular dynamics, pregnancy, hormones.

Orlandi, C. **Sperm viability.** Ohio State University. College of Veterinary Medicine. In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 257-262.

NAL call no.: SF997.5.C3O35 2000

Descriptors: fertility, semen quality and characteristics, artificial collection techniques, electroejaculation, artificial vagina.

Paschke, J. **Llama raising.** *Small Farm Today.* Mar/Apr 2000; 17(2): 52-53. ISSN: 1079-9729.

NAL call no.: S1.M57

Descriptors: llamas, animal husbandry.

Pearson, E.G.; Snyder, S.P. **Pancreatic necrosis in New World camelids: 11 cases (1990-1998).** *Journal of the American Veterinary Medical Association.* July 15, 2000; 217(2): 241-244. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, alpacas, pancreatic diseases, necrosis, clinical aspects, pathology, postmortem examinations, amylases, triacylglycerol lipase, enzyme activity, case reports.

Perez, P.; Maino, M.; Guzman, R.; Vaquero, A.; Kobrich, C.; Pokniak, J. **Carcass characteristics of llamas (*Lama glama*) reared in Central Chile.** *Small Ruminant Research.* July 2000; 37 (1/2): 93-97. Includes refs. ISSN: 0921-4488.

NAL call no.: SF380.I52

Descriptors: llamas, carcass composition and quality, body composition, sex differences, liveweight, carcass weight, dressing percentage, body fat thickness, moisture content, protein content, extracts, ash, Chile.

Abstract: Body and carcass composition were studied on 10 male and 10 female naturally reared llamas (*Lama glama*). Half the animals were young (9-12 months) and the other half adult (>3 year). The average live weights for young and adult males were 104.4 and 100.6 kg, and for females 67.6 and 104.6 kg, respectively. Average carcass weights for the four groups were 58.9, 56.2, 36.8 and 56.7 kg, respectively. Carcass composition for males and females was similar, but males had slightly higher dressing percentages than females (56.1 and 55.8 vs. 54.1 and 54.2 for young and adult males and females respectively). Carcass length and fat depth at the loin and proportions of cuts in the carcass were similar for both the sexes, except for leg and tail, which were proportionately heavier in young females compared to the other groups. The composition of meat on fresh basis was: moisture 70.2% protein 20.5%, ether extract 8.23% and ash 3.4%. Age and sex seemed to have no effects on the body and carcass characteristics studied nor on the chemical composition of meat.

Pugh, D.G.; Navarre, C.B. **Herd health programs for llamas.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 57-61.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, vaccination, parasites, dentistry, feet, reproduction, meningeal worm infection, ivermectin, clorsulon, dormamectin, North America.

Pugh, D.G. **Reproductive evaluation of the male llama.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 235-246.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, internal secondary sex glands, neutering, castrations, scrotum, testicles, epididymis, semen collection and quality.

Purdy, S.R. **The alpaca eye study.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 165-176.

NAL call no.: SF997.5.C3O35 2000

Descriptors: alpaca, eye anatomy, globe, eyelids, cornea, conjunctiva, third eyelid, sclera, pupil, iris and pupillary ruff, lens, aqueous and vitreous humor, and ocular fundus.

Purdy, S.R. **Diagnosis and treatment of uterine infections in alpacas: A study in progress.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 294-297.

NAL call no.: SF997.5.C3O35 2000

Descriptors: alpacas, *E. coli*, uterine infections, infertility, breeding practices, North America, research.

Purdy, S.R. **Uterine infections in alpacas and llamas: Diagnosis and treatment.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 298-301.

NAL call no.: SF997.5.C3O35 2000

Descriptors: alpacas, llamas, uterine infections, diagnosis, treatment, indwelling uterine infuser, prevention, breeding practices.

Read, M.R.; Duke, T.; Toews, A.R. **Suspected tolazoline toxicosis in a llama.** *Journal of the American Veterinary Medical Association.* Jan 15, 2000; 216(2): 227-229. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, narcotic antagonists, poisoning, intravenous injection, clinical aspects, xylazine, case reports.

Reigh, C. **So you want a buy a llama.** *Small Farm Today.* Mar/Apr 2000; 17(2): 49-51. ISSN: 1079-9729.

NAL call no.: S1.M57

Descriptors: llamas, purchasing, assessing a healthy animal.

Reigh, C. **What you need to know about owning llamas.** *Small Farm Today.* July/Aug 2000; 17(4): 32-33. ISSN: 1079-9729.

NAL call no.: S1.M57

Descriptors: llamas, animal husbandry, anecdotal information, care, handling.

Renaudeau d'Arc, N.; Cassini, M.H.; Vila, B.L. **Habitat use by vicunas *Vicugna vicugna* in the Laguna Blanca Reserve (Catamarca, Argentina).** *Journal of Arid Environments.* Oct 2000; 46(2): 107-115. ISSN: 0140-1963.

NAL call no.: QH541.5.D4J6

Descriptors: vicunas, grazing, feeding preferences, vegetation, Stipa, habitats, quantitative analysis, diurnal variation. semiarid zones, *Acantholippia hastulata*, *Fabiana densa*, *Baccharis bolivianensis*, *Adesmia horridiuscula*, Argentina.

Sackstadera, M.; Lehmkuhl, L.B., Anderson, D.E.; Mattoon, J.S.; Meurs, K.M.; Bonagura, J.D. **Retrospective analysis**

of cardiac disease in camelids. In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 130-138.

NAL call no.: SF997.5.C3O35 2000

Descriptors: camelids, heart diseases, mitral regurgitation, pulmonary hypertension, dilated cardiomyopathy, pericardial effusion, heart failure, case histories, North America.

Saltet, J.; Dart, A.J.; Dart, C.M.; Hodgson, D.R. **Ventral midline caesarean section for dystocia secondary to failure to dilate the cervix in three alpacas.** *Australian Veterinary Journal.* May 2000; 78(5): 326-328. ISSN: 0005-0423.

NAL call no.: 41.8 Au72

Descriptors: alpacas, caesarean section, dystocia, cervix, placental retention, uterine prolapse, case report.

Sarno, R.J.; David, V.A.; Franklin, W.L.; O'Brien, S.J.; Johnson, W.E. **Development of microsatellite markers in the guanaco, *Lama guanicoe*: utility for South American camelids.** *Molecular Ecology.* 2000; 9: 1922-1924.

NAL call no.: QH540.M64

Descriptors: guanacos, camelids, genetic markers, microsatellite markers, potential for assessing genetic diversity, natural resource management.

Sarno, R.J., Franklin, W.L.; O'Brien, S.J.; Johnson, W.E. **Using genetic markers for the conservation of the wild South American camelids.** In: B.P. González; F.M. Bas; C.G. Tala; A.W. Iriarte (Editors). *Manejo sustentable de la vicuña y el guanaco: Actas del Seminario Internacional.* [Sustainable Management of the Vicuna and Guanaco: Proceedings of an International Seminar.] Servicio Agrícola y Ganadero. Santiago. 2000: 47-54.

Descriptors: camelids, guanacos, vicunas, wild animal conservation, genetic markers, genetic diversity monitoring techniques, populations, natural resource management, South America.

Sharpe, M.; Wittum, T. **An epidemiologic investigation of morbidity and mortality in llama and alpaca crias in Ohio.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 281.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, alpacas, morbidity and mortality patterns, data from birth to weaning, 2 farms, Ohio.

Smith, B.B.; Timm, K.I.; Reed, P.J.; Christensen, M. **Use of cloprostenol as an abortifacient in the llama (*Lama glama*).** *Theriogenology.* Aug 2000; 54(3): 497-505. Includes refs. ISSN: 0093-691X.

NAL call no.: QP251.A1T5

Descriptors: llamas, cloprostenol, intramuscular injection, drug effects, induced abortion, adverse effects, gestation period, blood plasma, progesterone, pharmacokinetics, half-life.

Timm, K.I.; Hamir, A.N.; Mattoon, J.S.; Smith, B.B. **The geriatric llama: A baseline study.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000.* Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 33-37.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, baseline data, geriatric animals, 36 animals, blood values, necropsy findings, complete blood count, chemistry panel, serum vitamin D, T3 & T4, sodium pentobarbital, euthanasia.

Tornquist, S.J.; Dodson, L.; Lanning, D.V. **Effect of temperature, storage time, and sample type on sorbitol dehydrogenase activity in llama serum and plasma.** *Veterinary Clinical Pathology.* 2000; 29(1): 16-18. ISSN: 0275-6382.

NAL call no.: SF601.A54

Descriptors: llamas, blood serum, blood plasma, blood sampling, sample processing, storage, enzyme activity, diagnostic techniques, liditol dehydrogenase, temperature effects.

Uzal, F.A.; Assis, R.A.; Chang Reissig, E. **Malignant oedema in a guanaco (*Lama guanicoe*).** *Veterinary Record* (London). Sept 16, 2000; 147(12): 336. Includes refs. ISSN: 0042-4900.

NAL call no.: 41.8 V641

Descriptors: *Lama guanicoe*, guanaco, edema, *Clostridium septicum*, *Clostridium novyi*, susceptibility, case report, Argentina.

Van Saun, R.J.; Callihan, B.R.; Tornquist, S.J. **Nutritional support for treatment of hepatic lipidosis in a llama.** *Journal of the American Veterinary Medical Association*. Nov 15, 2000; 217 (10): 1531-1535. Includes refs. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, lipidosis, liver, liver diseases, treatment, nutritional support, aminoacids, blood chemistry, hematology, case report.

Vaughan, J.L.; Lonsdale, R.A.; Jackson, G.; Ryan, D.P. **Congenital caudal vertebral malformations in the alpaca (*Lama pacos*).** *Australian Veterinary Journal*. June 2000; 78(6): 412-415. ISSN: 0005-0423.

NAL call no.: 41.8 Au72

Descriptors: alpacas, congenital abnormalities, progeny, tail malformations, inheritance, case reports.

Weaver, D.M.; Tyler, J.W.; Marion, R.S.; Wallace, L.M.; Nagy, J.K.; Holle, J.M. **Evaluation of assays for determination of passive transfer status in neonatal llamas and alpacas.** *Journal of the American Veterinary Medical Association*. Feb 15, 2000; 216(4): 559-563. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, alpacas, newborn animals, passive immunity, IgG, immunodiffusion tests, gamma glutamyltransferase, blood proteins, serum albumin, globulins, sodium sulfite, turbidity.

Weaver, D.M.; Tyler, J.W.; Scott, M.A.; Wallace, L.M.; Marion, R.S.; Holle, J.M. **Passive transfer of colostral immunoglobulin G in neonatal llamas and alpacas.** *American Journal of Veterinary Research*. July 2000; 61(7): 738-741. Includes refs. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: llamas, alpacas, newborn animals, IgG, colostral immunity, failure, half-life, hypogammaglobulinemia, species differences, Missouri.

Wentz, P.A.; Belknap, E.B.; Pugh, D.G. **Bovine viral diarrhea virus in llamas.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000*. Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 139-140.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, BDV, bovine viral diarrhea, alahamatherol, Flaviviridae, Pestivirus, experimental infection.

Willis, A.M.; Anderson, D.E.; Gemensky, A.J.; Wilkie, D.A.; Silveira, F. **Evaluation of intraocular pressure in eyes of clinically normal llamas and alpacas.** *American Journal of Veterinary Research*. Dec 2000; 61(12): 1542-1544. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: llamas, alpacas, eyes, internal pressure, normal values, measurement estimation, age and sex differences, diurnal variation, species differences.

Willis, A.M.; Anderson, D.E.; Gemensky, A.J.; Silveira, F. **Evaluation of intraocular pressure in normal eyes of llamas and alpacas.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000*. Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 164.

NAL call no.: SF997.5.C3O35 2000

Descriptors: llamas, alpacas, camelids, intraocular pressure, measurements, tonometry, eye disease.

Wilson, Tim; Wilson, Kelly. **The things we do for love.** In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000*. Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 348.

NAL call no.: SF997.5.C3O35 2000

Descriptors: prosthetic leg, alpaca, camelid.

Wisner, E.R. **CT/MRI**. In: *The Ohio State University College of Veterinary Medicine Presents Camelid Medicine, Surgery and Reproduction, March 22-25, 2000*. Ohio State University. College of Veterinary Medicine. Columbus, Ohio. [2000]: 101-105.

NAL call no.: SF997.5.C3O35 2000

Descriptors: camelids, computed tomography, nuclear magnetic resonance imaging, contrasts, hemorrhage, intracranial mass lesions, edema, black and white images.

Wuliji, T.; Davis, G.H.; Dodds, K.G.; Turner, P.R.; Andrews, R.N.; Bruce, G.D. **Production performance, repeatability and heritability estimates for live weight, fleece weight and fiber characteristics of alpacas in New Zealand**. *Small Ruminant Research*. Aug 2000; 37(3): 189-201. Includes refs. ISSN: 0921-4488.

NAL call no.: SF380.I52

Descriptors: alpacas, body weight, fleece weight, staple, fiber quality of body regions, breaking strength, resistance, seasonal variation, sex differences, color.

1999

Aba, M.A.; Quiroga, M.A.; Auza, N.; Forsberg, M.; Kindahl, H. **Control of ovarian activity in llamas (*Lama glama*) with medroxyprogesterone acetate**. *Reproduction in Domestic Animals*. Dec 1999; 34(6): 471-476. ISSN: 0936-6768.

NAL call no.: SF105.A1Z8

Descriptors: llamas, ovaries, medroxyprogesterone, ovarian development, ovarian follicles, estrous cycle, synchronized females, blood chemistry, blood plasma, estradiol, progesterone, corpus luteum, mating, life expectancy, prostaglandins, hydrocortisone, LH.

Anderson, D.E.; Grubb, T.; Silveira, F. **The effect of short duration transportation on serum cortisol response in alpacas (*Lama pacos*)**. *Veterinary Journal* (London). Mar 1999; 157(2): 189-191. ISSN: 1090-0233.

NAL call no.: SF601.V484

Descriptors: alpacas, transporting animals. stress, blood chemistry, hydrocortisone, duration, time, heart rate, animal behavior.

Abstract: This research project evaluated the changes in serum cortisol in six male and six female alpacas in response to transportation of short duration. All alpacas were subjected to trailer transportation for 30 min. Serum samples were obtained prior to transportation, immediately after transportation, and after a 4-h recovery period. Heart rate was recorded at each time interval and observations of individual behavioural characteristics were recorded. Data were analysed using analysis of variance. Heart rate was not significantly changed by transportation stress. Serum cortisol concentration was significantly higher after transportation, but had returned to baseline concentration after the 4-h recovery period. Behavioural characteristics were not associated with changes in serum cortisol concentration.

Anderson, D.E.; Silveira, F. **Effects of percutaneous liver biopsy in alpacas and llamas**. *American Journal of Veterinary Research*. Nov 1999; 60(11): 1423-1425. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: alpacas, llamas, liver biopsy, blood proteins, adverse effects, l-iditol-dehydrogenase.

Baer, L. von; Hellemann, C. **Cryopreservation of llama (*Lama glama*) semen**. *Reproduction in Domestic Animals*. May 1999; 34(2): 95-96. ISSN: 0936-6768.

NAL call no.: SF105.A1Z8

Descriptors: llamas, semen, cryopreservation, surfactants, freezing, spermatozoa, motility, evaluation, fertility, thawing, semen diluents, semen preservation, fecundity.

Bank, M.S.; Lawrence, R.K.; Franklin, W.L.; Ortega, I.M. **Importance of wetland habitats to people and wildlife in the grazing agroecosystem of southern Chile**. *Vida Silvestre Neotropical*. 1999; 7(1): 43-45.

Descriptors: wildlife, humans, wetland habitats, value in agroecosystems, natural resources, resource management, Chile.

Barlow, A.M.; Mitchell, K.A.; Visram, K.H. **Bovine tuberculosis in llama (*Lama glama*) in the UK**. *Veterinary*

Record (London). Nov 27, 1999; 145(22): 639-640. ISSN: 0042-4900.

NAL call no.: 41.8 V641

Descriptors: llamas, *Mycobacterium bovis*, tuberculosis, diagnosis, isolation, susceptibility, United Kingdom.

Brunschwig, G. **Conduite des petits ruminants dans les cordilleres latino-americaïnes: comparaison des Andes centrales du Perou et de l'Altiplano du Guatemala.** [Performance of small ruminants in Latin American mountains: comparison of the central Andes in Peru and the Altiplano in Guatemala.] In: *Livestock Farming Systems: Integrating Animal Science Advances into the Search for Sustainability. Proceedings of the Fifth International Symposium on Livestock Farming Systems, Posieux, Fribourg, Switzerland, 19-20 August, 1999.* 2000: 160-163. ISBN: 9074134793. Note: In French with an English summary.

Descriptors: alpacas, llamas, goats, sheep, compared typology, animal breeding systems, meat production, wool production, influence of natural environments on management and rearing, Guatemala, puna of Peru.

Descriptors: alpacas, llamas, goats, sheep, compared typology, animal breeding systems, meat production, wool production, influence of natural environments on management and rearing, Guatemala, puna of Peru.

Cafrune, M.M.; Aguirre, D.H.; Rickard, L.G. **Recovery of *Trichuris tenuis* chandler, 1930, from camelids (*Lama glama* and *Vicugna vicugna*) in Argentina.** *Journal of Parasitology.* Oct 1999; 85(5): 961-962. ISSN: 0022-3395.

NAL call no.: 448.8 J824

Descriptors: llamas, vicunas, *Trichuris*, animal parasitic nematodes, trichuriasis, disease prevalence, seasonal variation, feces, helminth ova, new geographic records, new host records, fecal egg count, Argentina.

Cardwell, J.M.; Thorne, M.H. **Hydronephrosis and ureteral duplication in a young alpaca.** *Veterinary Record* (London). July 24, 1999; 145(4): 104-107. ISSN: 0042-4900.

NAL call no.: 41.8 V641

Descriptors: alpacas, kidney diseases, ureter, congenital abnormalities, duplication, case reports, histopathology.

Cashman, T.; Dart, A.J.; O'Shea, A.; Hodgson, D.R. **Management of bilateral flexural deformity of the metacarpophalangeal joints in three alpaca crias.** *Australian Veterinary Journal.* Aug 1999; 77(8): 508-510. ISSN: 0005-0423.

NAL call no.: 41.8 Au72

Descriptors: alpacas, newborn animals, joints deformities, congenital abnormalities, treatment, surgery, complications, case report, conservative treatment.

Costarella, C.E.; Anderson, D.E. **Ileoceocolic intussusception in a one-month-old llama.** *Journal of the American Veterinary Medical Association.* June 1, 1999; 214(11): 1672-1673. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, intussusception, young animals, diagnosis, treatment, resection, case report, anastomosis.

Drew, M.L.; Meyers-Wallen, V.N.; Acland, G.M.; Guyer, C.L.; Steinheimer, D.N. **Presumptive Sry-negative XX sex reversal in a llama with multiple congenital anomalies.** *Journal of the American Veterinary Medical Association.* Oct 15, 1999; 215(8): 1134-1139. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, congenital female genitalia abnormalities, sex reversal, genes, case report.

Duff, J.P.; Maxwell, A.J.; Claxton, J.R. **Chronic and fatal fascioliasis in llamas in the U.K.** *Veterinary Record* (London). Sept 11, 1999; 145(11): 315-316. Includes refs. ISSN: 0042-4900.

NAL call no.: 41.8 V641

Descriptors: llamas, *Fasciola hepatica*, fascioliasis, chronic and fatal infections, disease control, cattle, sheep, United Kingdom.

