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Attorneys For Plaintiff MICHAEL ANGELO MORALES

**UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION**

MICHAEL ANGELO MORALES

Plaintiff,

v.

JAMES TILTON, Acting Secretary of the

Case nos. 06-219 (JF)(RS)
06-926 (JF)(RS)

DECLARATION OF MICHAEL LOOMIS, DVM

California Department of Corrections;)
ROBERT L AYERS, Acting Warden of San)
Quentin State Prison; and DOES 1-50,)
)
Defendants.)

Declaration of Michael Loomis, DVM

I, Michael Loomis, declare as follows:

1. I am a doctor of veterinary medicine. I am licensed to practice veterinary medicine in the states of California and North Carolina. I am currently the Chief veterinarian of the North Carolina Zoological Park. I earned a B.S. in 1972 at the University of Georgia, Athens, Georgia. In 1974, I received an M.A. at Indiana University, Bloomington, Indiana. I earned a doctorate in veterinary medicine at the University of California at Davis, in Davis, California, in 1980. I have received awards from numerous national honor societies as well as Phi Zeta, the National Honorary Society for Veterinary Medicine. I am a recipient of the Achievement Rewards for College Scientists Scholarship in Primate Medicine and Primate Pathology.

2. I have been an Associate Professor of Zoological Medicine at the North Carolina College of Veterinary Medicine since 1991. I authored the chapter on Great Apes in Zoo and

Wild Animal Medicine, a standard text in the field. I have authored published scholarly articles in a number of peer reviewed professional journals including Laboratory Animal Science, The Journal of the American Veterinary Association, and The Journal of Zoo and Wildlife Medicine, among others. I am a Diplomate of the American College of Zoological Medicine, the specialty board for zoological medicine. I have been invited to give presentations at professional conferences regarding gorilla health. I am a member of several professional organizations including the American Association of Zoo Veterinarians and the American College of Zoological Medicine,. I have served as president of both organizations. I was the Association of Zoos and Aquaria Chimpanzee Species Survival Plan Veterinary Advisor from 1990-2000.

2. At the request of counsel, I have been asked to provide the steps taken in a standard euthanasia of a gorilla. I have never personally euthanized a gorilla. I do have twenty-six years of experience providing veterinary care to gorillas and have extensive experience in gorilla anesthesia. I have, in those 26 years, had to euthanize a number of animals including other primates for a variety of reasons. Euthanasia of gorillas are rare events. Written protocols and procedures specific to gorillas do not exist in the literature or veterinary training materials. That said, gorilla euthanasia complies with the standard euthanasia procedures established by the American Veterinary Medicine Association and contained in their published standards. Gorilla euthanasia varies from those protocols only in that additional sedation steps are included to reduce animal distress and increase veterinarian safety.

3. The first step in a gorilla euthanasia is pre-sedation. The animal is commonly
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given an oral drug, for anxiolytic or sedative purposes, mixed in a consumable substance placed in the animal's living space. For example, Valium® may be mixed into a favorite beverage. This is done to lessen the gorilla's anxiety that might result from the second step described below. This mixture is prepared by the veterinarian but often offered to the gorilla by a keeper as gorillas frequently shy away from veterinarians.

4. The second step in gorilla euthanasia is the administration of anesthesia agent(s) to induce unconsciousness. Many gorillas do not naturally submit to medical procedures of any kind and are generally placed under general anesthesia for the insertion of intravenous catheters. This is for the safety of the gorillas and their handlers. The injection of the anesthetic is delivered via dart intramuscularly. Some gorillas are trained to accept an intramuscular injection by hand syringe or pole syringe. If the gorilla is trained to accept injections, the injection may be given by a keeper who is trained to give injections. However, the drug or drug combination is prepared by the veterinarian and the veterinarian directly supervises the administration of the anesthetic agent. A common anesthetic combination used is ketamine/medetomidine/butorphenol, although other drugs or combinations of drugs can be used. This combination produces rapid anesthesia. Ketamine is a rapidly acting general anesthetic that does not significantly suppress respiration. Medetomidine is a sedative analgesic. Butorphenol is an analgesic. In surgical procedures, this combination is used to induce anesthesia in a gorilla for a short period of time, then they are given inhalant anesthetics and their breathing is supported. In the euthanasia process, once this combination has taken effect, the gorilla is unconscious, and still breathing. The veterinarian then places intravenous catheters in

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the gorilla and proceeds to the third step.