Franklin, W.L.; Johnson, W.E.; Iriarte, J.A.; Sarno, R.J. **Ecology of the Patagonian mountain lion, *Felis concolor patagonica*, in southern Chile.** *Biological Ecology.* 1999; 10: 41-47.

Descriptors: puma, *Felis concolor patagonica*, wild animals, natural ecology, preferred prey species, natural history, predators of guanacos, predator/prey relationships, Chile.

Fraser, M.D. **A comparison of the diet composition of guanacos (*Lama guanicoe*) and sheep when grazing swards with different clover: grass ratios.** *Small Ruminant Research.* May 1999; 32(3): 231-241. Includes refs. ISSN: 0921-

4488.

NAL call no.: SF380.I52

Descriptors: *Lama guanicoe*, sown grasslands, sheep, mixed grazing, mixed pastures, *Lolium perenne*, *Trifolium repens*, selective grazing, plant height, biomass, organic matter, fiber content, crude protein, leaves, stems, flowers, diets, botanical composition, United Kingdom.

Abstract: An experiment was conducted to compare the diet composition of guanacos and sheep when grazing grass/clover swards containing different amounts of clover. Experimental plots were prepared with clover: grass ratios of 40:60 (Low), 60:40 (Medium) and 80:20 (High). Two separate grazing trials were then conducted with these plots at two different sward heights. 20 cm (Tall) and 10 cm (Short). Sward composition and herbage biomass were determined for each plot using quadrat cuts, and the sward surface of each plot was characterised using a vertical point quadrat. Diet samples were collected using five animals of each species fistulated at the oesophagus. The sheep diet contained significantly more clover than the guanaco diet when the animals grazed the Medium plot of the Tall trial (31% versus 10%, $P < 0.05$) and the Low plot of the Short trial (56% versus 25%, $P < 0.05$). Statistically significant differences in the amounts of green grass leaf, dead grass leaf, grass vegetative stem, dead clover leaf and clover petiole in diets consumed by the two animal species were also recorded during the experiment. The sward composition and diet composition results obtained were used to calculate selectivity indices for individual dietary components. Both species strongly selected green grass leaf. In contrast, there was no consistent pattern to the selectivity indices for green clover leaf, although the response of the guanacos to this component was generally more negative than that of the sheep. The results of this study suggest that grazing by guanacos has the potential to improve the nutritive value of grass/clover swards for sheep, particularly if the sward being grazed initially contains more grass than clover.

Gerros, T.C.; Andreasen, C.B. **Analysis of transtracheal aspirates and pleural fluid from clinically healthy llamas (*Lama glama*).** *Veterinary Clinical Pathology*. 1999; 28(1): 29-32. ISSN: 0275-6382.

NAL call no.: SF601.A54

Descriptors: llamas, trachea, pleura, body fluids, blood cells, radiography, thorax, fibrinogen, cytology, macrophages, vacuoles, lymphocytes, neutrophils, eosinophils, epithelium, bacteria, specific gravity, glucose, lactic acid, chemical composition, protein content, refractive index.

Gilbert, J. **The lowdown on llamas.** *Small Farm Today*. Feb/Mar 1999; 16(1): 21-23. ISSN: 1079-9729.

NAL call no.: S1.M57

Descriptors: llamas, thoughts on managing this alternative livestock species.

Gorman, T.; Arancibia, J.P.; Lorca, M.; Hird, D.; Alcaino, H. **Seroprevalence of *Toxoplasma gondii* infection in sheep and alpacas (*Lama pacos*) in Chile.** *Preventive Veterinary Medicine*. June 11, 1999; 40(3/4): 143-149. ISSN: 0167-5877.

NAL call no.: SF601.P7

Descriptors: sheep, alpacas, *Toxoplasma gondii*, infections, seroprevalence, antibodies, serological surveys, diagnosis, geographical variation, sex differences, immunodiagnosis, Chile.

Hamor, R.E.; Severin, G.A.; Roberts, S.M. **Intraocular melanoma in an alpaca.** *Veterinary Ophthalmology*. 1999; 2(3): 193-196. ISSN: 1463-5216.

NAL call no.: SF891.V47

Descriptors: alpacas, melanoma, eye diseases, eyes, case report, symptoms, biochemical markers, clinical aspects, new host records, immunological deficiency, morphology, histology.

Hinrichs, K.; Buoen, L.C.; Ruth, G.R. **XX/XY chimerism and freemartinism in a female llama co-twin to a male.** *Journal of the American Veterinary Medical Association*. Oct 15, 1999; 215(8): 1140-1141. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, freemartinism, chimerism, blood cells, twins, female animal genitalia, case report.

Holmes, L.A.; Frame, N.W.; Frame, R.K.; Duff, J.P.; Lewis, G.C. **Suspected tremorgenic mycotoxicosis (ryegrass staggers) in alpacas (*Lama pacos*) in the UK.** *Veterinary Record* (London). Oct. 16, 1999; 145(16): 462-463. ISSN: 0042-4900.

NAL call no.: 41.8 V641

Descriptors: alpacas, ryegrass staggers, mycotoxicoses, endophytes, toxins, dry conditions, outbreaks, United Kingdom.

Jarvinen, J.A.; Dubey, J.P.; Althouse, G.C. **Clinical and serologic evaluation of two llamas (*Lama glama*) infected with *Toxoplasma gondii* during gestation.** *Journal of Parasitology*. Feb 1999; 85(1): 142-144. ISSN: 0022-3395.

NAL call no.: 448.8 J824

Descriptors: llamas, *Toxoplasma gondii*, toxoplasmosis, experimental infections, pregnancy, transplacental transmission, transmammary transmission, clinical aspects, seroprevalence, antibodies, blood serum, colostrum.

Jarvinen, J.A. **Prevalence of *Eimeria macusaniensis* (Apicomplexa: Eimeriidae) in midwestern *Lama* spp.** *Journal of Parasitology*. Apr 1999; 85(2): 373-376. ISSN: 0022-3395.

NAL call no.: 448.8 J824

Descriptors: llamas, alpacas, guanacos, *Eimeria*, coccidiosis, disease prevalence, feces, oocysts, species differences, age differences, North Central states of the United States.

Judson, G.J.; Feakes, A. **Vitamin D doses for alpacas (*Lama pacos*).** *Australian Veterinary Journal*. May 1999; 77(5): 310-315. ISSN: 0005-0423.

NAL call no.: 41.8 Au72

Descriptors: South Australia, alpacas, cholecalciferol, vitamin supplements, dosage, vitamin D, 25,26-dihydroxycholecalciferol, nutritional state, winter, seasonal variations, phosphorus, calcium, retinol, vitamin E, alkaline phosphatase, growth rate, rickets, vitamin deficiencies.

Kaneps, A.J.; Huber, M.J.; Snyder, S.P. **Comparison of autogenous cancellous bone grafts obtained from the sternum and proximal portion of the tibia of llamas.** *Journal of the American Veterinary Medical Association*. Aug 1, 1999; 215(3): 362-365. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, tibia, sternum, autografts, volume, animal anatomy, surgery, histology.

Kovacs, B.Z.; Gaulty, M.; Stranzinger, G. **Synaptonemal complex investigations on llamas (*Lama glama*) with differing fertility recordings.** *Journal of Animal Breeding and Genetics*. June 1999; 116(3): 235-242. ISSN: 0931-2668.

NAL call no.: 442.8 Z35

Descriptors: llamas, fecundity, synaptonemal complex, chromosome pairing, chromosome analysis, leukocytes, mitosis, meiosis, gametes, gametogenesis, sex differences, recombination, karyotypes, males.

La Perle, K.M.D.; Silveria, F.; Anderson, D.E.; Blomme, E.A.G. **Dalmeny disease in an alpaca (*Lama pacos*): sarcocystosis, eosinophilic myositis and abortion.** *Journal of Comparative Pathology*. Oct 1999; 121(3): 287-293. ISSN: 0021-9975.

NAL call no.: 41.8 J82

Descriptors: alpacas, sarcocystis, protozoal infections, myositis, abortion, case report, United States, Peru.

Lillich, J.D.; Roush, J.K.; DeBowes, R.M.; Mills, M.J. **Interlocking intramedullary nail fixation for a comminuted diaphyseal femoral fracture in an alpaca.** *Veterinary and Comparative Orthopaedics and Traumatology*. May 1999; 12(2): 81-84. ISSN: 0932-0814.

NAL call no.: SF910.5.V4

Descriptors: alpacas, femur, bone fractures, fracture fixation, nails, case report.

Mama, K.R.; A.E. Wagner, A.E.; Parker, D.A.; Hellyer, P.W.; Gaynor, J.S. **Determination of the minimum alveolar concentration of isoflurane in llamas.** *Veterinary Surgery*. Mar/Apr 1999; 28(2): 121-125. ISSN: 0161-3499.

NAL call no.: SF911.V43

Descriptors: llamas, isoflurane, anesthesia, heart rate, respiration rate, blood pressure, blood, blood gases, pH, hematocrit, blood proteins, recovery, duration, animal behavior.

Marcelina, E. **Alpacas: An attractive & amicable acquisition for your land.** *AgVentures*. Dec 1999/Jan 2000; 3(6): 6-8, 10-13.

NAL call no.: S441.A475

Descriptors: alpacas, animal husbandry, animal production, markets.

Marriott, M.R.; Dart, A.J.; Macpherson, C.; Hodgson, D.R. **Repair of canial cruciata ligament rupture in an alpaca.** *Australian Veterinary Journal*. Oct 1999; 77(10): 654-655. ISSN: 0005-0423.

NAL call no.: 41.8 Au72

Descriptors: alpacas, ligaments, rupture, autografts, suture, stifle, treatment, case reports.

Marriott, M.R.; Dart, A.J.; Macpherson, C.; Hodgson, D.R. **Total ear canal ablation and lateral bulla osteotomy in an alpaca.** *Australian Veterinary Journal*. May 1999; 77(5): 301-302. ISSN: 0005-0423.

NAL call no.: 41.8 Au72

Descriptors: alpacas, otitis media, ablation, ears, surgical operations, case reports.

Massa, K.L.; Murphy, C.J.; Hartmann, F.A.; Miller, P.E.; Korsower, C.S.; Young, K.M. **Usefulness of aerobic microbial culture and cytologic evaluation of corneal specimens in the diagnosis of infectious ulcerative keratitis in animals.** *Journal of the American Veterinary Medical Association*. Dec 1, 1999; 215(11): 1671-1674. Includes refs. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: dogs, horses, cats, birds, llamas, cornea, keratitis, diagnosis, cell culture, cytology, diagnostic value.

McCracken, Thomas O.; Kainer, Robert A.; Spurgeon, Thomas Leslie. *Spurgeon's Color Atlas of Large Animal Anatomy: The Essentials*. 1st ed. Lippincott Williams & Wilkins, Philadelphia. c1999. xix, 160 p. col. ill. ISBN: 0683306731.

NAL call no.: SF761.M35 1999 Ov

Descriptors: large animal anatomy, veterinary, atlas.

Muntz, F.H.A. **Oxalate-producing pulmonary aspergillosis in an alpaca.** *Veterinary Pathology*. Nov 1999; 36(6): 631-632. ISSN: 0300-9858.

NAL call no.: 41.8 P27

Descriptors: alpacas, aspergillosis, *Aspergillus niger*, *Candida albicans*, calcium oxalate, crystals, case report.

Navarre, C.B.; Pugh, D.G.; Heath, A.M.; Simpkins, S.A. **Analysis of first gastric compartment fluid collected via percutaneous paracentesis from healthy llamas.** *Journal of the American Veterinary Medical Association*. Mar 15, 1999; 214(6): 812-815. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, body fluids, stomach, collection, sampling technique, percutaneous paracentesis, characteristics, safety, efficacy.

Obreque, V.; Mancilla, R.; Garcia-Huidobro, J.; Cothran, E.G.; Hinrichsen, P. **Thirteen new dinucleotide microsatellites in Alpaca.** *Animal Genetics*. Oct 1999; 30(5): 397-398. ISSN: 0268-9146.

NAL call no.: QP98.A1A5

Descriptors: alpacas, microsatellites, nucleotide sequences, alleles, heterozygosity, polymerase chain reaction, genetic polymorphism.

Molecular sequence data: genbank/af14076, genbank/af140768, genbank/af140769, genbank/af140770, genbank/af140771, genbank/af140772, genbank/af140773, genbank/af140774, genbank/af140775, genbank/af140776, genbank/af140777, genbank/af140778, genbank/af140779.

Paolicchi, F.; Uguieta, B.; Valle, L. del; Bustos-Obregon, E. **Biological activity of the seminal plasma of alpacas: stimulus for the production of LH by pituitary cells.** *Animal Reproduction Science*. Jan 8, 1999; 54(3): 203-210. ISSN: 0378-4320.

NAL call no.: QP251.A5

Descriptors: alpacas, seminal plasma, LH, hormone secretion, ovulation, anterior pituitary, cells, bioassays.

Pelant, R.K.; Chandra, B.; Pu, J.B.; Lohani, M.; Suknaphasawat, N.; Xu, G. **Small ruminants in development: the Heifer Project International experience in Asia.** *Small Ruminant Research*. Nov 1999; 34(3): 247-257. Includes refs.

Note: In the special issue: *Role of Small Ruminants in the Supply of Animal Products* / edited by G.F.W. Haenlein and M.H. Fahmy. Proceedings of the special symposium in conjunction with the 8th World Conference on Animal Production, June 28-July 4, 1998, Seoul, South Korea. ISSN: 0921-4488.

NAL call no.: SF380.I52

Descriptors: goats, sheep, small ruminants, animal production, community development, voluntary services, breed differences, livestock numbers, Asia.

Abstract: For more than half a century, Heifer Project International (HPI), a charitable organization headquartered in Little Rock, AR, has been providing livestock and training in animal husbandry and sustainable agriculture to developing areas throughout the world. Since 1944, more than four million families have been assisted. More than 20 different kinds of food- and income-producing animals have been provided for communities and families in over 110 countries worldwide. Annually, HPI has projects in approximately 40 countries. Intensive training in animal husbandry, environmentally sound animal agriculture practices and community development are all part of HPI's program. HPI has had a long history with using small ruminants, from sheep and goats to llamas and alpacas, around the world. Small ruminants are of a most convenient size and prolificacy for the small holders that HPI typically partners with, and they are among the most diverse and multipurpose of all livestock species. In Asia, HPI uses small ruminants in development programs in the People's Republic of China, the Democratic People's Republic of Korea, Thailand, India, Sri Lanka, Nepal, Bangladesh, Vietnam and Indonesia. All of these programs are with limited resource families living in marginal, rural conditions. The programs are geared toward increasing peoples' income and nutritional status, while enhancing their dignity and benefitting the ecology.

Penedo, M.C.T.; Caetano, A.R.; Cordova, K. **Eight microsatellite markers for South American camelids.** *Animal Genetics.* Apr 1999; 30(2): 166-167. ISSN: 0268-9146.

NAL call no.: QP98.A1A5

Descriptors: llamas, alpacas, guanacos, microsatellites, genetic markers, DNA libraries, nucleotide sequences, gene frequency, heterozygosity, polymerase chain reaction, genetic polymorphism.

Molecular sequence data: genbank/af091122, genbank/af091123, genbank/af091124, genbank/af091125, genbank/af091126, genbank/af091127, genbank/af091128, genbank/af091129.

Penedo, M.C.T.; Caetano, A.R.; Cordova, K.I. **Six microsatellite markers for South American camelids.** *Animal Genetics.* Oct 1999; 30(5): 399. Includes refs. ISSN: 0268-9146

NAL call no.: QP98.A1A5

Descriptors: llamas, alpacas, microsatellites, genetic markers, nucleotide sequences, alleles, gene frequency, heterozygosity.

Molecular sequence data: genbank/af142656, genbank/af142657, genbank/af142658, genbank/af142659, genbank/af142660, genbank/af142661.

Pizarro R., Ramon (Pizarro Rodriguez). *Camelidotecnia: Camelidos Sudamericanos, Alpaca, Guanaco, Llama, Vicuna.* 1. ed. [Peru?: s.n., 1999] xxii, 206 p., ill. (some col.), maps. Includes refs. p. 197-200. ISBN: 997291500X. Note: In Spanish.

NAL call no.: SF401.L35P59 1999

Descriptors: llamas, alpacas, guanacos, vicunas, South America.

Pugh, D.G.; Navarre, C.B.; Ruffin, D.C.; Belknap, E.B. **A review of diagnostic procedures in llamas and alpacas.** *Veterinary Medicine.* July 1999; 94(7): 654-659. ISSN: 8750-7943.

NAL call no.: 41.8 M69

Descriptors: llamas, alpacas, diagnostic techniques, cerebrospinal fluid, gastric juices, body fluids, collection, liver, biopsy, bone marrow, catheterization, peritoneal fluid.

Pugh, D.G. **Small ruminant medicine for the small animal veterinarian.** *Proceedings of the North American Veterinary Conference.* 1999; 13: 318-320. Note: Meeting held on Jan. 9-13, 1999, Orlando, Florida.

NAL call no.: SF605.N672

Descriptors: llamas, sheep, goats, small animal practice.

Puntel, M.; Fondevila, N.A.; Blanco-Viera, J.; O'Donnell, V.K.; Marcovecchio, J.F.; Carrillo, B.J.; Schudel, A.A.

Serological survey of viral antibodies in llamas (*Lama glama*) in Argentina. *Journal of Veterinary Medicine, Series B.* Apr 1999; 46(3): 157-161. ISSN: 0931-1793.

NAL call no.: 41.8 Z52

Descriptors: bluetongue virus, llamas, serological surveys, antibodies, bovine adenovirus, bovine herpesvirus 1, bovine diarrhea virus, bovine enterovirus, bovine leukemia virus, aphthovirus, rotavirus, incidence, seroprevalence, Argentina.

Raggi, L.A.; Ferrando, G.; Parraguez, V.H.; MacNiven, V.; Urquieta, B. **Plasma progesterone in alpaca (*Lama pacos*) during pregnancy, parturition and early postpartum.** *Animal Reproduction Science.* Jan 29, 1999; 54 (4): 245-249. ISSN: 0378-4320.

NAL call no.: QP251.A5

Descriptors: alpacas, pregnancy, parturition, postpartum period, progesterone, blood plasma.

Sarno, R.J.; Clark, W.R.; Bank, M.S.; Prexl, W.S.; Johnson, W.E.; Behl, M.J. **Juvenile guanaco survival: management and conservation implications.** *Journal of Applied Ecology.* 1999; 36(6): 937-945.

URL: <http://www.blackwell-synergy.com/doi/abs/10.1046/j.1365-2664.1999.00449.x>

NAL call no.: 410 J828

Descriptors: guanacos, young animals, reproductive capacity, conservation, population levels, natural resource management, sustained yields, juvenile factors, sex, birthrate, mean monthly snowfall, adult female behaviors, radio-collar study of juveniles, Torres del Paine National Park, Chile.

Sarno, R.J.; Franklin, W.L. **Maternal expenditure in the polygynous and monomorphic guanaco: suckling behavior, reproductive effort, yearly variation, and influence on juvenile survival.** *Behavioral Ecology.* 1999; 10(1): 41-47. ISSN: 1465-7279 (online). ISSN: 1045-2249 (print).

URL: <http://beheco.oxfordjournals.org/cgi/content/abstract/10/1/41>

Descriptors: guanacos, reproduction, birth weights, suckling behaviors, polygynous monomorphic animals, survival rates, influences on survival of juveniles, no sex bias in maternal behaviors, comparison study, Chile.