5. The third step in gorilla euthanasia is the intravenous administration of a commercial preparation euthanasia solution, for example, Beuthanasia®. This compound is made of phenytoin, an anti-convulsant, and pentobarbital, a barbiturate. The dose suggested by the manufacturer is 1 ml/ 10 lbs for dogs. In practice it is common to adjust the dosage to account for size of the animal as well as physical condition. The pentobarbital rapidly suppresses respirations and heart beat.

6. The gorilla should be monitored throughout the procedure to include pulse oximetry, blood pressure, end tidal carbon dioxide, and electrocardiogram. I understand some practitioners carry out euthanasias monitoring the cessation of vital signs with auscultation, visual observation of respirations, and evaluation of the corneal reflex only, however I feel this is insufficient. At the very least, I would recommend monitoring the electrocardiogram during the procedure. In my experience, among a variety of species including primates, it can become necessary to administer a second bolus dose of the euthanasia solution. This is a rare occurrence and is generally due to underestimation of animal weight, individual metabolic rates, or a species specific response to the drug(s) used. Without appropriate instrumentation this secondary dose may be unduly delayed.

7. In my experience, respirations cease within one to two minutes but can occasionally continue for up to five minutes of administering the IV bolus of the euthanasia

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solution and cardiac arrest occurs within one to two minutes or so after. If respiration continues for longer than two minutes, I would consider giving a second bolus.

8. The zoo veterinarian remains directly at the gorilla's side from the induction of general anesthesia until the confirmation of death. The veterinarian conducts the procedures and monitors the animal's condition. It is common for zoo keepers and zoo hospital staff to be present at these sad events, however, it would be illegal and inappropriate for keepers or technicians to administer these medications except under the direct supervision of a veterinarian. The administration of anesthetics must be done by veterinarians or under their direct supervision by law in the State of North Carolina.

I declare under penalty of perjury under the laws of the United States and the State of California that the foregoing is true and correct.

Executed in New London, Connecticut on this 9th day of November, 2006



Michael Loomis

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CURRICULUM VITAE

PERSONAL INFORMATION

Name	Michael R. Loomis, DVM, MA, Dipl ACZM
Business Address	North Carolina Zoological Park Hanes Veterinary Medical Center 4401 Zoo Parkway Asheboro, NC 27205
Business Phone	(336) 879-7631
Email	mike.loomis@nczoo.org
Home Address	1158 Lazell Avenue Asheboro, NC 27205
Home Phone	(336) 626-5865
Date of Birth	February 14, 1950
Citizenship	U.S.A.
Marital Status	Married, two children

EDUCATION

High School	Fairfield High School, Fairfield, Iowa, 1968.
University	University of Georgia, Athens, Georgia, B.S., 1972, magna cum laude
Graduate School	Indiana University, Bloomington, Indiana, M.A., 1974.
Veterinary School	University of California, Davis, California, D.V.M., 1980.
Internship	National Zoological Park, Smithsonian Institution, Washington, D.C., July 1980 - June 1981.
Specialty Board	Diplomate, American College of Zoological Medicine. Examination 1986.
Fellowships	Fellowship in Zoology, Indiana University, Bloomington, Indiana.
Honors, Awards	Phi Eta Sigma, National Honorary Society Phi Kappa Phi, National Honorary Society Phi Beta Kappa, National Honorary Society Phi Zeta, National Honorary Society for Veterinary Medicine. Achievement Rewards for College Scientists (ARCS) Scholarship in Primate Medicine and Primate Pathology
Licensure	California, 1981 (certificate 007541) North Carolina, 1983 (certificate ZC871)

PROFESSIONAL BACKGROUND

Zoological Medicine Appointments

Chief Veterinarian and Director, Hanes Veterinary Medical Center, North Carolina Zoological Park, Asheboro, NC, May 1, 1994 to present.

Senior Veterinarian and Director, Hanes Veterinary Medical Center, North Carolina Zoological Park, Asheboro, NC, November 3, 1990 - May 1, 1994.

Senior Veterinarian, San Diego Zoo, San Diego, CA, January 1989 - October 1990.

Associate Veterinarian, San Diego Zoo, San Diego, CA, June 1988 - January 1989.

Zoo Veterinarian, North Carolina Zoological Park, Asheboro, NC, August 1983 - June 1988.

Zoo Veterinarian, Los Angeles Zoo, Los Angeles, CA, June 1981 - July 1983.

Intern, Zoological Medicine, National Zoological Park, Smithsonian Institution, Washington, D.C., July 1980 - June 1981.

Appointed Boards

Board of Visitors, Veterinary Medicine Teaching Hospital, University of California, Davis, CA, 1983.

Board of Health, Randolph County, Asheboro, NC, 1983 - 1988; 1990 - 2001; Chairman, 1993 - 2001.

Institutional Animal Care and Use Committee, University of North Carolina at Greensboro, Greensboro, NC, 1985 - 1988.

Community Schools Advisory Committee, Asheboro, NC 1985 - 1986.

Journal of Zoo and Wildlife Medicine; Editorial Board, 1989 to 1994.

American Veterinary Medical Association Committee on Environmental Affairs, 1993-2000.

Academic Appointments

Associate Instructor in Zoology, Indiana University, August 1973 - June 1974.

Adjunct Assistant Professor of Exotic Animal Medicine, North Carolina State University School of Veterinary Medicine, September 1983 to June 1988.

Adjunct Associate Professor of Zoological Medicine, North Carolina State University College of Veterinary Medicine, July 1991 to present.

Associate Graduate Faculty, North Carolina State University, May 1991 to present.

MILITARY SERVICE

Space Surveillance Officer, USAF, June 1974 - June 1976.

SOCIETY MEMBERSHIPS

American Association of Zoo Veterinarians
Research Committee Chairman, 1989 - 1990
Treasurer, 1990 - 1991
Secretary, 1991 - 1992
Vice President, 1992 - 1993
President-elect and Program Chairman, 1993 - 1994
President 1994 - 1995
American Veterinary Medical Association
Committee on Environmental Affairs, 1993 - 2000
Association of Primate Veterinarians
Association of Avian Veterinarians
American College of Zoological Medicine
Examination Committee Chairman, 1989 - 1992
Secretary, 1997 - 1998
Vice President 1999 - 2000
President 2001 - 2002
North Carolina Herpetological Society
Vice President, 1992 - 1993
AZA Chimpanzee SSP Veterinary Advisor, 1990 - 2000

FIELD WORK AND CONSULTANCIES

Project Coordinator for North Carolina Zoo for elephant, wild dog, and western black rhinoceros monitoring with WWF, Cameroon, 1996 to present.

Veterinary consultant to California Condor Recovery program with USFWS, California Fish and Game and Audubon Society, 1981-1983, 1988-1990.

Veterinary consultant to Sumatran Rhino Trust for capture and translocation of rhinos in Sumatra, 1983.

Disease monitoring of koalas in Queensland, Australia, 1984.

Veterinary consultant to red wolf recovery program with USFWS, 1990 to 2000.

Anesthesia consultant for hippos, Buyamon Science Park, Puerto Rico, 1990 to present.

Anesthesia consultant for gorillas, Barcellona Zoo.

Veterinary consultant for drill monitoring program with WWF, Cameroon, 1998.

Disease outbreak investigation with Kenya Wildlife Service, Tsavo National Park, 1994.