Sarno, R.J.; Franklin, W.L. **Population density and annual variation in birth mass of guanacos in southern Chile.** *Journal of Mammalogy.* 1999; 80: 1158-1162. ISSN: 1545-1542.

NAL call no.: 410 J823

Descriptors: guanacos, reproductive potential, populations levels, year-to-year fluctuations in numbers of births, natural resource management, Chile.

Schmidtman, E.T.; Tabachnick, W.J.; Hunt, G.J.; Thompson, L.H.; Hurd, H.S. **1995 Epizootic of vesicular stomatitis (New Jersey serotype) in the western United States: an entomologic perspective.** *Journal of Medical Entomology.* Jan 1999; 36(1): 1-7. ISSN: 0022-2585.

NAL call no.: 421 J828

Descriptors: vesicular stomatitis virus, serotypes, epidemics, horses, cattle, llamas, disease distribution, disease transmission, disease vectors, hematophagous insects, epidemiology, seasonality, western states, United States.

Abstract: Entomologic and epizootic data are reviewed concerning the potential for transmission of vesicular stomatitis (VS) virus by insects, including field data from case-positive premises in New Mexico and Colorado during the 1995 outbreak of the New Jersey serotype (VSNJ). As with previous outbreaks of VSNJ in the western United States, the 1995 epizootic illustrated that risk of exposure is seasonal, increasing during warm weather and decreasing with onset of cool weather; virus activity spread from south to north along river valleys of the southwestern and Rocky Mountain states; clinical disease was detected most commonly in horses, but also occurred in cattle and 1 llama; and most infections were subclinical. Overall, 367 case-positive premises were identified during the 1995 outbreak, with foci of virus activity along the Rio Grande River south of Albuquerque, NM, in southwestern Colorado, and along the Colorado River near Grand Junction, CO. The establishment of a 16-km (10-mile) radius zone of restricted animal movement around confirmed positive premises, along with imposition of state and international embargoes, created economic hardship for livestock owners and producers. The importance of defining the role of blood-feeding insects as biological vectors of VSNJ virus relative to risk factors that promote high levels of insect transmission, such as the presence of livestock along western river valleys, blood feeding activity, and frequent transport of animals for recreational purposes, is emphasized as a basis for developing effective disease management.

comparisons, accuracy.

American Association of Small Ruminant Practitioners. Western Regional Coordinating Committee 46. Oregon State University. College of Veterinary Medicine. *American Association of Small Ruminant Practitioners, Western Regional Coordinating Committee 46 (Ram Epididymitis and Ovine Footrot), Oregon State University, College of Veterinary Medicine present Symposium on Diseases of Small Ruminants, Nendels Inn, Corvallis, Oregon, June 7, 8, 9, 1990.* [s.l.: s.n., 1990] v, 149 p., ill.

NAL call no.: SF968.S96 1990

Descriptors: ruminants diseases, sheep, goats, llamas, alpacas, congresses, diseases.

Anonymous. **Rabies in llamas: Oklahoma.** *Dairy, Food and Environmental Sanitation.* Oct 1990; 10(10): 614. ISSN: 1043-3546.

NAL call no.: SF221.D342

Descriptors: llamas, rabies, incidence of disease, susceptibility, Oklahoma.

Belknap, E.B.; Dunstan, R.W. **Congenital ichthyosis in a llama.** *Journal of the American Veterinary Medical Association.* Sept 15, 1990; 197(6): 764-767. ill. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, congenital abnormalities, hyperkeratosis, conjunctivitis, case studies, symptoms, diagnosis, treatment.

Belknap, E.B.; Schmidt, A.R.; Carleton, C.L. **Double cervixes in two llamas.** *Journal of the American Veterinary Medical Association.* Oct 15, 1990; 197(8): 1049-1050. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, cervix, congenital abnormalities, case studies, embryonic development, abnormal development.

Bravo, P.W.; Fowler, M.E.; Stabenfeldt, G.H.; Lasley, B. **Endocrine responses in the llama to copulation.** *Theriogenology.* Apr 1990; 33(4): 891-899. ISSN: 0093-691X.

NAL call no.: QP251.A1T5

Descriptors: llamas, hormones, LH, estradiol, copulation, progesterone, gonadotropins, ovulation.

Bravo, P.W.; Fowler, M.E.; Stabenfeldt, G.H.; Lasley, B. **Ovarian follicular dynamics in the llama.** *Biology of Reproduction.* Oct 1990; 43(4): 579-585. ill. ISSN: 0006-3363.

NAL call no.: QL876.B5

Descriptors: llamas, Graafian follicles, estradiol, estrogens, plasma, urine, gonadotropins, hormone secretion, LH, FSH, progesterone.

Fowler, M.E.; Olander, H.J. **Fetal membranes and ancillary structures of llamas (*Lama glama*).** *American Journal of Veterinary Research.* Sept 1990; 51(9): 1495-1500. ill. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: llamas, fetal membranes, placenta, pregnancy, morphology.

Abstract: The placenta of llamas is epitheliochorial, with patchy areas of dense folded papillation serving as the placentome. The amnion of the full term placenta is closely adhered to either the allantois or the chorion and remains with these structures at the time of parturition. Llamas and alpacas, like dromedaries, have an extra fetal membrane that is derived from the epidermis of the fetus. In association with the watery amniotic fluid of llamas, the epidermal membrane is slippery, facilitating delivery of the fetus.

Franklin, W.L. **Wild camelids of South America: guanacos and vicuñas.** In: W. Klienburg (Editor). *Kindler-Grzimek's Animal Life Encyclopedia.* Germany. 1990.

Descriptors: guanacos, vicunas, wild populations, description of species, natural history, behavior, taxonomic relationships, range, distribution, South American camelids.

Garlick, D.S.; Doherty, T.J.; Paradis, M.R. **Gemistocytic astrocytoma in a one month old llama.** *Journal of the American Veterinary Medical Association.* June 15, 1990; 196(12): 2009-2010. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, young animals, neoplasms, neuroglia, case studies, histopathology, astrocytes.

Johnson, L.W.; Gentz, E.J. **Multiple nonlethal congenital anomalies in a llama.** *Journal of the American Veterinary Medical Association.* Feb 15, 1990; 196(4): 630-631. ill. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, congenital abnormalities, lameness, hocks, case studies.

Johnson, W.E.; Franklin, W.L.; Iriarte, J.A. **The mammalian fauna of the northern Chilean Patagonia: a biogeographical dilemma.** *Mammalia.* 1990; 54: 457-469. ISSN: 0026-1461.

Descriptors: mammalian fauna, camelids, resource management, Patagonia, Chile.

Leon, J.B.; Smith, B.B.; Timm, K.I.; LeCren, G. **Endocrine changes during pregnancy, parturition and the early post partum period in the llama (*Lama glama*).** *Journal of Reproduction and Fertility.* Mar 1990; 88(2): 503-511. ISSN: 0022-4251.

NAL call no.: 442.8 J8222

Descriptors: llamas, endocrine glands, pregnancy, parturition, postpartum interval, progesterone, estrogens.

McCorkle, Constance M.; Small Ruminant Collaborative Research Support Program. **Improving Andean Sheep and Alpaca Production: Recommendations from a Decade of Research in Peru.** University of Missouri-Columbia, Columbia, Mo. 1990. xx, 220 p., ill.

NAL call no.: SF375.5.P4I56 1990

Descriptors: alpacas, sheep, production systems, care, management, breeding, research application, Andes, Peru.

McGee, Marty; Tellington-Jones, Linda; Hart, Kelly. *Basic T.E.A.M. with Llamas.* Olympia, WA: Juniper Ridge Press, c1990. 1 videocassette (112 min.): sd., col.

NAL call no.: Videocassette no. 1770

Descriptors: llamas training, training method, positive reinforcement.

Abstract: Presents the basics of the Tellington-Jones Equine Awareness Method (T.E.A.M.) as a way to train llamas.

McLaughlin, B.G.; Evans, C.N.; McLaughlin, P.S.; Johnson, L.W.; Smith, A.R.; Zachary, J.F. **An Eperythrozoon like parasite in llamas.** *Journal of the American Veterinary Medical Association.* Nov 1, 1990; 197(9): 1170-1175. ill. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, eperythrozoon, erythrocytes, bacterial diseases, symptoms, diagnosis, treatment, United States.

NOVA. *In the Land of Llamas.* 1990. Identification Number: ASIN 6302420431 (Amazon.com). Note: William L. Franklin was an Associate Producer and Scientific Consultant.

Descriptors: llamas, domesticated camelids, role in the culture and economic lives of indigenous people, history, uses, South America.

Powers, B.E.; Johnson, L.R.; Linton, L.B.; Garry, F.; Smith, J. **Endometrial biopsy technique and uterine pathologic findings in llamas.** *Journal of the American Veterinary Medical Association.* Nov 1, 1990; 197(9): 1157-1162. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, biopsy, endometrium, female infertility, uterine diseases, histopathology, prognosis.

Reagan, W.J.; Garry, F.; Thrall, M.A.; Colgan, S.; Hutchison, J.; Weiser, M.G. **The clinicopathologic, light, and scanning electron microscopic features of eperythrozoonosis in four naturally infected llamas.** *Veterinary Pathology.* Nov 1990; 27(6): 426-431. ill. ISSN: 0300-9858.

NAL call no.: 41.8 P27

Descriptors: llamas, eperythrozoon, pathology, anemia, hypoproteinemia, blood picture, blood chemistry, new host records.

Rivero, J.L.; Cascone, O.; Biscoglio de Jimenez Bonino, M.J. **Conformational comparison in the growth hormone family.** *Comparative Biochemistry and Physiology. B. Comparative Biochemistry.* 1990; 95(2): 229-232. ISSN: 0305-

0491.

NAL call no.: QP501.C6

Descriptors: cattle, somatotropin, horses, man, monkeys, sheep, alpaca.

Tvedten, H.W. **What is your diagnosis.** *Veterinary Clinical Pathology*. Sept 15, 1990; 19 (3): 77-78. ISSN: 0275-6382.

NAL call no.: SF601.A54

Descriptors: llamas, blood picture, diagnosis, hemoglobin, crystals.

1989

Adams, G.P.; Griffin, P.G.; Ginther, O.J. **In situ morphologic dynamics of ovaries, uterus, and cervix in llamas.**

Biology of Reproduction. Sept 1989; 41(3): 551-558. ill. ISSN: 0006-3363.

NAL call no.: QL876.B5

Descriptors: llamas, ovaries animal, uterus, cervix, morphology, follicles, pregnancy, corpus luteum.

Bradford, G.E.; Burfening, P.J.; Cartwright, T.C. **Evaluation of production and reproduction of sheep, goat and alpaca genotypes in the small ruminant collaborative research support program.** *Journal of Animal Science*. Nov 1989; 67(11): 3058-3067. ISSN: 0021-8812.

NAL call no.: 49 J82

Descriptors: sheep, goats, alpaca, animal research, genetic resources, animal breeding, breeding programs, Kenya, Morocco, Indonesia, Peru, Brazil.

Bryant, F.C.; Florez, A.; Pfister, J. **Sheep and alpaca productivity on high Andean rangelands in Peru.** *Journal of Animal Science*. Nov 1989; 67(11): 3087-3095. ISSN: 0021-8812.

NAL call no.: 49 J82

Descriptors: sheep, alpaca, animal production, animal husbandry, stocking rate, productivity, Peru.

Cheney, J.M.; Allen, G.T. **Parasitism in llamas.** *Veterinary Clinics of North America. Food Animal Practice*. Mar 1989; 5(1): 217-225. ISSN: 0749-0720.

NAL call no.: SF601.V535

Descriptors: llamas, nematodes, Protozoa, arthropod pests, internal and external parasites.

Cheney, S. **Llamas and South American Camelids January 1970 October 1988.** *Quick Bibliography Series, U.S. Department of Agriculture, National Agricultural Library*. The Library. Beltsville, MD. Feb 1989; no. 89-29, 14 p.

NAL call no.: aZ5071.N3

Descriptors: llamas, Camelidae, animal physiology.

Ebel, S. **The Llama industry in the United States.** *Veterinary Clinics of North America. Food Animal Practice*. Mar 1989; 5(1): 1-20. ISSN: 0749-0720.

NAL call no.: SF601.V535

Descriptors: llamas, domestication, history, adaptability, animal production, facilities, equipment, veterinary services, United States.

Fowler, Murray E. **Medicine and Surgery of South American Camelids: Llama, Alpaca, Vicuna, Guanaco.** 1st ed. Iowa State University Press, Ames. 1989. vii, 391 p., ill. ISBN: 0813803934.

NAL call no.: SF997.5.L35F68 1989

Descriptors: llamas, diseases, vicunas, surgery, drug treatment.

Fowler, M.E.; Zinkl, J.G. **Reference ranges for hematologic and serum biochemical values in llamas (*Lama glama*).** *American Journal of Veterinary Research*. Dec 1989; 50(12): 2049-2053. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: llamas, hematology, blood serum, blood chemistry, age differences, sex differences, California, Nevada.
Abstract: Hematologic and serum biochemical values were determined in 174 llamas of all age groups and both sexes from ranches in California and Nevada. Compared with hematologic values for horses and cattle, llama erythrocytes

were more numerous (10.1 to 17.3 x 10⁶/microliter), but the PCV was lower (25 to 45%) because the smaller elliptical cells pack tighter. The mean corpuscular volume was half that of horses and cattle (22 to 29.5 fl). The mean corpuscular hemoglobin concentration was higher (38.9 to 46.2 g/dl), and the mean corpuscular hemoglobin slightly lower (9.6 to 12.6 pg). Most serum biochemical values were similar to those of cattle and horses, with the exception of triiodothyronine (48 to 468 ng/dl) and thyroxin (9.8 to 30 microgram/dl), which are up to 10 times higher than values for other domestic species.

Fowler, M. **Physical examination, restraint and handling.** *Veterinary Clinics of North America. Food Animal Practice.* Mar 1989; 5(1): 27-35. ill. ISSN: 0749-0720.

NAL call no.: SF601.V535

Descriptors: llamas, handling, restraint, body condition, hematology, blood serum, blood chemistry, diagnostic techniques.

Garry, F. **Clinical pathology of llamas.** *Veterinary Clinics of North America. Food Animal Practice.* Mar 1989; 5(1): 55-70. ISSN: 0749-0720.

NAL call no.: SF601.V535

Descriptors: llamas, animal diseases, diagnostic techniques, hematology, blood serum, biochemistry, urine analysis, cerebrospinal fluid, abdominocentesis.

Guerrero Figueroa, Luis B.; Blanco Aguilar, Marcial. **Encuentro Alpaquero (2nd: 1989: Cajamarca, Peru).** *Alpaca in Northern Peru.* 1. ed. EDAC CIED: CONCYTEC, Cajamarca, Peru: 1989. 318 p.

NAL call no.: SF401.A4E5 1990

Descriptors: alpaca, Peru, congresses.

Heath, R.B. **Llama anesthetic programs.** *Veterinary Clinics of North America. Food Animal Practice.* Mar 1989; 5(1): 71-80. ill. ISSN: 0749-0720.

NAL call no.: SF601.V535

Descriptors: llamas, anesthesia, management, anesthetics.

Hoffman, Clare; Asmus, Ingrid. **Caring for Llamas: a Health and Management Guide.** Rocky Mountain Llama Association, Livermore, CO. c1989. 150 p., ill. ISBN: 0962276804.

NAL call no.: SF401.L6H54

Descriptors: llamas, care, management, disease recognition.

Johnson, LaRue W. **Llama medicine.** *The Veterinary Clinics of North America. Food Animal Practice.* 5(1). c1989. xii, 236 p., ill. ISSN: 0749 0720.

NAL call no.: SF601.V535 v.5, no.1

Descriptors: llamas diseases, treatment, surgical techniques, handling, restraint.

Johnson, L.W. **Llama reproduction.** *Veterinary Clinics of North America. Food Animal Practice.* Mar 1989; 5(1): 159-182. ill. ISSN: 0749-0720.

NAL call no.: SF601.V535

Descriptors: llamas, reproduction, female genitalia, animal breeding, pregnancy diagnosis, female infertility, endometritis, semen characters.

Johnson, LaRue W.; Hartworks Video (Firm). Llama Association of North America. Conference (1988: Redmond, Or.). **Llama Reproduction: a Neonatal Clinic.** Olympia, WA: Juniper Ridge Press, c1989. 2 videocassettes (3 hr., 34 min.): sd., col. 1 booklet (70 p., ill., 28 cm.).

NAL call no.: Videocassette no. 2356

Descriptors: llamas reproduction, care of neonates, breeding, fetal development, cria delivery.

Abstract: Through lecture, slides, and live footage, Dr. Johnson presents his clinic covering llama reproductive anatomy, breeding, fetal development, birth, and newborn care. He also covers the delivery of crias in a variety of positions, using plastic uteruses and stillborn cria.

Johnson, L.W. **Nutrition.** *Veterinary Clinics of North America. Food Animal Practice.* Mar 1989; 5(1): 37-54. ill.

ISSN: 0749-0720.

NAL call no.: SF601.V535

Descriptors: llamas, animal nutrition, diets, nutrients, mineral supplements, digestion, nutrition physiology.

Kaneps, A.J.; Schmotzer, W.B.; Huber, M.J.; Riebold, T.W.; Watrous, B.J.; Arnold, J.S. **Fracture repair with transfixation pins and fiberglass cast in llamas and small ruminants.** *Journal of the American Veterinary Medical Association.* Nov 1, 1989; 195(9): 1257-1261. ill. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: sheep, calves, llamas, bone fractures, fixation, pins, fiberglass casts.

Kingdon, L.B. **Llama leader for a day.** *Arizona Land & People.* Spring 1989; 39 (1): 12-14. ill. ISSN: 0033-0744.

NAL call no.: 6 P9452

Descriptors: llamas, backpacking, hiking, trails, arid zones, enterprises, Arizona.

Long, P. **Llama herd health.** *Veterinary Clinics of North America. Food Animal Practice.* Mar 1989; 5(1): 227-232. ISSN: 0749-0720.

NAL call no.: SF601.V535

Descriptors: llamas, herd improvement, animal health, vaccination, ectoparasites, parasitic worms.

Lunn, D.P.; Hinchcliff, K.W. **Cerebrospinal fluid eosinophilia and ataxia in five llamas.** *Veterinary Record* (London). Mar 25, 1989; 124(12): 302-305. ISSN: 0042-4900.

NAL call no.: 41.8 V641

Descriptors: llamas, ataxia, eosinophilia, cerebrospinal fluid, symptoms, physiopathology, *Parelaphostrongylus tenuis*, case studies, drug therapy.

McLaughlin, B.G.; Evans, N.C. **Urethral obstruction in a male llama.** *Journal of the American Veterinary Medical Association.* Dec 1, 1989; 195(11): 1601-1602. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, urethra, blockage, symptoms, postmortem examinations, case studies.

Mulrooney, D.M.; Johnson, M.R.; Smith, B.B.; Zimmerman, G.L. **Clinical reference values for serum protein electrophoresis for the llama (*Lama glama*).** *American Journal of Veterinary Research.* Nov 1989; 50(11): 1889-1892. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: llamas, young animals, female animals, pregnancy, male animals, blood serum protein, electrophoresis, Oregon.

Abstract: Serum protein electrophoresis was performed on 71 clinically healthy juvenile and adult llamas (6 juvenile males, 7 juvenile females 25 adult males, 13 adult females, and 20 pregnant females) to determine normal serum protein concentrations. Values were reported for each of the 5 groups because the groups were not homogeneous in all 8 peaks. Although the values reported here may serve as reference values for adults, they represent only a guideline for the juveniles because of the limited number of animals in each of these groups.

Oxley, J.W. **Domestic and host country institution strengthening through the small ruminant collaborative research support program experience and projections toward the next decade.** *Journal of Animal Science.* Nov 1989; 67(11): 3118-3123. ISSN: 0021-8812.

NAL call no.: 49 J82

Descriptors: sheep, goats, alpaca, research, international cooperation, development aid, United States, developing countries.

Paul Murphy, J.; Gershwin, L.J.; Thatcher, E.F.; Fowler, M.E.; Habig, W.H. **Immune response of the llama (*Lama glama*) to tetanus toxoid vaccination.** *American Journal of Veterinary Research.* Aug 1989; 50(8): 1279-1281. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: *Lama*, llamas, immune response, vaccination, *Clostridium tetani*, tetanus, enzyme linked immunosorbent assay, California.

Abstract: An ELISA was developed to measure serum concentrations of tetanus toxoid specific immunoglobulins. The titers obtained with this assay were compatible with those obtained by the standard mouse toxin neutralization test. Serum samples from 123 llamas were analyzed for ELISA titers to tetanus toxoid. Of the 82 vaccination adults, 75 (91%) had titers greater than or equal to 1:50. The vaccination status and titers of weanlings and juveniles (3 to 12 months old) varied; of the 21 vaccinated, 17 (81%) had titers greater than or equal to 1:50 and 7 of 9 (78%) unvaccinated llamas had titers less than 1:50. The ELISA titers of unvaccinated llamas less than 8 weeks old (crias) were matched with the maternal titers. All crias with titers less than 1:50 had dams with titers greater than or equal to 1:50.

Paul Murphy, J. **Obstetrics, neonatal care, and congenital conditions.** *Veterinary Clinics of North America. Food Animal Practice.* Mar 1989; 5(1): 183-202. ill. ISSN: 0749-0720.

NAL call no.: SF601.V535

Descriptors: llamas, obstetrics, newborn animals, congenital abnormalities, diagnosis, treatment.

Paulsen, M.E.; Young, S.; Smith, J.A.; Severin, G.A. **Bilateral chorioretinitis, centripetal optic neuritis, and encephalitis in a llama.** *Journal of the American Veterinary Medical Association.* May 1, 1989; 194(9): 1305-1308. ill. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, blindness animal, neuritis, encephalitis, retinitis, histopathology, diagnosis, etiology, infectious diseases, case studies.

Pfister, J.A.; San Martin, F.; Rosales, L.; Sisson, D.V.; Flores, E.; Bryant, F.C. **Grazing behaviour of llamas, alpacas and sheep in the Andes of Peru.** *Applied Animal Behaviour Science.* June 1989; 23(3): 237-246. ISSN: 0168-1591.

NAL call no.: QL750.A6

Descriptors: llamas, alpaca, sheep, grazing behavior, mountain areas, grazing time, feeding habits, Peru.

Proyecto Alpacas, Proyecto Andino de Tecnologias Campesinas (Peru). **Breeding of llamas and alpacas in the Andes.** *Proyecto Alpacas, Convenio COTESU-INIAA: Proyecto Andino de Tecnologia Campesina, [Peru] . c1989.* 169 p., [6] p. of plates: ill. (some col.).

NAL call no.: SF401.L6C75 1989

Descriptors: llamas, Andes mountain region, breeding, alpaca, Peru.

Riebold, T.W.; Kaneps, A.J.; Schmotzer, W.B. **Anesthesia in the llama.** *Veterinary Surgery.* Sept/Oct 1989; 18 (5): 400-404. ISSN: 0161-3499.

NAL call no.: SF911.V43

Descriptors: llamas, anesthesia, anesthetics.

Rosychuk, R.A.W. **Llama dermatology.** *Veterinary Clinics of North America. Food Animal Practice.* Mar 1989; 5(1): 203-215. ISSN: 0749-0720.

NAL call no.: SF601.V535

Descriptors: llamas, skin diseases, allergies, neoplasms, bacteria, mites.

San Martin, F.; Bryant, F.C. **Nutrition of domesticated South American llamas and alpacas.** *Small Ruminant Research.* Sept 1989; 2(3): 191-216. ISSN: 0921-4488.

NAL call no.: SF380.I52

Descriptors: llamas, alpacas, animal anatomy, stomach, digestion, feed intake, feeding preferences, sheep, stocking rate, Andes, South America.

Simmons, A.G. **Alternative site for the single intradermal comparative tuberculin test in the llama (*Lama glama*).** *Veterinary Record (London).* Jan 7, 1989; 124(1): 17-18. ISSN: 0042-4900.

NAL call no.: 41.8 V641

Descriptors: llamas, tuberculin, diagnostic techniques, skin tests, tuberculosis, *Mycobacterium bovis*.

Smith, B.B.; Pearson, E.G.; Leon, J. **Evaluation of normal triiodothyronine and tetraiodothyronine concentrations in llamas (*Lama glama*).** *American Journal of Veterinary Research.* Aug 1989; 50(8): 1215-1219. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: *Lama*, llamas, blood sampling, blood serum, thyronine, triiodothyronine, thyroid diseases, diagnosis, thyroid gland.

Abstract: Basal serum triiodothyronine (T3) and tetraiodothyronine (T4) concentrations have not been established for the llama (*Lama glama*). In addition, changes in T3 and T4 concentrations in response to thyroid stimulating hormone (TSH) administration have not been determined, making clinical evaluation of problems referable to thyroid dysfunction difficult. In study 1, basal T3 and T4 concentrations were determined in serum samples collected from 132 clinically healthy llamas. The llamas were allotted to 3 groups: mature intact or neutered males (group I, n = 25), nonpregnant sexually mature females (group II, n = 21), and pregnant females (group III, n = 86). A mean concentration and a 95% confidence interval were computed for each group. An analysis of variance (ANOVA) indicated that a single confidence interval range (0.45 to 4.18, mean = 1.37 ng T3/ml) adequately defined the normal T3 concentrations for all groups. An ANOVA indicated that the T4 concentrations for the female populations (groups II and III) could be combined with a normal confidence interval range of 39 to 204 ng/ml (mean = 88 ng/ml), whereas a separate range (70 to 220 ng/ml, mean = 124 ng/ml) was determined for the male population. An ANOVA indicated that a single confidence interval range (0.0066 to 0.0321, mean = 0.0146) adequately defined the normal T3/T4 ratio for all groups. In study 2, T3 and T4 concentrations were evaluated in 10 healthy llamas immediately preceding and at 2, 4, 6, 8, and 24 hours after the IV administration of 3 IU of TSH/44 kg of body weight. The T3 and T4 concentrations were significantly higher by 2 hours after TSH administration in both groups. Peak T3 and T4 concentrations were observed at 4 and 8 hours, respectively, after TSH administration. When normalized with respect to serum T3 concentrations in samples collected immediately prior to TSH administration, the maximal increase in predicted T3 concentration was 4.06 fold (80% confidence interval range = 2.99 to 5.50 fold) at 4 hours after TSH administration. The maximal increase in predicted normalized T4 concentration was 2.32 fold (80% confidence interval range = 1.76 to 3.05 fold) at 8 hours after TSH administration. The TSH stimulated increases in T3 and T4 concentrations at 4 hours were clearly distinguishable from values in samples obtained before TSH administration.

Smith, J.A. **Noninfectious diseases, metabolic diseases, toxicities, and neoplastic diseases of South American camelids.** *Veterinary Clinics of North America. Food Animal Practice.* Mar 1989; 5(1): 101-143. ISSN: 0749-0720.

NAL call no.: SF601.V535

Descriptors: llamas, metabolic diseases, poisoning, toxicity, neoplasms, poisonous plants, South America.

Sponenberg, D.P.; Ito, S. **Comparative pigmentation of sheep, goats, and llamas what colors are possible through selection.** In: *Colored Sheep and Wool: Exploring their Beauty and Function: the Proceedings of the World Congress on Coloured Sheep, U.S.A.* Edited by Kent Erskine. Black Sheep Press, Ashland, Or. c1989. p. 154-155. ill. ISBN: 0960873627.

NAL call no.: SF371.2.W67 1989

Descriptors: sheep, goats, llamas, color, selection, pigmentation.

St. Jean, G.; Bramlage, L.R.; Constable, P.D. **Repair of fracture of the proximal portion of the radius and ulna in a llama.** *Journal of the American Veterinary Medical Association.* May 1, 1989; 194(9): 1309-1311. ill. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, bone fractures, radius, ulna, surgical operations, repairing, case studies.

Thedford, T.R.; Johnson, L.W. **Infectious diseases of new world camelids (NWC).** *Veterinary Clinics of North America. Food Animal Practice.* Mar 1989; 5(1): 145-157. ISSN: 0749-0720.

NAL call no.: SF601.V535

Descriptors: Camelidae, llamas, alpaca, camels, infectious diseases, bacteria, viruses, fungi.

Turner, A.S. **Surgical conditions in the llama.** *Veterinary Clinics of North America. Food Animal Practice.* Mar 1989; 5 (1): 81-99. ill. ISSN: 0749-0720.

NAL call no.: SF601.V535

Descriptors: llamas, surgery, orthopedics, abdomen, head, urogenital system, bone fractures.

Warmington, B.G.; Wilson, G.F.; Barry, T.N. **Voluntary intake and digestion of ryegrass straw by llama X guanaco**

crossbreds and sheep. *Journal of Agricultural Science.* Aug 1989; 113(pt. 1): 87-91. ISSN: 0021-8596.

NAL call no.: 10 J822

Descriptors: guanacos, llamas, males, crossbreds, rams, kent or romney marsh, breeds of sheep, digestibility trials, feed intake, ryegrass straw, feces composition, liveweight gains, voluntary intake, New Zealand.

Wolcott, J. **High country camel.** *American Forestry.* Jan/Feb 1989; 95(1/2): 46-49. ill. ISSN: 0002-8541.

NAL call no.: 99.8 F762

Descriptors: forest recreation, forest trails, hiking, backpacking, llamas.

1988

Anonymous. **Are you considering a petting zoo? Don't overlook llamas.** *Rural Enterprise.* Summer 1988; 2(3): 22-23. ill.

NAL call no.: HD2346.U5R8

Descriptors: *Lama pacos*, zoological gardens, non-farm income, ancillary enterprises, diversification, Wisconsin.

Bustinza, A.V.; Burfening, P.J.; Blackwell, R.L. **Factors affecting survival in young alpacas (*Lama pacos*).** *Journal of Animal Science.* May 1988; 66(5): 1139-1143. ISSN: 0021-8812.

NAL call no.: 49 J82

Descriptors: alpaca, survival, genetic correlation, phenotypic correlation, heritability, birth weight, environmental factors.

Conboy, G.A.; O'Brien, T.D.; Stevens, D.L. **A natural infection of *Fascioloides magna* in a llama (*Lama glama*).** *Journal of Parasitology.* Apr 1988; 74: 345-346. ill. ISSN: 0022-3395.

NAL call no.: 448.8 J824

Descriptors: llamas, *Fascioloides magna*, infectivity, parasitic infections.

Esteban, L.R.; Thompson, J.R. **The digestive system of New World Camelids common digestive diseases of llamas.** *Iowa State University Veterinarian.* 1988; 50(2): 117-121. ISSN: 0099-5266.

NAL call no.: 41.8 V6425

Descriptors: llamas, digestive disorders, animal anatomy, physiology.

Gavier, D.; Kittleson, M.D.; Fowler, M.E.; Johnson, L.E.; Hall, G.; Nearenberg, D. **Evaluation of a combination of xylazine, ketamine, and halothane for anesthesia in llamas.** *American Journal of Veterinary Research.* Dec 1988; 49(12): 2047-2055. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: llamas, ketamine, halothane, xylazine, anesthesia, drug combinations, cardiovascular system, respiratory system, ventilation.

Abstract: Anesthesia induced by use of a combination of xylazine, ketamine, and halothane, under conditions of spontaneous and mechanically controlled ventilation, was evaluated in 5 llamas positioned in dorsal recumbency. Using chronically implanted catheters, systemic arterial blood pressure, pulmonary arterial pressure, right atrial pressure, heart rate and rhythm, cardiac output, blood pH and gas tensions, body temperature, and respiratory rate were measured before anesthesia induction (baseline), throughout the anesthetic period, and for 1 hour into the recovery period. During anesthesia, llamas undergoing spontaneous ventilation developed hypercapnia and respiratory acidosis. Cardiovascular function was decreased during both types of ventilation. The combination of xylazine, ketamine, and halothane in various doses and 2 ventilation procedures (spontaneous and controlled) provided a reliable method for general anesthesia in llamas, but marked cardiovascular depression developed during anesthesia maintenance with halothane. Spontaneous ventilation resulted in potentially clinically important respiratory acidosis.

Hawkey, C.M.; Gulland, F.M.D. **Haematology of clinically normal and abnormal captive llamas and guanaco.** *Veterinary Record* (London). Mar 5, 1988; 122(10): 232-234. ISSN: 0042-4900.

NAL call no.: 41.8 V641

Descriptors: llamas, guanacos, hematology, animal diseases, blood picture, hemoglobin value, hematocrit.

Llama Banner. Llama Banner, Manhattan, KS. 1988. v.: ill. (some col.). ISSN: 0899-6202.

NAL call no.: SF401.L6L5

Descriptors: llamas, periodicals, articles about llama care, producers, United States.

Ortega, I.M.; Franklin, W.L. **Feeding habitat utilization and preference by guanaco male groups in the Chilean Patagonia.** *Revista Chilena de Historia Natural.* 1988; 61: 209-216. ISSN: 0716-078X.

Descriptors: guanacos, male groups, habitat usage, feeding preferences, Patagonia, Chile.

Rebhun, W.C.; Jenkins, D.H.; Riis, R.C.; Dill, S.G.; Dubovi, E.J.; Torres, A. **An epizootic of blindness and encephalitis associated with a herpesvirus indistinguishable from equine herpesvirus I in a herd of alpacas and llamas.** *Journal of the American Veterinary Medical Association.* Apr 1, 1988; 192(7): 953-956. ill. ISSN: 0003-1488.

NAL call no.: 41.8 AM3

Descriptors: llamas, alpaca, Herpetoviridae, encephalitis, blindness animal, histopathology.

Rickard, L.G.; Bishop, J.K. **Prevalence of *Eimeria* spp. (Apicomplexa: Eimeriidae) in Oregon llamas.** *Journal of Protozoology.* Aug 1988; 35(3): 335-336. ISSN: 0022-3921.

NAL call no.: 439.8 J82

Descriptors: llamas, *Eimeria*, feces, mixed infection, diagnosis, Oregon.

Sumar, J. **Present and potential role of south American camelids in the high Andes.** *Outlook on Agriculture.* 1988; 17(1): 23-29. ill., maps. ISSN: 0030-7270.

NAL call no.: 10 OU8

Descriptors: Camelidae, alpaca, llamas, vicunas, guanacos, history, production potential, types, geographical distribution, physiology, reproductive behavior, taxonomy, mountain areas, South America.

Timm, K.I.; Watrous, B.J. **Urethral recess in two male llamas.** *Journal of the American Veterinary Medical Association.* Apr 1, 1988; 192(7): 937-938. ill. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, urethra, male animals, radiography, catheters, male genitalia.

1987

Bishop, J.K.; Rickard, L.G. **Fecal survey of llamas (*Lama glama*) in Oregon: incidental recovery of *Nematodirus battus*.** *Journal of the American Veterinary Medical Association.* Dec 15, 1987; 191(12): 1579-1581. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, *Nematodirus battus*, disease surveys, feces composition, incidence, ova, Nematoda, Oregon.

Cartwright, M.E.; McChesney, A.E.; Jones, R.L. **Vaccination related anthrax in three llamas.** *Journal of the American Veterinary Medical Association.* Sept 15, 1987; 191(6): 715-716. ill. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, anthrax, vaccines, vaccination, *Bacillus anthracis*.

Dargatz, D.A.; Johnson, L.W. **Castrating the llama: a step by step guide.** *Veterinary Medicine.* June 1987; 82(6): 625-627. ill. ISSN: 0042-4889.

NAL call no.: 41.8 M69

Descriptors: llamas, castration methods.

Delhon, G.A.; von Lawzewitsch, I. **Reproduction in the male llama (*Lama glama*), a South American camelid. I. Spermatogenesis and organization of the intertubular space of the mature testis.** *Acta Anatomica.* May 1987; 129(1): 59-66. ill. ISSN: 0001-5180.

NAL call no.: 444.8 AC82

Descriptors: llamas, male animals, reproductive ability, spermatogenesis, testes, Leydig cells, interstitial environment, Argentina.

Franklin, W.L. **My two decades with America's camels.** *International Wildlife*. 1987; 17(5): 34-43 + cover.

Descriptors: South American camelids, guanacos, vicunas, alpacas, llamas, biology, behaviors, care, wild populations.

Garmendia, A.E.; Palmer, G.W.; DeMartini, J.C.; McGuire, T.C. **Failure of passive immunoglobulin transfer: a major determinant of mortality in newborn alpacas (*Lama pacos*).** *American Journal of Veterinary Research*. Oct 1987; 48(10): 1472-1476. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: alpaca, newborn animals, mortality, immunoglobulins, colostral immunity.

Garmendia, A.E.; McGuire, T.C. **Mechanism and isotypes involved in passive immunoglobulin transfer to the newborn alpaca (*Lama pacos*).** *American Journal of Veterinary Research*. Oct 1987; 48(10): 1465-1471. ill. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: alpaca, newborn animals, immunoglobulins, colostral immunity.

Hart, Rosana. **Living with Llamas: Adventures, Photos, and a Practical Guide.** 2nd ed. (Part II revised). Juniper Ridge Press, Ashland, Or. c1987. 189 p., ill. ISBN: 091628901X.

NAL call no.: SF459.L52H37 1987

Descriptors: llamas as pets, animal welfare, anecdotal information, care and management.

Hochachka, P.W.; Mommsen, T.P.; Jones, J.H.; Taylor, C.R. **Substrate and O₂ fluxes during rest and exercise in a high altitude adapted animal, the llama.** *American Journal of Physiology*. Aug 1987; 253(2, pt. 2): R298-R305. ISSN: 0002-9513.

NAL call no.: 447.8 AM3

Descriptors: llamas, oxygen consumption, exercise, altitude, adaptation.

Kiorpes, A.L.; Kirkpatrick, C.E.; Bowman, D.D. **Isolation of *Giardia* from a llama and from sheep.** *Canadian Journal of Veterinary Research [Revue Canadienne de Recherche Vétérinaire]*. Apr 1987; 51(2): 277-280. ill. ISSN: 0830-9000.

NAL call no.: SF601.C24

Descriptors: sheep, llamas, Mongolian gerbil, *Giardia*, isolation, intestinal parasites, Wisconsin.

Krogdahl, D.W.; Thilsted, J.P.; Olsen, S.K. **Ataxia and hypermetria caused by *Parelaphostrongylus tenuis* infection in llamas.** *Journal of the American Veterinary Medical Association*. Jan 15, 1987; 190(2): 191-193. ill. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, *Parelaphostrongylus tenuis*, ataxia, movement disorders, drug therapy, avermectins, ivermectin, Virginia, New Mexico.

Levine, S.A.; Lindsay, W.A.; Beck, K.A. **The use of a silicone T tube to treat tracheal stenosis in a llama.** *Veterinary Surgery*. May/June 1987; 16(3): 241-244. ill. ISSN: 0161-3499.

NAL call no.: SF911.V43

Descriptors: llamas, trachea, atresia, surgical operations, strictures, tracheostomy.