PUBLICATIONS

1. Illmensee, Karl, Anthony P. Mahowald and Michael R. Loomis: The Ontogeny of Germ Plasm During Oogenesis in Drosophila. Developmental Biology 49; 40-65, 1976.
2. Loomis, Michael R., Roy V. Henrickson and John H. Angerson: Effects of Ketamine Hydrochloride on the Hemogram of Rhesus Monkeys (Macaca mulatta). Laboratory Animal Science 30 (5): 851-853, 1980.
3. Rosenberg, Daniel P. and Michael R. Loomis: Apparent Psychogenic Polydipsia in a Rhesus Monkey. JAVMA 177 (9): 940-941, 1980.
4. Loomis, Michael R., Timothy O'Neill, Mitchell Bush, Richard J. Montali: Fatal Herpesvirus Infection in Patas Monkeys and a Black and White Colobus Monkey. JAVMA 179 (11): 1236-1239, 1981.
5. Teare, J. Andrew and Michael R. Loomis: Epizootic of Balantidiasis in Lowland Gorillas. JAVMA 181 (11): 1345-1347, 1982.
6. Gardiner, C.H., Michael R. Loomis, J.O. Britt, et al: Dermatitis Caused by Filaria taxidea in a Lesser Panda. JAVMA 183 (11): 1285-1287, 1983.
7. Loomis, Michael R., James O. Britt, Annette P. Gendron, et al: Hepatic and Gastric Amebiasis in Black and White Colobus Monkeys. JAVMA 183 (11): 1188-1191, 1983.
8. Lothrop, C.D., J.H. Olsen, Michael R. Loomis: Endocrine Diagnosis of Feathering Problems in Psittacine Birds. Ann. Proc. Am. Assoc. Zoo Vet. 1983: 144-147.

9. Loomis, Michael R. and Charles D. Lee: Canine Heartworm Infection in African Cape Hunting Dogs (Lycaon pictus). Ann. Proc. Am. Assoc. Zoo Vet. 1984: 137. (abstract)
10. Loomis, Michael R.: Immunoprophylaxis in Infant Great Apes. In: Graham, C.E. and Bowen, J.A. ed., Clinical Management of Infant Great Apes. 107-112, Alan R. Liss, Inc., New York, 1985.
11. Lothrop, Clinton D., Michael R. Loomis, and John H. Olsen: Thyrotropin Stimulation Test for Evaluation of Thyroid Function in Psittacine Birds. JAVMA 186 (1): 47-48, 1985.
12. Lothrop, Clinton D., John H. Olsen, Michael R. Loomis, et al: Evaluation of Adrenal Function in Psittacine Birds, Using the ACTH Stimulation Test. JAVMA 187 (11): 1113-1115, 1985.
13. Loomis, Michael R.: Vaccination of Nonhuman Primates: Proc. Symposium on Immunology of Zoo and Wild Animals. 20-21, 1985. (abstract)
14. Loomis, Michael R.: An Update on Antibiotic Therapy in Birds. In: Kirk, Robert W. ed. Current Veterinary Therapy IX. Small Animal Practice. 733-737. W.B. Saunders Co., Philadelphia, 1986.
15. Loomis, Michael R. and James F. Wright: Gastric Trichuriasis in a Black and white Colobus Monkey. JAVMA 189 (9): 1212-1215, 1986.
16. Ley, David H., Ronald E. Morris, James E. Smallwood, and Michael R. Loomis: Mortality of Chicks and Decreased Fertility and Hatchability of Eggs from a Captive Breeding Pair of Ostriches. JAVMA 189 (9): 1124-1126, 1986.
17. Loomis, M.R. and R.J. Smith: Fertility Following Caesarian Section in an Aruba Island Rattlesnake. Int. Zoo Yb. 16: 187-188, 1987.
18. Loomis, M.R. and J.F. Wright: Systemic Infections in Impala (Aepyceros melampus) Calves Following Ear Tagging. J. Zoo and Wildlife Medicine 20 (3): 370-372, 1989.
19. Loomis, Michael R. Diabetes Mellitus in a Galapagos Tortoise: Third International Colloquium on Pathology and Medicine of Reptiles and Amphibians. Orlando, Florida, USA, Jan. 13-15, 1989 (abstract).
20. Seed, John R., John B. Sechelski, and M.R. Loomis: A Survey for a Trypanocidal Factor in Primate Sera. J. Protozool 37(5): 393-400, 1990.