Reiner, R.J.; Bryant, F.C.; Farfan, R.D.; Craddock, B.F. **Forage intake of alpacas grazing Andean rangeland in Peru.** *Journal of Animal Science*. Mar 1987; 64(3): 868-871. ISSN: 0021-8812.

NAL call no.: 49 J82

Descriptors: alpaca, feed intake, grazing, rangelands, digestibility, dry season, wet season, Peru.

Rivera, H.; Madewell, B.R.; Meghino, E.A. **Serologic survey of viral antibodies in the Peruvian alpaca (*Lama pacos*).** *American Journal of Veterinary Research*. Feb 1987; 48(2): 189-191. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: alpaca, antibodies, viral diseases, disease surveys, blood serum, susceptibility, Peru.

Strain, M.G.; Strain, S.S. **Caring for the premature llama.** *Veterinary Medicine*. Dec 1987; 82(12): 1243-1244. ISSN:

0042-4889.

NAL call no.: 41.8 M69

Descriptors: llamas, premature infants, medical treatment, therapeutic diets, obstetrics.

1986

Bernhardson, W. **Campesinos and conservation in the Central Andes: indigenous herding and conservation of the vicuna.** *Environmental Conservation*. Winter 1986; 13(4): 311-318. ill., maps. ISSN: 0376-8929.

NAL call no.: QH540.E55

Descriptors: vicunas, conservation, reserves, herds, land use, endangered species, economic development, natural resources, resource management, Peru, Chile.

Bianchi, N.O.; Larramendy, M.L.; Bianchi, M.S.; Cortes, L. **Karyological conservatism in South American camelids.** *Experientia*. June 15, 1986; 42(6): 622-624. ill. ISSN: 0014-4754.

NAL call no.: 475 EX7

Descriptors: camels, llamas, karyotypes, chromosome morphology, genetic variability, South America.

Cramer, C. **Big bucks from bizarre breeds.** *New Farm*. Sept/Oct 1986; 8(6): 20-24. ill. ISSN: 0163-0369.

NAL call no.: S1.N32

Descriptors: livestock farming, exotics, bison, *Cervus canadensis*, llamas, *Dama dama*, pheasants, prices, markets, Iowa.

Guttler, Eva. **Untersuchungen über die Haltung, Zucht, Physiologie und Pathologie der Fortpflanzung und Krankheiten von Lamas in den Anden Argentiniens. [Investigations on management, breeding, physiology and pathology of reproduction in llamas in the Andes of Argentina.]** *Inaugural Dissertation / Justus Liebig Universität Giessen, Fachbereich Veterinärmedizin und Tierzucht*; 1986 [no. 28]. Giessen: [s.n.], 1986. 169 p., ill., maps. Note: In German with summaries in English and Spanish.

NAL call no.: 41.2 G3642 1986 [no. 28]

Descriptors: llamas, breeding, care, physiology, pathology, reproduction.

Hart, Kelly; Goldsmith, Bobra. **Llama Training with Bobra Goldsmith: What Every Llama Should Know.** Juniper Ridge Press, Ashland, OR. c1986. 1 videocassette (114 min.): sd., col.

NAL call no.: Videocassette no. 1358

Descriptors: llamas, training methods, behaviors, restraint, handling.

Heller, R.; Cercasov, V.; Engelhardt, W.V. **Retention of fluid and particles in the digestive tract of the llama (*Lama guanacoe F. glama*).** *Comparative Biochemistry and Physiology. A. Comparative Physiology*. 1986; 83(4): 867-691. ill. ISSN: 0300-9629.

NAL call no.: QP1.C6

Descriptors: llamas, digestive tract motility, digestive juices, forestomach, particle size, retention.

Jefferson, R.T. Jr.; Franklin, W.L. **Behavioral considerations in the live capture of guanacos with spring-activated foot snarls.** *Iowa Academy of Science*. 1986; 93(2): 48-50. ISSN: 0085-2236.

NAL call no.: 500 IO93

Descriptors: guanacos, live capture, foot snarls, behavioral impacts of capture method.

Lassen, E.D.; Pearson, E.G.; Long, P.; Schmotzer, W.B.; Kaneps, A.J.; Riebold, T.W. **Clinical biochemical values of llamas: reference values.** *American Journal of Veterinary Research*. Oct 1986; 47(10): 2278-2280. ISSN: 0002-9645.

NAL call no.: 41.8 Am3A

Descriptors: llamas, blood analysis, blood serum, blood composition.

Reiner, R.J.; Bryant, F.C. **Botanical composition and nutritional quality of alpaca diets in two Andean rangeland communities.** *Journal of Range Management*. Sept 1986; 39(5): 424-427. ISSN: 0022-409X.

NAL call no.: 60.18 J82

Descriptors: alpacas, diet studies, botanical composition, nutritional value, rangelands, plant communities, seasonality, mountain grasslands, grazing, sites, Andes mountains, bofedal and atiplano site, Peru.

Schneider, H.E.; Pohle, V. **Vergiftungen durch Rhododendronblätter bei Lamas und Ziegen. [Intoxication Llamas and goats from rhododendron leaves.** In: *Erkrankungen der Zootiere: Verhandlungsbericht des 28. Internationalen Symposiums über die Erkrankungen der Zootiere vom 28. April bis 3. Mai 1986 in Rostock / herausgegeben von Rudolf Ippen und Hans Dieter Schroder.* Akademie Verlag, Berlin. 1986. p. 237-240. ISBN: 3055001478. Note: In German with summaries in English, German, Russian and French.

NAL call no.: SF996.I5 1986

Descriptors: goats, llamas, poisoning, ingestion toxicity, rhododendron leaves, therapy, detoxicants, *Atropinum sulfuricum*.

Sumar, J.; Garcia, M. **Reproductive physiology of the alpaca. [Fisiologia de reproduccion de la alpaca.]** In: *Nuclear and Related Techniques in Animal Production and Health: Proceedings of an International Symposium / jointly organized by the International Atomic Energy Agency. [et al.].* International Atomic Energy Agency, Vienna. 1986. p. 149-177. ill. ISBN: 9200102867.

NAL call no.: SF5.I57 1986

Descriptors: alpaca, reproductive physiology, genitalia, ovulation, progesterone, pregnancy, insemination.

Taylor/Gavin Communications. **All about Llamas.** Taylor/Gavin Communications, Bozeman, MT. 1986 videocassettes: sd., col., 1 guide to tape 2.

NAL call no.: Videocassette no. 1330

Descriptors: llamas, llama pack camping, care, breeding.

Abstract: Intended as a guide for llama owners, the video discusses basic care techniques including specific details and examples of breeding methods, birthing methods, newborn care and expectations and specific instruction for owners to assist in these procedures. Also discusses how to go packing with llamas instead of horses or mules and what types of equipment to carry.

1985

Baumgartner, W.; Zajac, A.; Hull, B.L.; Andrews, F.; Garry, F. **Parelaphostrongylis in llamas.** *Journal of the American Veterinary Medical Association.* Dec 1, 1985; 187(11): 1243-1245. ill. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, *Parelaphostrongylus tenuis*, parasitic nematodes, meningitis, paraplegia, histopathology, Ohio.

Abstract: Two llamas from a herd of 15 which shared pastures with white tailed deer in Southeast Ohio, USA, developed posterior ataxia and weakness. Hematological abnormalities were not found. The llamas were killed at three weeks. Nematodes were found in the cervical portion of and thoracic portions of the spinal cords. They were identified as immature female *Parelaphostrongylis tenuis*. Antemortem diagnosis was based on eosinophilic meningitis and paraplegia, and the fact that the pasture was shared with white tailed deer.

Bustinza Choque, Victor. Universidad Nacional Tecnica del Altiplano (Peru). Proyecto Piel de Alpaca. **Alpaca Hydres [Hides?].** Universidad Nacional del Altiplano, Instituto de Investigaciones para el Desarrollo Social del Altiplano, Puno [Peru]. [1985] 189 p., ill.

NAL call no.: HD9904.P53P867 1985

Descriptors: alpacas, wool industry, rural development projects, textile industry.

Cueto, Luis J.; F. Ponce, Carlos; Food and Agriculture Organization of the United Nations. **Management of vicuna: its contribution to rural development in the High Andes of Peru.** *FAO Conservation Guide.* Food and Agriculture Organization of the United Nations, Rome. 1985; no. 11, 38 p., ill. ISBN: 9251022240.

NAL call no.: S900.F6 no.11

Descriptors: vicuna, rural development, projects, Peru.

Llamas. [Bob Dal Porto, Elk Grove, Calif.], 1985- v.: ill. ISSN: 0887-9923.

NAL call no.: SF401.L6L636

Descriptors: llamas, periodicals.

Miller, W.J.; Hollander, P.J.; Franklin, W.L. **Blood typing South American camelids.** *Journal of Heredity*. 1985; 76: 369-371. ISSN 1465-7333 (online). ISSN 0022-1503 (print).

URL: <http://jhered.oxfordjournals.org/>

NAL call no.: 442.8 AM3

Descriptors: camelids, *Lama*, blood sampling, blood typing, hematological factors, South America.

Nakashima, M.; Noda, H.; Hasegaea, M.; Ikai, A. **The oxygen affinity of mammalian hemoglobins in the absence of 2,3 diphosphoglycerate in relation to body weight.** *Comparative Biochemistry and Physiology. A. Comparative Physiology*. 1985; 82(3): 583-589. ill. ISSN: 0300-9629.

NAL call no.: QP1.C6

Descriptors: sheep, man, llamas, pigs, cows, horses, rabbits, oxygen consumption, hemoglobin, body weight, diphosphoglycerate.

Purdy, C.M.; Lochner, F.K. **Proximal radial fracture in a llama.** *Equine Practice*. Nov/Dec 1985; 7(10): 12-15. ill. ISSN: 0162-8941.

NAL call no.: SF951.E62

Descriptors: llamas, radius, bone fractures, fixation, diagnosis.

Rabinovich, J.E.; Hernandez, M.J.; Cajal, J.L. **A simulation model for the management of vicuna populations.** *Ecological Modelling*. Dec 1985; 30(3/4): 275-295. ISSN: 0304-3800.

NAL call no.: QH541.15.M3E25

Descriptors: vicunas, *Vicugna vicugna*, population dynamics, population density, harvesting, mathematical models, computer simulation, resource management, decision making, conservation, profits, Peru, Argentina.

Seigle, N. **The allure of the llama.** *Farmline. U.S. Department of Agriculture, Economic Research Service*. Mar 1985; 6(3): 12. ISSN: 0270-5672.

Descriptors: llamas, breeding, prices, imports, wool.

Wiepz, D.W.; Chapman, R.J. **Non surgical embryo transfer and live birth in a llama.** *Theriogenology*. Aug 1985; 24 (2): 251-257. ill. ISSN: 0093-691X.

NAL call no.: QP251.A1T5

Descriptors: llamas, embryos animal, transferring, embryo mortality.

Wilson, P.; Franklin, W.L. **Male group dynamics and inter-male aggression of guanacos in southern Chile.** *Zeitschrift fur Tierpsychologie*. 1985; 69: 305-328.

Descriptors: guanacos, males, behavior in single gender groups, inter-male aggression, Chile.

1984

Bryant, F.C.; Farfan, R.D. **Dry season forage selection by alpaca (*Lama pacos*) in southern Peru.** *Journal of Range Management*. July 1984; 37(4): 330-333. ill. ISSN: 0022-409X.

Descriptors: alpacas, *Lama pacos*, grazing behavior, foraging, food habits, diets, seasonal behavior, dry season, vegetation, Peru.

Bustinza Choque, A.V. **The Camelidae of South America.** In: W. Ross Cockrill (Editor). *The Camelid: an All Purpose Animal*. Scandinavian Institute of African Studies, Uppsala. c1984 c1985; 1: 112-143. ill., maps. ISBN: 9171062289.

NAL call no.: SF401.C2K48 1979

Descriptors: Camelidae, alpaca, *Lama*, llamas, vicunas, guanacos, history, habitats, breeds, meat production, wool production, wool, South America.

Calle-Escobar, Rigoberto. **Animal Breeding and Production of American Camelids.** Printed by Talleres Graficos de Abril, Lima, Peru; [3-R Ranch, Mt. Shasta, CA, distributor], 1984. 358 p., [34] p. of plates, ill. (some col.).

NAL call no.: SF401.A4C3413 1984

Descriptors: alpacas, breeding, llamas, vicunas, guanacos.

Engelhardt, W. von; Rubsam, K., Heller, R. **The digestive physiology of camelids.** In: W. Ross Cockrill (Editor). *The Camelid: an All Purpose Animal*. Scandinavian Institute of African Studies, Uppsala. c1984 c1985; 1: 323-346. ISBN: 9171062289.

NAL call no.: SF401.C2K48 1979

Descriptors: Camelidae, camels, *Lama*, digestion, nutrition physiology, stomach motility, forestomach, digesta.

Heller, R.; Gregory, P.C.; Engelhardt, W. von. **Pattern of motility and flow of digesta in the forestomach of the llama (*Lama guanacoe F. glama*).** *Journal of Comparative Physiology. B. Biochemical, Systemic, and Environmental Physiology*. 1984; 154(5): 529-533. ill. ISSN: 0174-1578.

NAL call no.: QP33.J681

Descriptors: llamas, forestomach, motility, digesta.

Iowa State University Research Foundation; Franklin, W.L. **Guanacos of the Patagonia: A Study of Behavior and Ecology** (English and Spanish versions). 1984. Note: This videotape was directed by Megan Epler-Wood, Produced by and based upon the research of W.L. Franklin. It was the winner of 7 international film festival awards, including The Best International Non-Commercial Behavioral Film 1980-1985 by the Animal Behavior Society. Distributed by Walter H. Derlet International Film Bureau.

Availability: On file at Iowa State University Library: Media VIDE 007 697.

Descriptors: guanacos, behaviors, ecology, social structure, habitat, diets, reproduction, wild animal resource, fiber, South America.

Koch, M.D. **Canine tooth extraction and pulpotomy in the adult male llama.** *Journal of the American Veterinary Medical Association*. Dec 1, 1984; 185(11): 1304-1306. ill. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, teeth, dentistry, pulpotomy.

Marshall, R.C.; Zahn, H.; Blankenburg, G. **Possible identification of specialty fibers by electrophoresis.** *Textile Research Journal*. Feb 1984; 54(2): 126-128. ill. ISSN: 0040-5175.

NAL call no.: 304.8 T293

Descriptors: hair fibers, fleece, identification techniques, goats (mohair, cashmere), camel, alpaca, vicuna, angora rabbit.

Novoa, C.; Wheeler, J.C. **Llama and alpaca.** In: Ian L. Mason (Editor). *Evolution of Domesticated Animals*. Longman, London. 1984. p. 116-128. maps. ISBN: 0582460468.

NAL call no.: S41.E93

Descriptors: llama, alpaca, domestication, distribution, history, evolution.

Schnieder, T.; Kaup, F.J.; Drommer, W.; Thiel, W.; Rommel, M. **Zur Feinstruktur und Entwicklung von *Sarcocystis aucheniae* beim Lama. [Fine structure and development of *Sarcocystis aucheniae* of the llama.]** *Zeitschrift für Parasitenkunde Research*. 1984; 70(4): 451-458. ill. ISSN: 0044-3255. Note: In German with an English abstract.

NAL call no.: 442.8 Z33F

Descriptors: *Sarcocystis*, ultrastructure, life history, llamas, dogs, cysts passed through dog and cat, cyst morphology in muscle tissue.

Sumar, J.; Settergren, I. **Gonadal hypoplasia in the alpaca (*Lama pacos*) in Peru.** *10th International Congress on Animal Reproduction and Artificial Insemination, University of Illinois at Urbana Champaign, Illinois, USDA, June 10-14, 1984*. [University of Illinois at Urbana Champaign?, Urbana?, 1984?]. 3: 472.1-472.2.

NAL call no.: SF105.5.I5 1984

Descriptors: alpaca, hypoplasia, gonads, Peru.

Sumar, J. **Reproductive physiology in South American Camelids.** In: R.B. Land and D.W. Robinson *Genetics of Reproduction in Sheep*. Butterworths, London. 1984. p. 81-95. ill. ISBN: 0407003029.

NAL call no.: SF376.2.G46

Descriptors: alpaca, llamas, reproductive physiology, reproductive organs animal, South American Camelidae.

Torres, Hernan. **Distribucion y conservacion de la vicuna (*Vicugna vicugna*): informe. [Distribution and conservation of the vicuna.] *Informe Especial (International Union for Conservation of Nature and Natural Resources*, no. 1. International Union for Conservation of Nature and Natural Resources, IUCN, Gland, Switzerland. 1984. 15, [3], 14 p., ill. ISBN: 2880329035.**

NAL call no.: QL737.U54T67

Descriptors: vicunas, geographical distribution, wildlife conservation, South America.

1983

Fowler, M.E. **The jugular vein of the llama (*Lama peruana*): a clinical note cervical venous anatomy.** *Journal of Zoo Animal Medicine*. June 1983; 14(2): 77-78. ill. ISSN: 0093-4526.

NAL call no.: SF601.J6

Descriptors: llama, venous anatomy, jugular.

Franklin, W.L. **Contrasting socioecologies of South American wild camelids: the vicuna and the guanaco.** In: J.F. Eisenberg; D.G. Kleiman (Editors). *Advances in the Study of Mammalian Behavior. Special Publication.* American Society of Mammals. No. 7. 1983. p. 573-629.

Descriptors: guanacos, vicunas, wild animals, species comparison, social behaviors, habitat choices, natural history, South America.

Galotta, D.R.; Nuevo Freire, C.M.; Galotta, J.M. **Contribucion a la anatomia de los camelidos sudamericanos. I. Las Almohadillas digitales de la llama (*L. glama guanicoe f. d. glama*, Linnaeus 1758). [Anatomy of the South American Camelidae. I. Digital pads of the llama (*Lama glama guanicoe f. d. glama*, Linnaeus 1758).] *Revista de Ciencias Agrarias*. Buenos Aires, Facultad de Ciencias Agrarias, Universidad Catolica Argentina. July/Dec 1983; 4(3/4): 5-13. ill. Note: In Spanish.**

NAL call no.: S15.R39

Descriptors: llamas, foot structure, digital pads, external and internal anatomy.

Heller, Rolf. **Vormagenmotorik und Passage von festem und flussigem Inhalt durch die Vormagen des Lamas. [Forestomach motility and passage of solid and fluid content through the forestomach in llamas.] *Hohenheim. Universitat. Dissertation*; 1983 no. 3. Hohenheim: s.n., 1983. 101 p. Note: In German with an English summary.**

NAL call no.: 105.8 H686D 1983 no.3

Descriptors: llamas, gastric structure and action, forestomach.

Hofmann, Rudolf K. **El manejo de la vicuna silvestre. [Management of the Wild Vicuna.]** G.T.Z., Eschborn. 1983. 2 v.: ill. (some col.), maps. ISBN: 3880851131. Note: In Spanish.

NAL call no.: SF401.V5M3

Descriptors: vicuna, wildlife conservation research, Peru.

Khodadad, J.K.; Weinstein, R.S. **The band 3 rich membrane of llama erythrocytes: studies on cell shape and the organization of membrane proteins.** *Journal of Membrane Biology*. 1983; 72(3): 161-171. ill. ISSN: 0022-2631.

NAL call no.: QH573.J6

Descriptors: llamas, red blood cells, membrane structure and biochemistry.

Montes, G.; M. Stutzin; J. Correa; A. Glade. **Estudio hematologico, de proteinas totales y fibrinogeno en alpacas (*Lama pacos*) dela Provincia de Parinacota, Chile. [Haematological parameters, total plasmatic protein and fibrinogen in *Lama pacos* alpacas in Parinacota Province, Chile.] *Archivos de Medicina Veterinaria*. Facultad de Medicina Veterinaria, Universidad Austral de Chile, Valdivia. 1983; 15(1): 37-41. ISSN: 0301-732X. Note: In Spanish with an English summary.**

NAL call no.: SF604.A75

Descriptors: alpacas, blood composition, plasma protein, fibrinogen, hemoglobin, packed cell volume.

Reiner, R.; Bryant, F. **A different sort of sheep Alpacas, Peru.** *Rangelands*. June 1983; 5(3): 106-108. ill. ISSN: 0190-0528.

NAL call no.: SF85.A1R32

Descriptors: alpacas, Peru.

1982

Bartels, H. **Welche Eigenschaften begünstigen die Tylopoden für das Leben in grossen Höhen. [Which morphological and functional qualities favor life of Tylopoda at high altitude?]** *Verhandlungen der Deutschen Zoologischen Gesellschaft*. 1982; 75: 185-194. ISSN: 0070-4342. Note: In German with an English abstract.

NAL call no.: 410.9 D48

Descriptors: llamas, camels, Tylopoda, mountain areas, red blood cell characteristics, oxygen affinity, oxygen saturation, cardiac output.

Calle Escobar, Rigoberto. **Produccion y mejoramiento de la alpaca. [Production and Development of the Llama.]** Fondo del Libro, Banco Agrario del Peru, Lima, Peru. 1982. 334 p., 32 p. of plates, ill., ports. Note: In Spanish.

NAL call no.: SF401.L6C34

Descriptors: llamas, livestock production, economic factors, care and management.

Ellis, J. **The hematology of South American Camelidae and their in adaptation to altitude -- llamas, vicunas, guanacos, and alpacas.** *Veterinary Medicine / Small Animal Clinician*. Dec 1982; 77(12): 1796-1802. ill. ISSN: 0042-4889.

NAL call no.: 41.8 M69

Descriptors: llamas, vicunas, guanacos, alpacas, physiological and metabolic adaptations, mountainous areas, South America.

Espinoza, J.E.; McDowell, L.R.; Rodriguez, J.; Loosli, J.K.; Conrad, J.H.; Martin, F.G. **Mineral status of llamas and sheep in the Bolivian Altiplano Highlands.** *Journal of Nutrition*. Dec 1982; 112(12): 2286-2292. ISSN: 0022-3166.

NAL call no.: 389.8 J82

Descriptors: llamas, sheep, mountainous areas, nutritional status, minerals, Bolivia.

Fenwick, B.W.; Kock, M. **Complete choanal atresia in a llama.** *Journal of the American Veterinary Medical Association*. Dec 1, 1982; 181(11): 1409-1410. ill. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, disease of the colon.

Fowler, M.E. **Angular limb deformities in young llamas.** *Journal of the American Veterinary Medical Association*. Dec 1, 1982; 181(11): 1338-1342. ill. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llamas, congenital limb deformities.

Franklin, W.L. **Biology, ecology, and relationship of man to the South American camelids.** In: M.A. Mares; H.H. Genoways (Editors). *Mammalian Biology in South America. Special Publication Series*. Pymatuning Laboratory of Ecology, University of Pittsburg. 1982; 6: 457-487.

Descriptors: camelids, natural resource, biology, natural history, habitat, ecology, relationship with humans, South America.

Franklin, W.L. **Llama language: modes of communication in the South American camelids.** *Llama World*. 1982; 1(2):10-15.

Descriptors: llamas, communication, behaviors, vocalizations, South American camelids.

Kruska, D. **Hirngrossenänderungen bei Tylopoden während der Stammesgeschichte und in der Domestikation. [Changes of brain size in Tylopoda during phylogeny and caused by domestication.]** *Verhandlungen der*

Deutschen Zoologischen Gesellschaft. 1982; 75: 173-183. ill. ISSN: 0070-4342. Note: In German with an English abstract.

NAL call no.: 410.9 D48

Descriptors: llama, alpaca, Tylopoda, affects of domestication.

Loupal, G. **Gastrolithiasis bei einem *Lama*. [Gastric phytobezoariasis in a llama.] *Berliner und Munchener tierarztliche Wochenschrift*. Jan 1, 1982; 95(1): 14-16. ill. ISSN: 0005-9366. Note: In German with an English summary.**

NAL call no.: 41.8 B45

Descriptors: llamas, gastroliths.

Macedo, H. de. **Note on vicuna x alpaca hybrids crossbreeding, Peru.** *Zeitschrift fur Säugetierkunde [International Journal of Mammalian Biology]*. Apr 1982; 47 (2): 117-118. ill. ISSN: 0044-3468.

NAL call no.: QL700.Z4

Descriptors: vicuna, alpaca, hybrids, crossbreeding, characteristics, Peru.

Muir, S.; Pappagianis, D. **Coccidioidomycosis in the llama: case report and epidemiologic survey *Coccidioides immitis*.** *Journal of the American Veterinary Medical Association*. Dec 1, 1982; 181(11): 1335-1337. ill. ISSN: 0003-1488.

NAL call no.: 41.8 Am3

Descriptors: llama, *Coccidioides immitis*, parasitic disease, incidence of disease.

Ricciuti, E.R. **The vicuna victor or victim.** *Animal Kingdom*. June/July 1982; 85(3): 5-14, 18-23. ill. ISSN: 0003-3537.

NAL call no.: 410.9 N483B

Descriptors: vicunas, endangered species, wildlife conservation, slaughter, destruction of animals, wool production, Peru.

Stevens, E.J. **Highland agriculture in Peru. II. Alpaca and sheep farming.** *Review / Tussock Grassland and Mountain Lands Institut*. Dec 1982; (41): 22-28. ill. ISSN: 0577-9898.

NAL call no.: 60.9 C46

Descriptors: alpaca, sheep, livestock production, Andes, Peru.

Western, D. **Perspective: how many vicunas.** *Animal Kingdom*. June/July 1982; 85(3): 16-17. ill. ISSN: 0003-3537.

NAL call no.: 410.9 N483B

Descriptors: vicunas, endangered species, wildlife conservation, resource management, censuses.

1981

Brightman, A.H.; McLaughlin, S.A.; Brumley, V. **Keratoconjunctivitis in a llama *Staphylococcus aureus*, *Moraxella liquefaciens*.** *VMSAC, Veterinary Medicine / Small Animal Clinician*. Dec 1981; 76(12): 1776-1777. ill. ISSN: 0042-4889.

NAL call no.: 41.8 M69

Description: llama, bacterial eye infection, *Staphylococcus aureus*, *Moraxella liquifaciens*, description and treatment.

Cardozo, Armando. **Thoughts on the Production of Sheep and Camel-Like Animals in the Department of Oruno, Bolivia.** Academia Nacional de Ciencias de Bolivia, La Paz. 1981. 120, [8] p., ill. (some col.), maps.

NAL call no.: SF55.B5C37 1981

Descriptors: livestock, Bolivia Oruro Department., forage plants, sheep, *Lama* genus, vicuna.

Miller, R.M. **Azalea poisoning in a llama: a case report.** *Veterinary Medicine / Small Animal Clinician*. Jan 1981; 76(1): 104. ISSN: 0042-4889.

NAL call no.: 41.8 M69

Descriptors: azaleas, llamas, poison, effects, case report.

Rodriguez Claros, Tito. **Importancia de la influencia de factores ambientales sobre algunos caracteres de produccion de carne y lana en llamas (*Lama glama*).** [Importance of the influence of environmental factors on some characteristics of meat and wool production in llamas.] *Escuela Nacional de Agricultura. Tesis* 1981; no. 45. Colegio de Postgraduados, Institucion de Ensenanza e Investigacion en Ciencias Agricolas, Chapingo, Mexico. 1981. 127 p., ill. Note: In Spanish.

NAL call no.: S539.M6E82 1981 no. 45

Descriptors: llamas, meat, fleece, wool quality, environmental effects.

Shklair, I.L. **Natural occurrence of caries in animals animals as vectors and reservoirs of cariogenic flora.** *Proceedings of Animal Models in Cariology.* Information Retrieval, Washington, D.C. 1980 (pub. 1981). p. 41-51.

NAL call no.: QL55.A54

Descriptors: dental decay, llamas, livestock, *Streptococcus mutans*, decay causing microflora.

1980

Palmer, A.C.; Blakemore, W.F.; O'Sullivan, B.; Ashton, D.G.; Scott, W.A. **Ataxia and spinal cord degeneration in llama, wildebeeste and camel.** *Veterinary Record* (London). July 5, 1980; 107(1): 10-11. ISSN: 0042-4900.

NAL call no.: 41.8 V641

Descriptors: camels, muscular coordination, spinal cord, neural tissue functionality, llama, wildebeeste.

Steven, D.H.; Burton, G.J.; Sumar, J.; Nathanielsz, P.W. **Ultrastructural observations on the placenta of the alpaca (*Lama pacos*).** *Placenta.* Jan/Mar 1980; 1(1): 21-32. ill. ISSN: 0143-4004.

NAL call no.: QP281.P53

Descriptors: alpacas, placenta, morphology, South America.

Van Nice, P.; Black, C.P.; Tenney, S.M. **A comparative study of ventilatory responses to hypoxia with reference to hemoglobin O₂ affinity in llama, cat, rat, duck and goose.** *Comparative Biochemistry and Physiology. A.*

Comparative Physiology. 1980; 66(2): 347-350. ill. ISSN: 0300-9629.

NAL call no.: QP1.C6

Descriptors: camel, llama, cat, rat, duck, goose, oxygen affinity, hypoxia, lungs, hemoglobin, breathing behavior.

1979

Franklin, W.L. **Territorial marking behavior by the South American vicuna.** In: C. Muller-Schwarze; R.M. Silverstein (Editors). *Chemical Signals: Vertebrates and Aquatic Invertebrates.* Plenum Press, NY. 1979. p. 53-66. ISBN: 0306403390.

NAL call no.: QL776.S94 1979

Descriptors: vicunas, wild animals, territorial behavior, territorial marking, South America.

Rubsamen, K.; Engelhardt, W. von. **International Symposium on Ruminant Physiology, 5th, Clermont Ferrand, 1979. Morphological and functional peculiarities of the llama forestomach.** *Annales de Recherches Vétérinaires.* 1979; 10(2/3): 473-475. ill. ISSN: 0003-4193.

NAL call no.: SF602.A5

Descriptors: llama, forestomach, structure, function.

1978

Brown, T.T.; Jordan, H.E.; Demorest, C.N. **Cerebrospinal parelophostroglylosis in llamas.** *Journal of Wildlife Diseases.* October 1978; 14(4): 441-444. ISSN: 0090-3558.

NAL call no.: 41.9 W64B

Descriptors: llamas, meningeal worms, parasitic nematodes, *Parelaphostrongylus tenuis*, neurologic disease, Texas.

Abstract: Four llamas near Houston Texas, developed clinical symptoms of neurologic disease. The tissues of two of

the animals showed lesions consistent with a migrating parasite. An adult nematode with the morphology of *Parelophostrongylus tenuis* was found in the brain of one of the animals.

Engelhardt, Wolfgang. **Renale Harnstoffexkretion und renale Konzentrationsfähigkeit beim Lama (*Lama glama*) bei proteinarmen Diäten. [Renal urea excretion and renal concentration capacity of llama (*Lama glama*) in protein poor diet.]** *Hohenheim. Universitat. Dissertation.* 1978, no. 7. Hohenheim: s.n., 1978. 92 p., ill. Note: In German.

NAL call no.: 105.8 H686D 1978 no. 7

Descriptors: llamas, protein, nutrition, kidney functions.

Franklin, W.L. ***Socioecology of the vicuna.*** Utah State University, Logan. Ph.D. dissertation. 1978. 169 p.

Descriptors: vicuna, habitat, ecology, biology, social organization, social behaviors, natural history.

Hinderer, Sieghard. **Kinetik des Harnstoff Stoffwechsels beim Lama bei proteinarmen Diäten. [Kinetics of urea metabolism in llama in protein poor diet.]** *Hohenheim. Universitat. Dissertation,* 1978, no. 45. Hohenheim: s.n., 1978. 123 p., ill. Note: In German with an English summary.

NAL call no.: 105.8 H686D 1978 no. 45

Descriptors: llamas, physiology, nutrition, diet, urea metabolism.

Hofmann, Rudolf. **Utilizacion de la vicuna en el Peru. [Utilization of vicunas in Peru]. [Nutzung der Vikunjas in Peru].** *Deutsche Gesellschaft fur Technische Zusammenarbeit. Schriftenreihe der Deutschen Gesellschaft fur Technische Zusammenarbeit.* no. 44. Eschborn: [s.n.], 1978. 47 p., col. ill., maps. ISBN: 3880850488. Note: In Spanish, English and German.

NAL call no.: HD1417.B8 no. 44

Descriptors: vicunas, wild life management, biology, continually growing incisors, fine thick fleece, social structure, use, care, economic value, habitat, repopulation project, project goals and objectives, species conservation, Andean farmers, Pampas Galeras Vicunga Reserve, Peruvian puna, vegetation, Peru.

Sumar, J.; Smith, G.W.; Mayhua, E.; Nathanielsz, P.W. **Adrenocortical function in the fetal and newborn alpaca.** *Comparative Biochemistry and Physiology. A. Comparative Physiology.* 1978; 59(1): 79-84. Ref.

NAL call no.: QP1.C6

Descriptors: alpaca, fetus, adrenal gland, function.

1977

Braunitzer, G.; Schrank, B.; Stangl, A.; Bauer, C. **Regulation of respiration at high altitudes and its molecular interpretation: The sequence of beta chains of hemoglobins from pig and llama.** *Hoppe-Seyler's Zeitschrift für Physiologische Chemie.* July 1977; 358(7): 921-925. Ref.

NAL call no.: 384 Z38

Descriptors: llama, pig, sow, hemoglobin, structural differences, adaptations for high altitudes.

Braunitzer, G.; Schrank, B.; Stangl, A. **The sequence of alpha chains from pig and llama hemoglobins (aspects on the respiration in highlands).** *Hoppe-Seyler's Zeitschrift für Physiologische Chemie.* Mar 1977; 358(3): 409-412. Ref.

NAL call no.: 384 Z38

Descriptors: llamas, pigs, hemoglobin, molecular structure.

Cardozo, Armando. **Bibliografia de los camelidos sudamericanos. [Bibliography of South American Camelidae.]** Universidad Nacional de Jujuy, Jujuy, Argentina. 1977. ix, 93 p.

NAL call no.: Z5074.C2C3

Descriptors: Camelidae, bibliography, llamas, South American camelids.

Orlove, Benjamin S. **Alpacas, sheep, and men: the wool export economy and regional society of southern Peru.** *Studies in Anthropology Series.* Academic Press, New York. 1977. xx, 270 p., ill.

NAL call no.: HD9904.P53S56

Descriptors: wood trade and industry, alpacas, sheep rural economy, Sicuani region, Peru.

1976

Bezrukov, N.I. **The growth oocytes and folliculi in Tylopoda.** *Arkhiv Anatomii, Gistologii i Embriologii.* May 1976; 70(5): 32-38. Ref.

NAL call no.: QL801.A7

Descriptors: camelids, reproduction, egg development, suborder Tylopoda.

Engelhardt, W.; Engelhardt, W. von. **Diminished renal urea excretion in the llama at reduced food intake.** In: *Tracer Studies on Non-Protein Nitrogen for Ruminants III; Proceedings of a Research Coordination Meeting*, 1976, p. 61-62.

NAL call no.: SF98.N5R3 1976

Descriptors: llama, kidney, urea excretion, food restrictions, impacts.

Heath, D.; Smith, P.; Harris, P. **Clara cells in the llama.** *Experimental Cell Biology.* 1976; 44(2): 73-82.

NAL call no.: 448.8 SCH9

Descriptors: llama, bronchioles, clara cells.

Hinderer, S.; Engelhardt, W. von. **Entry of blood urea into the rumen of the llama.** In: *Tracer Studies on Non Protein Nitrogen for Ruminants III; Proceedings of a Research Coordination Meeting*, 1976, p. 59-60.

NAL call no.: SF98.N5R3 1976

Descriptors: llama, rumen metabolism, urea processing.

Lewis, J.H. **Comparative hematology: studies on Camelidae.** *Comparative Biochemistry and Physiology. A. Comparative Physiology.* 1976; 55(4): 367-371.

NAL call no.: QP1.C6

Descriptors: camels, llamas, guanacos, blood studies, comparisons.

Rubsamen, Klaus. **Secretion and resorption in the cardiac gland zone of the llama.** Hohenheim. Universitat. Dissertation. 1976, no. 27] Hohenheim: [s.n.], 1976. 82 p., ill.

NAL call no.: 105.8 H686D 1976 no. 27

Descriptors: llama, cardiac gland, changes.

Sato Sato, A.; Kian Tobaru, O.T. **On the morphology of the cerebellum of the alpaca (*Lama pacos*).** *Zentralblatt für Veterinärmedizin. Reihe C. Anatomia, Histologia, Embryologia.* June 1976; 5 (2): 105-112. Ref.

NAL call no.: SF761.Z4

Descriptors: alpacas, brain structure, cerebellum.

Sillau, A.H.; Cueva, S.; Valenzuela, A.; Candela, E. **O₂ transport in the alpaca (*Lama pacos*) at sea level and at 3,300 meters.** *Respiration Physiology.* Aug 1976; 27(2): 147-155. Ref.

NAL call no.: QP121.A1R4

Descriptors: llamas, oxygen transport, high elevations.

Treus, V.D.; Lobanov, N.V. **Acclimatization of Tylopoda in Askania Nova.** *Vestnik Zoologii.* Jan/Feb 1976; 1: 3-9, map. Ref.

NAL call no.: QL1.V4

Descriptors: llamas, camels, breeding, suborder Tylopoda, adaption to USSR.

1975

Baumann, I.; Bligh, J.; Vallenias, P.A. **Temperature regulation in the alpaca (*Lama pacos*): thermoregulatory-consequences and inconsequences of injections of noradrenaline, 5 hydroxytryptamine, carbamyl choline and**

prostaglandin E1 into a lateral cerebral ventricle. *Comparative Biochemistry and Physiology. A. Comparative Physiology.* Jan 1975; 50(1): 105-109. Ref.

NAL call no.: QP901.C6

Descriptors: alpaca, body temperature regulation, brain, injections.

Bligh, J.; Baumann, I.; Sumar, J.; Pocco, F. **Studies of body temperature patterns in South American Camelidae.** *Comparative Biochemistry and Physiology. A. Comparative Physiology.* Apr 1, 1975; 50(4A): 701-708. Ref.

NAL call no.: 444.8 C73

Descriptors: alpaca, llama, vicuna, body temperature.

Fernandez Baca, S. **Alpaca raising in the high Andes.** *World Animal Review.* 1975; 14: 1-8. Ref.

NAL call no.: SF191.W6

Descriptors: alpacas, livestock production systems, Peru, Bolivia.

Franklin, W.L. **Guanacos in Peru.** *Oryx.* 1975; 13(2): 191-202. ISSN: 0030-6053.

NAL call no.: 410 OR9

Descriptors: guanacos, behavior, populations, socioecology, Peru.

Hinderer, S.; Engelhardt, W. von. **Urea metabolism in the llama.** *Comparative Biochemistry and Physiology. A. Comparative Physiology.* Dec 1, 1975; 52(4A): 619-622. Ref.