21. Loomis, Michael R.: Update of Vaccination Recommendations for Nonhuman Primates. Proceedings American Association of Zoo Veterinarians: 257-260, 1990. (abstract)
22. Roberts, Gregory W., M.K. Klein, Loomis, M.R., et. al. Photodynamic Therapy of Spontaneous Cancers in Felines, Canines, and Snakes with Chloro-aluminum Sulfonated Phthalocyanine. J. Nat. Cancer Institute, 83(1): 18-23, 1991.
23. Loomis, M.R., W. Gregory Roberts, Scott Weldy, et al. Treatment of tumors in snakes with photodynamic therapy: Fourth International Colloquium on Pathology and Medicine of Reptiles and Amphibians, Bad Nauheim, Germany, Sept. 27-29, 1991.
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25. Zuba, Jeffrey R., Donald L. Janssen, Michael R. Loomis, et al. Management of chlamydiosis in quarantined exotic columbiformes. J. Zoo and Wildlife Medicine 23(1): 86-91, 1992.
26. Loomis, Michael R. Health In: Falk, R. and Garland, C. The Care and Management of Chimpanzees (Pan troglodytes in Captive Environments, pp. 133-141, North Carolina Zoological Society, 1992.
27. Kuehler, C. and M.R. Loomis: Artificial incubation of nondomestic bird eggs. In: Kirk, R and J. Bonagura eds. Current Veterinary Therapy XI. Small Animal Practice. pp. 1138-1142. W.B. Saunders Co., Philadelphia, 1992.
28. Loomis, Michael R.: Identification of Animals in Zoos, In: Fowler, M.E., ed. Zoo and Wild Animal Medicine: Current Therapy 3. 21-23. W.B. Saunders Co., Philadelphia, 1993.
29. Shima, Amy L., Donald L. Janssen, and Michael R. Loomis. Management of Herpes B-virus seropositive macaques in a zoo collection. Proceedings American Association of Zoo Veterinarians: 179-180, 1989 (abstract).
30. Loomis, Michael R. and James F. Wright. Treatment of iron storage disease in a Bali mynah. Proceedings American Association of Zoo Veterinarians: 28, 1993 (abstract).
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34. Beck, K., M. Loomis, G. Lewbart, et al. Preliminary Comparison of plasma concentrations of gentamicin injected into the cranial and caudal limb musculature of the eastern box turtle (Terrapene carolina carolina). JZWM 26(2): 265-268, 1995.
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42. Spaulding K and M Loomis. Principles and applications of computed tomography and magnetic resonance imaging in zoo animals: In Fowler M E and R E Miller (eds): Zoo and wild Animal Medicine Current Therapy 4. Philadelphia, WB Saunders 83-88, 1999.
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49. Wolfe BA, KK Sladky, MR Loomis. Obstructive urolithiasis in a reticulated giraffe (*Giraffa camelopardalis reticulata*). Vet Record 146, 260-261, 2000.
50. Sladky, KK, BT Kelley, MR Loomis, et al. Cardiorespiratory effects of four alpha2-adrenoreceptor agonist-ketamine combinations in captive red wolves. JAVMA 217(9) 1366-1371, 2000.
51. Horne WA, MN Tchamba and MR Loomis. A simple method for providing intermittent positive pressure ventilation in etorphine-immobilized elephants (*Loxodonta africana*) in the field. Proceedings AAZV-IAAAM Joint Conference 27-30, 2000.

52. Sladky, KK, WA Horne, KL Goodrowe, MK Stoskopf, MR Loomis and CA Harms. Evaluation of epidural morphine for postoperative analgesia in ferrets (*Mustela putorius furo*). Contemporary Topics 39(6), 33-38, 2000.
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58. Wolfe, BA, FG Dalldorf, JF Wright, MA Stamper, MR Loomis. Ruptured dissecting aortic aneurysms in two red lechwe (*Kobus leche*). Vet Record 149: 92-93, 2001.
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60. Chittick E, Horne WH, Wolfe B, Sladky K, Loomis M. Cardiopulmonary assessment of medetomidine, ketamine, and butorphenol anesthesia in captive Thomson's gazelles (*Gazella thomsoni*). JZAWM 32(2) 168-175, 2001.
61. Horne WH, Tchamba MN, Loomis MR. A simple method of providing intermittent positive-pressure ventilation to etorphine-immobilized elephants (*Loxodonta africana*) in the field. JZWM 32(4) 519-522, 2001.