NAL call no.: QP1.C6

Descriptors: llama, diet, urea.

Leite, R.C.; H. Negrelli Filho; C.H. Langenegger. **Corynebacterium equi infection in a llama (*Lama glama*).** *Pesquisa Agropecuária Brasileira. Série Veterinaria.* 1975; 10(8): 57-59. Ref.

NAL call no.: SF604.P4

Descriptors: llama, bacterial infections, *Corynebacterium equi*.

Pardo, M.; Grauer, R.C.; Swart, J.H.; Hartsock, R.J. **Scanning electron microscopy of elliptocytes in man and llama.** *Proceedings Electron Microscopy Society of America.* 1975; 33: 510-511.

NAL call no.: QH201.E4

Descriptors: humans, llamas, elliptocytes, morphology.

Reynafarje, C.; Faura, J.; Villavinencio, D.; Curaca, A.; Reynafarje, B.; Oyola, L.; Contreras, L.; Vallenias, E.; Faura, A. **Oxygen transport of hemoglobin in high altitude animals (Camelidae).** *Journal of Applied Physiology.* May 1975; 38(5): 806-810. Ref.

NAL call no.: 447.8 J825

Descriptors: llamas, alpacas, vicunas, hemoglobin efficiency, oxygen transport.

Rubsamen, K.; Engelhardt, W. von. **Water metabolism in the llama.** *Comparative Biochemistry and Physiology. A. Comparative Physiology.* Dec 1, 1975; 52(4A): 595-598. Ref.

NAL call no.: QP1.C6

Descriptors: llama, goat, water physiology.

1974

Angel Ferrari, D.R. **Two treatments applied to vicunas (*Vicugna*) in captivity.** *Gaceta Veterinaria.* Apr 1974; 36(286): 236-243. Ref.

NAL call no.: 41.8 G112

Descriptors: vicunas, sterility, treatment, Argentina.

Calle Escobar, R. **Role of nutrition in rearing alpacas.** *Ovina.* Nov/Dec 1974; 37(435/436): 16-17.

NAL call no.: 45.8 OV4

Descriptors: alpacas, diet.

Cardozo, A. **Factors in livestock production in the high Andes.** *Informes de Conferencias, Cursos y Reuniones, IICA Interamericano Instituto Ciencias Agricolas.* 1974; 54: 152-182.

NAL call no.: S401.I56

Descriptors: cattle, sheep, goats, llamas, alpacas, livestock production, meat, milk, wool, South America.

Engelhardt, W. von; Becker, G.; Engelhardt, W.; Hauffe, R.; Hinderer, S.; Rubsam, K.; Schneider, W. **Energy, water and urea metabolism in the llama.** In: *Tracer Studies on Non-Protein Nitrogen for Ruminants II; Proceedings of a Research Coordination Meeting & Panel.* 1974 (pub. 1975), p. 111-122. Ref.

NAL call no.: SF95.P37 1974

Descriptors: llama, metabolism, energy, water, urea.

Franklin, W.L. **The social behavior of the vicuna.** In: V. Geist; F. Walther (Editors). *The Behavior of Ungulates and its Relation to Management.* IUCN, Morges. 1974. p. 447-487.

Descriptors: vicunas, wild animals, behaviors, social structures, concerns for sustained management.

Grunberg, W.; Preisinger, A. **Bobierrit newberyit concretions in the glandular sacs of the forestomach of *Lama lama*.** *Experienti.* Sept 15, 1974; 30(9): 1047-1048.

NAL call no.: 475 EX7

Descriptors: llamas, gastric concretions, fore stomach sacs.

Kubicek, J. **Semen collecting in alpaca with a urethral fistel.** *Zeitschrift für Tierzucht und Züchtungsbiologie.* Mar 1974; 90(4): 335-351. Ref.

NAL call no.: 442.8 Z35

Descriptors: alpaca, semen collection, fistula to urethra.

Ortiz, C.; Cavero, J.; Sillau, H.; Cueva, S. **The parotid saliva of the alpaca (*Lama pacos*).** *Research in Veterinary Science.* Jan 1974; 16(1): 54-56.

NAL call no.: 41.8 R312

Descriptors: alpacas, parotid saliva analysis.

Schneider, W.; Hauffe, R.; Engelhardt, W. von. **Energy and nitrogen exchange in the llama.** *Publication / European Association for Animal Production.* 1974; 14: 127-130.

NAL call no.: 49.9 EU7

Descriptors: llamas, nutrition, energy/nitrogen balances.

Sumar, K.J. **The South American Camelidae as production factors in the high Andes.** *Informes de Conferencias, Cursos y Reuniones, IICA Interamericano Instituto Ciencias Agricolas.* 1974; 54: 311-322.

NAL call no.: S401.I56

Descriptors: llamas, alpacas, livestock production, rural economy, high elevations, Andes, South America.

1973

Eckerlin, R.H.; Stevens, C.E. **Bicarbonate secretion by the glandular saccules of the llama stomach.** *Cornell Veterinarian.* July 1973; 63(3): 436-445. Ref.

NAL call no.: 41.8 C81

Descriptors: llamas, gastric secretions, bicarbonate.

Franklin, W.L. **Conservation of the vicuna in Peru.** In: P. Jackson (Editor). *World Wildlife Yearbook 1972-73.* World Wildlife Fund, Morges. 1973. p. 209-232.

Descriptors: vicuna, wild animals, natural resource conservation, recommendations, populations levels, mountain areas, Peru.

Hintz, H.F.; Schryver, H.F.; Halbert, M. **A note on the comparison of digestion by New World camels, sheep and**

ponies. *Animal Production*. June 1973; 16(3): 303-305. Ref.

NAL call no.: 49 AN55

Descriptors: camelids, New World camels, llamas, alpacas, vicunas, guanacos, ponies, digestion of feed, comparison study.

1972

Banchero, N.; Grover, R.F. **Effect of different levels of simulated altitude on O₂ transport in llama and sheep.**

American Journal of Physiology. May 1972; 222(5): 1239-1245. Ref.

NAL call no.: 447.8 AM3

Descriptors: llama, sheep, oxygen transport, effects of altitude, experiment.

Calle Escobar, R. **Rearing and improvement of alpacas.** *Peru Ministerio de Agricultura Boletin*. Mar 1972; no. 19, 65 p.

NAL call no.: S15.P47

Descriptors: alpacas, breeding, care and management, Peru.

Cummings, J.F.; Munnell, J.F.; Vallenas, A. **The mucigenous glandular mucosa in the complex stomach of two New World camelids, the llama and guanaco.** *Journal of Morphology*. May 1972; 137(1): 71-109. Ref.

NAL call no.: 444.8 J826

Descriptors: llamas, guanacos, gastric mucosa.

Engelhardt, H.P.W. von. **Resorption and secretion in the rumen of the llama.** *Zentralblatt fur Veterinarmedizin*.

Reihe A. Feb 1972; 19(2): 117-132. Ref.

NAL call no.: 41.8 Z5

Descriptors: llama, rumen, fluid metabolism.

Miller, P.D.; Alexander, A.F.; Lebel, J.L.; Banchero, N. **Iatrogenic myocardial infarction and mitral valve insufficiency in a llama (*Lama glama*).** *American Journal of Veterinary Research*. Mar 1972; 33(3): 639-647. Ref.

NAL call no.: 41.8 AM3A

Descriptors: llamas, cardiac conditions, cardiac valves.

1971

Fernandez-Baca A., Saul. **La alpaca: reproduccion y crianza. [The alpaca: reproduction and breeding].** *Boletin de Divulgacion (Universidad Nacional Mayor de San Marcos. Instituto Veterinario de Investigaciones Tropicales y de Altura. Centro de Investigacion)*, no. 7. IVITA, Lima, Peru. [1971] 43 p., ill. "Direccion de Investigacion, Universidad Nacional Mayor de San Marcos." "Julio de 1971." "Contrato U.N.M. de S.M.--Zona Agraria XII (Puno) del Ministerio de Agricultura." Errata slip inserted. Note: In Spanish with and English summary.

NAL call no.: SF401.A4F47 1971

Descriptors: alpacas, reproduction, breeding, Peru.

Franklin, W.L. **Vicuna survey, Peru.** In: P. Jackson (Editor). *World Wildlife Yearbook 1970-71*. World Wildlife Fund, Morges. 1971. p. 145-148.

Descriptors: vicuna, population levels, survey, high mountain areas, wild animals, natural resource assessment, Peru.

Guerrero, C.A.; Hernandez, J.; Bazalar, H.; Alva, J. ***Eimeria macusaniensis* n. sp. (Protozoa: Eimeriidae) of the alpaca, *Lama pacos*.** *Journal of Protozoology*. Feb 1971; 18(1): 162-163.

NAL call no.: 439.8 J82

Descriptors: alpaca: parasitic protozoa, *Eimeria macusaniensis*, new species.

Vallenas, A.; Cummings, J.F.; Munnell, J.F. **A gross study of the compartmentalized stomach of two New World camelids, the llama and guanaco.** *Journal of Morphology*. Aug 1971; 134(4): 399-424. Ref.

NAL call no.: 444.8 J826

Descriptors: llamas, guanacos, gross stomach anatomy.

Vallenas, Augusto. *Structural and Functional Studies of the Llama and Guanaco Stomach*. University Microfilms, Ann Arbor, Mich. 1971. ix, 93 leaves.

NAL call no.: DISS 70 23,092

Descriptors: llama, guanaco, stomach anatomy and function.

Vallenas P.A.; Stevens, C.E. **Volatile fatty acid concentrations and pH of llama and guanaco forestomach digesta**. *Cornell Veterinarian*. Apr 1971; 61(2): 238-252.

NAL call no.: 41.8 C81

Descriptors: llama, guanaco, cattle, sheep, forestomach, acidity of digesta, comparison study.

1970

Fernandez Baca, S.; Hansel, W.; Novoa, C. **Corpus luteum function in the alpaca**. *Biology of Reproduction*. Oct 1970; 3(2): 252-261.

NAL call no.: QL876.B5

Descriptors: alpaca, ovarian follicle, corpus luteum, role in reproduction, hormones.

Fernandez Baca, S.; Madden, D.H.L.; Novoa, C. **Effect of different mating stimuli on induction of ovulation in the alpaca**. *Journal of Reproduction and Fertility*. July 1970; 22(2): 261-267.

NAL call no.: 442.8 J8222

Descriptors: alpaca, mating behavior, relationship to ovulation.

Fernandez Baca, S.; Hansel, W.; Novoa, C. **Embryonic mortality in the alpaca**. *Biology of Reproduction*. Oct 1970; 3(2): 243-251.

NAL call no.: QL876.B5

Descriptors: alpaca, embryo mortality.

Fernandez Baca, Saul. *Luteal Function and the Nature of Reproductive Failures in the Alpaca*. 1970. xii, 173 leaves.

NAL call no.: DISS 70 23,109

Descriptors: alpaca, ovaries, reproductive physiology and dysfunction.

Novoa, C. **Reproduction in Camelidae**. *Journal of Reproduction and Fertility*. June 1970; 22(1): 3-20.

NAL call no.: 442.8 J8222

Descriptors: camels, llamas, alpacas, reproduction, anatomy, structure, hormones, behavior.

Pattyn, S.R.; Antoine Portaels, F.; Kageruka, P.; Gigase, P. ***Mycobacterium microti* infection in a zoo llama: *Lama vicugna* (Molina)**. *Societe Royale de Zoologie d'Anvers Bulletins*, Sept 1970; 51: 17-24.

NAL call no.: 410.9 SO193

Descriptors: llama, *Mycobacterium microti*, captive animal, case study.

1969

Gade, D.W. **The llama, alpaca and vicuna: fact vs. fiction** *Journal of Geography*. Sept 1969; 68(6): 339-343, map.

NAL call no.: 278.8 J82

Descriptors: llama, alpaca, vicuna, facts about husbandry, care, behavior, life history.

Steklenev, E.P. **On the anatomo-morphological characteristics of the structure and physiological function of the oviduct in camels (*Lama* and *Camelus* genera)**. *International Congress on Animal Reproduction and Artificial Insemination [Proceedings]*, 1968 (pub. 1969), 6th congr., 1: 71-74.

NAL call no.: SF105.5.I5

Descriptors: camels, genus *Lama*, oviduct, structure, anatomy, physiology.

1968

Foote, W.C.; England, B.G.; Wilde, M.E. **Llama reproduction: a South American problem.** *Utah Science*. June 1968; 29(2): 43-45.

NAL call no.: 100 Ut1F

Descriptors: reproduction, breeding rates.

Heath, D.; Harris, P., Castillo, Y.; Arias-Stella, J. **Histology, extensibility and chemical composition of the pulmonary trunk of dogs, sheep, cattle and llamas living at high altitude.** *Journal of Pathology and Bacteriology*. July 1968; 96(1): 161-167.

NAL call no.: 448.8 J82

Descriptors: pulmonary systems, lungs, anatomy, structure, composition, effects of high altitude.

San Martin, M.; Copaira, M., Zuniga, J.; Rodreguez, R.; Bustinza, G.; Acostaand, L. **Aspects of reproduction in the alpaca.** *Journal of Reproduction and Fertility*. Aug. 1968; 16(3): 395-399.

NAL call no.: 442.8 J8222

Descriptors: reproduction, behavior, anatomy, sex organs.

Souteyrand-Boulenger, J.D. **Muscle articulaire de la hanche chez les camelides. [The articularis coxae muscle in the camelids.]** *Revue d'Elevage et de Medecine Veterinaire des Pays Tropicaux*. 1968; 21(3): 289-292. Note: In French with English and Spanish summaries.

NAL call no.: 41.8 R3262

Descriptors: gluteal musculature, morphology, disposition of the articularis coxae muscle, Bactrian camel, dromedary, llama.

1967

Chavez, Carlos E.; Universidad Nacional Mayor de San Marcos. Facultad de Medicina Veterinaria. **Environmental Factors Influencing Parasites and Parasitic Diseases of Economical Importance in Ruminants: Cattle, Sheep, Alpacas.** Lima, Peru, University of San Marcos, 1967, 1 v. (various pagings) illus., tables.

NAL call no.: SF810.C5

Descriptors: alpacas, cattle, sheep, parasites, parasitic diseases of economic importance, Peru.

Cozzi, P. **Research on the physical and chemical properties of wool and fleece production of animals raised in tropical and subtropical environment.** *Rivista di Agricoltura Subtropicale e Tropicale*. Jan./Mar. 1967; 61(1/3): 3-10.

NAL call no.: 26 Ag82

Descriptors: alpacas, Latin America, wool and fleece production.

Guerrero, C.A.; Chavez, C.A. **New parasitic nematodes reported in alpacas (*Lama pacos*) from Peru, with a description of *Spiculopteragia peruvianus* n. sp. (Sp.).** *Boletin Chileno de Parasitologia*. Oct./Dec. 1967; 22(4): 147-150. Ref. Note: English summary.

NAL call no.: 436.9 C43

Descriptors: new species, parasitic nematode, taxonomic description.

Hindmarsh, W.L. **The introduction of llamas into New South Wales.** *Australian Veterinary Journal*. Aug. 1967; 43(8): 304.

NAL call no.: 41.8 Au72

Descriptors: llama, history of importation, Australia.

Leupold, J. **[The new world Tylopoda.]** *Deutsche Tierarztliche Wochenschrift*. Aug. 15, 1967; 74(16): 414-417. Ref. Note: In German with an English summary.

NAL call no.: 41.8 D482

Descriptors: New World camels.

1966

Alvarado, J.; Astrom, G.; Heath, G.B.S. **An investigation into remedies of sarna (Sarcoptic mange) of alpacas in Peru.** *Experimental Agriculture*. Oct. 1966; 2(4): 245-254. Ref.

NAL call no.: 10 Ex72

Descriptors: mange, parasites of the skin, *Sarcoptic scabiei*, *Psoroptes communis*.

Young, E. **Chorioptic mange in the alpaca, *Lama pacos*.** *Journal of the South African Veterinary Medical Association*. Dec. 1966; 37(4): 474-475.

NAL call no.: 41.8 So8

Descriptors: mange, skin parasites, *Chorioptes*.

1965

Bonadonna, T. **[The auchenidae of South America.]** *Recueil de Medecine Veterinaire*. Aug. 1965; 141(8): 749-771. Note: In French with an English summary.

NAL call no.: 41.8 R24

Descriptors: camelids, South America, alpacas, vicunas, veterinary medicine.

Murra, J.V. **Herds and herders in the Inca state.** In: Anthony Leeds; Andrew P. Vayda (Editors). *Man, Culture, and Animals; the Role of Animals in Human Ecological Adjustments*. 1965. p. 185-215. Ref.

NAL call no.: 411 L51

Descriptors: alpacas, llamas, rural life, Peru, Incas, herding agricultural systems.

Universidad Nacional Mayor de San Marcos de Lima. Facultad de Medicina Veterinaria. *Parasites and Parasitic Diseases of Lama pacos (Alpacas) in Peru* by C.E. Chavez, and C.A. Guerrero. Lima, [Peru]. 1965. 9 p. Ref.

NAL call no.: 436 Un322

Descriptors: alpacas, parasites, parasitic diseases, pathobiology, descriptions of microorganism, Peru.

Vallenas, P.A. **Some physiological aspects of digestion in the alpaca (*Lama pacos*).** *International Symposium on the Physiology of Digestion in the Ruminant*. 2nd, 1964, pub. 1965. p. 147-158. Ref.

NAL call no.: 444.9 In86

Descriptors: physiology, stomach, intestines, digestive process.

1964

Blackburn, D. **Vicuna-the royal fiber.** *Wool Review*. June 1964; 37(518): 29.

NAL call no.: 45.8 W886

Descriptors: wool, use in royal garments, Incas, South America.

Hugh-Jones, M.E., Bacon, A.J. **The "Augenidos" of South America.** *The Veterinarian* (Oxford). Sept. 1964; 2(3): 251-255. Note: Part III b of the *Report of the Cambridge Trans-American Expedition, 1960-61*.

NAL call no.: 41.8 V6467

Descriptors: llama family in South America, camelids.

Nachtigall, H. **Woker stammt das Nomadentum? Kulturgeschichtliche Probleme des indianischen Viehzuchtums. [What is the origin of nomadism? Problems in the history of civilization on the state of Indian animal husbandry.]** *Die Umschau*. Jan. 15, 1964; 64(2): 47-50, map. Ref. Note: In German.

NAL Call no: 474 Um7

Descriptors: llamas, alpacas, South America, herding, nomads, historical analysis, animal care and husbandry.

Wagenaar, G. [*Sarcoptic scabiei* in a llama.] *Tijdschrift voor Diergeneeskunde*. [Netherlands Journal of Veterinary Science.] May 1, 1964; 89(9): 623-624. Note: In Dutch.

NAL call no.: 41.8 T431

Descriptors: mange, *Sarcoptes*, parasitic mites, skin infection.

Wood, S. **The production of alpaca.** *Wool Review*. Oct. 1964; 38(522): 31.

NAL call no.: 45.8 W886

Descriptors: wool production, care, shearing, trade, Europe, alpaca, Peru.

1962

San Martin, M.; Vega, E. de la; Gonzalez, S.C. **Actividad mitogenica y estadios precoces de la oogenesis en el ovario de alpacas.** [Mitogenic activity and early stages of oogenesis in the ovary of the alpaca; possible primary or secondary effects of gonadotropins.] *Universidad Nacional Mayor de San Marcos. Facultad de Medicina Veterinaria Revista*. 1960, pub. 1962; 15: 7-20. Ref. Note: In Spanish with Spanish and English summaries.

NAL call no.: 41.9 Un37

Descriptors: egg development, ovaries, hormonal effects, gonadotropins, year old animal, polyoocytic primary follicles.

1961

Fallet, M. **Vergleichende Untersuchungen zur Wollbildung Sudamerikanischer Tylopoden.** [Comparative research into wool makin of South American Tylopods.] *Zeitschrift fur Tierzuchtung und Zuchtungsbiologie*. [Journal of Animal Breeding and Genetics]. Jan. 1961; 75(1): 34-56. Ref. Note: In German with an English summary.

NAL call no.: 442.8 Z35

Descriptors: wool, guanaco, South American camelids.

1960

Acosta Rodriguez, L. **Induccion del crecimiento folicular y de la ovulacion en alpacas juvenes.** [Beginning of follicular growth and of ovulation in young female alpacas.] *Veterinaria y Zootecnia*. Mar./Apr. 1960; 12(32): 10. Note: In Spanish.

NAL call no.: 41.8 V6434

Descriptors: young animals, female development, follicules, ovulation.

Chaman Silva Santisteban, E. **Imagen citologica vaginal antes y despues de ovulacion en las alpacas en celo.** [Images of the cellular changes of the vagina before and after ovulation of alpacas in heat.] *Veterinaria y Zootecnia*. Mar./Apr. 1960; 12(32): 13. Note: In Spanish.

NAL call no.: 41.8 V6434

Descriptors: mature female alpacas, reproduction changes, vaginal cellular structural images, affects of ovulation, receptive animals.

Moro, S. **Fiebre de las alpacas o estreptococosis.** [Fever in alpacas or streptocosis.] *Universidad Nacional Mayor de San Marcos. Facultad de Medicina Veterinaria Revista*. 958/59, pub. 1960; 13/14: 7-25. Ref. 1 Note: In Spanish with an Spanish and English summary.

NAL call no.: 41.9 Un37

Descriptors: *Streptococcus* infection, bacterial disease, pathogenesis.

1959

Rodriguez Arce, R. **Ovulacion en las alpacas. [Ovulation in alpacas.]** *Veterinaria y Zootecnia*. Apr. 1959; 11(28): 17.

Note: In Spanish.

NAL call no.: 41.8 V6434

Descriptors: reproduction, female animals, ovulation physiology, hormones.

1958

Pena Sosa, A. **Camelidos sur-Americanos: una fauna util que desaparece. [The camelids of South America: An animal that is disappearing.]** *El Agricultor Venezolano*. Apr. 1958; 21(199): 20-21.

NAL call no.: 9.95 Ag8

Descriptors: *Lama*, llama, alpacas, vicunas, guanacos, natural resource, South America.

Zuniga, Q.J. **El celo en las alpacas. [Heat in alpacas.]** *Veterinaria y Zootecnia*. July 18, 1958; 10(25): Note: In Spanish.

NAL call no.: 41.8 V6434

Descriptors: reproduction, female animals, description, physiology, behavior.

1957

Moro S.M. **Casos clinicos observados en alpacas. [Clinical cases observed in alpacas.]** *Veterinaria y Zootecnia*. June 1957; 9(21/22): 15-19. Note: In Spanish.

NAL call no.: 41.8 V6434

Descriptors: clinical care, veterinary care, case studies.

Moro Sommo, M. **Informe sobre los estudios realizados en las alpacas. [Report about studies made on alpacas.]** *Boletin de la Direccion de Ganaderia. Ganaderia*. Lima, Peru Aug. 1957; 16/17: 3-88. Ref. Note: In Spanish.

NAL call no.: 49.9 P433

Descriptors: diseases, reports, case studies, alpacas.

Vallenas Pantogozo, A. **Algunos estudios sobre la fisiologia de la alpaca. [Some studies about the physiology of the alpaca.]** Lima, Peru. *Boletin de la Direccion de Ganaderia. Ganaderia [Bulletin of the Department of Livestock (cattle) Raising. Livestock Raising.]* Aug. 1957; 16/17: 90-116. Ref. Note: In Spanish.

NAL call no.: 49.9 P433

Descriptors: glycemia, physiology.

1956

Chivilchez Chavez, J. **Estudio biometrico y estructural de la lana de los aquenidos (alpaca, llama y vicuna). [Study the size and structure of the wool of the camelids-alpaca, llama, vicuna.]** *Direccion General de Ganaderia. Patronato de Biologia Animal. Revista*. Spain. Oct./Dec. 1956; 2(4): 355-421. Ref.

NAL call no.: 49.9 Sp16

Descriptors: wool, biometrics, structure.

Moro, S.M. **Contribucion al estudio de las enfermedades de los aquenidos. [Contribution to the study of the diseases of the llama family.]** *Universidad Nacional Mayor de San Marcos. Facultad de Medicina Veterinaria Revista*. Dec. 1956; 7/11: 5-16. Note: In Spanish with an English summary.

NAL call no.: 41.9 Un37

Descriptors: alpacas, diseases, survey, types.

Moro, S.M. **Contribucion al estudio de la leche de las alpacas. [Study of alpaca milk.]** *Universidad Nacional Mayor de San Marcos. Facultad de Medicina Veterinaria Revista*. Dec. 1956; 7/11: 117-141. Note: In Spanish with an English summary.

NAL call no.: 41.9 Un37

Descriptors: alpaca milk, composition.

Vallenas P.A. **Algunas constantes fisiologicas en alpacas. [Some physiological constants in alpacas.]** *Universidad Nacional Mayor de San Marcos. Facultad de Medicina Veterinaria Revista*. Dec. 1956; 7/11: 157-171. Note: In Spanish with an English summary.

NAL call no.: 41.9 Un37

Descriptors: physiology, constants, blood, other organs.

1955

Chivilchez Chavez, J. **La ganaderia en Peru: los aquenidos. [Livestock in Peru: the llama family.]** *Granja*, Madrid, Spain. Feb. 1955; 3(26): 39-40.

NAL call no.: 15 G762

Descriptors: alpacas, vicunas, llamas, characteristics, uses, habitat.

Kraft, H. **Geburt eines Lamas und eklampsie des neugeborenen. [Birth of a llama and eclampsia of the newborn.]** *Berliner und Munchener Tierarztliche Wochenschrift*. July 1, 1955; 68: 228-229. Note: In German with an English summary.

NAL call no.: 41.8 B45

Descriptors: crias, clonic convulsions, *Eclampsia infantum*, calcium and vitamin D treatment.

1954

Appleby, E.C.; Head, K.W. **A case of suspected Johne's disease in a llama (*L. glama*).** *Journal of Comparative Pathology*. Jan. 1954; 64: 52-53.

NAL call no.: 41.8 J82

Descriptors: Johne's disease, *Mycobacterium avium paratuberculosis*, case study.

Arnao de McGregor, M. **Sobre la identificacion de las especies Parasitas en *Lama glama pacos* (alpaca). [The identification of a species of parasites in the llama family.]** *Boletin de la Direccion de Ganaderia. Ganaderia*. Lima, Peru. Jan. 1954; 11: 78-80. Note: In Spanish.

NAL call no.: 49.9 P433

Descriptors: protozoans, cestodes, fluke, various nematodes, mites, insects, *Eimeria*, *Fasciola*, *Moniezia*, *Microtheracius*, *Bovicola*, Peru.

Baracco, A. **Los resultados obtenidos en la explotacion de los auquenidos. [The results obtained in the use of the llama family of animals.]** *Boletin de la Direccion de Ganaderia. Ganaderia*. Lima, Peru. Jan. 1954; 11: 18-23. Note: In Spanish.

NAL call no.: 49.9 P433

Descriptors: care and use, Peru.

Cuba Caparo, A.; Copaira, M.; Ega, E. de la. **Comparative study of the lesions produced by "animal *Streptococcus piogenes*" in the alpaca and goat.** (Sum.) *Pan-American Veterinary Congress Proceedings*. 1954; 2: 210. Note: In English.

NAL call no.: 41.9 C7626

Descriptors: *Streptococcus* infection, alpaca, goat, lesions, comparative study.

Santolalla, N.R. **El fomento en la crianza de la vicuna en domesticidad. [The Development of domestication of the vicuna.]** *Mensajero Agricola*. Sept. 1954; 97: 5-7.

NAL call no.: 9.8 M52

Descriptors: natural resources, domestication of the vicuna, history.

1953

Bautista Iturrizaga, D. **Enfermedad o fiebre de las alpacas. [Diseases or fever in alpacas.]** *Revista del Instituto Nacional de Biología Animal* (Peru). Dec. 1953; 4(6/7): 27-31. Note: In Spanish with an English summary, p. 124-125.
NAL call no.: 442.9 L62R
Descriptors: diseases, alpacas, Peru.

Preston Smith, H. **Fiebre de las alpacas. [Fever in alpacas.]** *Revista del Instituto Nacional de Biología Animal* (Peru). Dec. 1953; 3(4/5): 91-95. Note: In Spanish.
NAL call no.: 442.9 L62R
Descriptors: fever, disease, alpacas, *Streptococcus zooepidemicus*, Peru.

1952

Godoy, J.C. **Glosas históricas sobre los camelidos andinos. [Historical comments about the camel family.]** *La Res.* Jan. 20, 1952; 22: 26755-26756. Note: In Spanish.
NAL call no.: 286.85 R31
Descriptors: alpacas, llamas, history.

1951

Vega D., E. de la. **Aspectos histológicos del aparato digestivo y sistema urogenital de la alpaca. [Histology of the digestive organs and urogenital system the alpaca.]** *Universidad Nacional Mayor de San Marcos. Facultad de Medicina Veterinaria Revista*. Dec. 1951; 6: 145-170. Note: In Spanish.
NAL call no.: 41.9 Un37
Descriptors: histology, stomach, intestines, urogenitals, alpacas.

1950

Bellido Nunez, J. **Estudio comparativo de los caracteres físicos de las lanas y de las producciones pilíferas de los camelidos americanos: alpacas. [Comparative study of the physical characters of the wool and wool products from the American camelids: alpacas.]** *Boletín de la Dirección de Ganadería. Ganadería*. Lima, Peru. May 1950; 3(7): 66-77. Note: In Spanish.
NAL call no.: 49.9 P433
Descriptors: wool fibers, alpacas, comparative study, physical description of fibers, Peru.

Cuba Caparo, A. **Algunas observaciones en la llamada "Fiebre de las Alpacas." [Some observations in the named "Fever of the Alpacas."]** *Boletín de la Dirección de Ganadería. Ganadería*. Lima, Peru. May 1950; 3(7): 14-19. Note: In Spanish.
NAL call no.: 49.9 P433
Descriptors: alpaca diseases, Peru.

Hodge, W.H. **Golden fleece of the Andes.** *Natural History*. May 1950; 59: 200-207.
NAL call no.: 500 N483J
Descriptors: vicuna, the wonderful wool fiber, Andes mountains, South America.

Hodge, W.H. **Llamas: New World beasts of burden.** *The Westralian Farmers' Gazette*. June 1950; 18: 389-392.
NAL call no.: 280.28 W522
Descriptors: llamas, uses, livestock animals, draft animals.

1949

Arnao, M.; Gonzalez, E.; Arbaiza, E. **Parasitos en *Lama glama pacos* o alpaca. [Parasites in *Lama glama pacos* or alpaca.]** *Universidad Nacional Mayor de San Marcos. Facultad de Medicina Veterinaria Revista*. Nov. 1949; 4: 64-65.

Note: In Spanish.

NAL call no.: 41.9 Un37

Descriptors: parasitic organisms, diseases, alpaca.

Copaira, M.A. **Estudios hematologicos en auquenidos. [Studies on the blood of the alpaca family.]** *Universidad Nacional Mayor de San Marcos. Facultad de Medicina Veterinaria Revista*. Nov. 1949; 4: 73-85. Note: In Spanish.

NAL call no.: 41.9 Un37

Descriptors: alpacas, vicunas, blood composition, blood cells, blood components.

Santivanez Morales, J.; Moro Somo, M. **Germen es aislados de alpacas. [Isolated pathogens in alpacas.]** *Universidad Nacional Mayor de San Marcos. Facultad de Medicina Veterinaria Revista*. Nov. 1949; 4: 56-57. Note: In Spanish.

NAL call no.: 41.9 Un37

Descriptors: pathogenic organisms, alpacas, veterinary medicine.

1948

Godoy, J.C. **Glosas historicas sobre los camelidos andinos. [Historical comments on the Andean camelids.]** *Campo y Suelo Argentino*. Nov. 1948; 32(385): 64-65, 69.

NAL call no.: 9 C15

Descriptors: South American camelids, historical notes, alpacas, vicunas.

Rath, E. **Enfermedades de los auquenidos. [Diseases of the *Lama* family.]** Peru. *Direccion de Ganaderia. e Indus. Pecuarias. Ganaderia*. Mar. 1948; 2(4): 51-53. Note: In Spanish.

NAL call no.: 49.9 P433

Descriptors: alpacas, llamas, diseases, *Lama* species.

Toledo Lazo, A.; San Martin, M. **Alpacas y vicunas y su plan de Mejoramiento. [Alpacas and vicunas and the plan for breed improvement.]** *Lanares y Lan as*. July/Sept. 1948; 3(12): 19. Note: In Spanish.

NAL call no.: 45.8 L22

Descriptors: breed improvement plan, alpacas, vicunas.

1947

Benjamin, J. **Breve resena historica y descriptiva de los auchenidos. [A brief historic account and description of the llama.]** *Campo*. La Paz, Peru. July 1947; 1(3): 25-33.

NAL call no.: 9.1 C15

Descriptors: history, llamas, description, natural history.

Lewis, C. **O velocino de ouro dos Andes. [The golden fleece of the Andes.]** *A Fazenda*. Dec. 1947; 42(12): 30-31, 56. Note: In Portugese.

NAL call no.: 6 H11P

Descriptors: llamas, alpacas, vicunas, fleece, economic value, Andes mountains, South America.

Preston, H. **La enfermedad de las alpacas. [The diseases of alpacas.]** *Lanares y Lan as*. Jan./Mar. 1947; 2(6): 14-16. Note: In Spanish.

NAL call no.: 45.8 L22

Descriptors: diseases, alpacas.

Toledo, A. **La granja de auquenidos. [The farm of alpacas.]** Lima, Peru. *Boletin de la Direccion de Ganaderia*. June 1947; 1(1): 10-14. Note: In Spanish.

NAL call no.: 49.9 P433

Descriptors: alpaca raising, Peru.

Santolalla, N.R. **Hacia la vicuna domesticada, por la pacovicuna.** [From the domesticated vicuna through the pacovicuna.] *Lanares y Lanas*. Oct./Dec. 1947; 3(9): 22.

NAL call no.: 45.8 L22

Descriptors: domestication from wild species, history, South America.

1946

Fryckberg, M. **Gifts of the Americas: the vicuna.** *Agriculture in the Americas*. June/July 1946; 6: 111.

NAL call no.: 1 F752A

Descriptors: wool obtained, value of the fiber, vicuna.

1945

Anonymous. **Alpacas and other queer beasts.** *Scottish Woollens* (Edinburgh, Scotland). 1945; no. 34, 4 p.

NAL call no.: 304.8 Sco8

Descriptors: wool bearing animals, alpacas.

Anonymous. **The breeding of alpacas.** *Bolivia*. May/June 1945; 11(23): 15-20.

NAL call no.: 286.8 B633

Descriptors: general characteristics, husbandry, breeding, care, South America.

Cuello Freyre, J.A. **La llama, preponderante factor economico y social de la America indigena.** [The llama; a predominant social and economic factor in indigenous America.] *Chacra & Campo Moderno*. Dec. 1945. 16(182): 74-75. Note: In Spanish.

NAL call no.: 9 C34

Descriptors: South American, role of the llama, value, social importance.

Whitford, A.C. **The South American cameloids.** *Textile Age*. Sept. 1945; 9(9): 80, 82, 84, 86-87. Note: Third of a series on animal fibers.

NAL call no.: 304.8 T3132

Descriptors: llamas, alpacas, vicunas, guanacos, taxonomic relationships, habitat, characteristic, colors, fibers, South America.

1944

Gallegos P.J. **Explotacion de auguenidos en el Peru.** [Exploitation of llamas and vicuna in Peru.] Direccion de Ganaderia, Ministerio de Agricultura, Chuquibemilla. 1944. 36 p. Note: Issued by Granja Modelo de Puno. In Spanish.

NAL call no.: 412.7 P96

Descriptors: llamas, vicunas, uses, native peoples, Peru.

Savage, W.N. **Rebellious llama.** *Our Dumb Animals*. June 1944; 77: 105.

NAL call no.: 48.8 Ou7

Descriptors: llamas, characterization, behavior.

1943

Falbo, F.L G.; Elias, R.G. **Camelidos Americanos.** [American camelids.] *Suelo Argentino*. Nov. 1943; 2: 372-373 [i.e. 872-873]. Note: In Spanish.

NAL call no.: 9 Su2

Descriptors: llamas, South America.

Preston, H. **La enfermedad de las alpacas. [The diseases of alpacas.]** *Peru. Direccion de Ganaderia. Ganaderia. Inform.* Lima, Peru. 1943; no. 1. 9 p. Note: In Spanish.

NAL call no.: 49.9 P43I

Descriptors: illness, disease, pathogens, alpacas, Peru.

Preston, Harry. **La sarna de las alpacas, "condor ccaracha," "Auma usa."** [Scabies in alpacas, ???] *Peru. Direccion de Ganaderia. Ganaderia. B. de Vulgarizacion.* Lima, [Peru]. 1943; no. 6. 8 p.

NAL call no.: 49.9 P43

Descriptors: *Sarcoptes scabiei aucheniae*, mange, Peru.

Selected Web Resources

Most of the sites below contain general information about these animals. The sites may include information about history, care, behavior, fiber, breeders, and where to obtain supplies. They are usually well illustrated with photographs of the animals.

Camelids

<http://www.omafra.gov.on.ca/english/livestock/alternat/camelids.htm>

If you are interested in accessing more veterinary care and science based information, click on this site and follow the many links to various universities both in Canada and the United States. The site is managed by the Canadian Ministry of Agriculture, Food and Rural Affairs.

<http://www.ultimateungulate.com/>

The Ultimate Ungulate homepage has general information and descriptions about these animals. It is a guide to the world's hoofed mammal species.

<http://animaldiversity.ummz.umich.edu/chordata/mammalia/artiodactyla/camelidae.html>

Camelidae, University of Michigan.

Llamas

<http://www.llama.org/>

Provided by the Llama Lifestyle Marketing Association.

<http://www.llamapaedia.com/index.html>

Includes general information on anatomy, behavior, fiber quality, care, feeding, nutrition, reproduction, etc.

<http://www.nhlama.org/>

There is a lot of basic information here. The New Hampshire Llama Association is interested in educating the public and potential owners about these animals.

<http://www.fao.org/ag/magazine/0108sp.htm>

About Camels and Llamas - Agriculture 21 Magazine article, Food and Agriculture Organization of the United Nations.

Alpacas

<http://www.alpacainfo.com>

Contains information on how to get started as an alpaca owner, a calendar of events related to alpacas, breeder listing, breeding registry, and a lending library of books on the topic. It is maintained by the Alpaca Owners & Breeders Association.

Vicunas

<http://www.bonnydoonalpacas.org/vicunas.html>

Contains very brief information about vicunas with some photographs.

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The Animal Welfare Information Center, <http://awic.nal.usda.gov/contact-us>

<http://www.nal.usda.gov/awic/pubs/llama.htm>

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