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Docket No. APHIS – 2006-0044
Regulatory Analysis and Development
PPD/APHIS
Station 3A-03.8
4700 River Road, Unit 118
Riverdale, MD 20737-1238

Dear Sir or Madam:

On behalf of the more than 9.5 million members and constituents of The Humane Society of the United States (“The HSUS”), I submit the following comments in response to the notice of petition and solicitation of comments on the regulation of captive elephants under the Animal Welfare Act (“AWA”) published by the Animal and Plant Health Inspection Service (“APHIS”) on August 9, 2006. *See* 71 Fed. Reg. 45438. In addition, The HSUS hereby incorporates the comments submitted to APHIS by D.J. Schubert on December 11, 2006 in response to the August 9, 2006 Federal Register notice.

1. What are the causes of Arthritis in elephants?

Predominantly in captive environments, arthritis can develop due to long periods of standing on hard surfaces and lack of sufficient space for mobility. The lack of varied substrates and inability of choice for the elephant exacerbate the problem. Stress factors brought on and aggravated by captivity (i.e. stereotypic or repetitive behaviors) are also causes of arthritis in elephants.^{xiv} Arthritis in elephants generally stems from degenerative joint disease^{xiii} or pododermatitis (Hitmair, K./Vielgrader, H.) (Radiographic Diagnosis of Lameness in African Elephants).^x Hard surfaces cause damp and cold environments along with wet and muddy conditions. Restricted movement in a cold, damp environment with hard surfaces makes arthritis more likely and severe. Arthritis is rare in animals that have freedom of movement and choice of substrates in their natural environment (O’Regan and Kitchener, 2005 (The effects of captivity on the morphology of captive, domesticated and feral animals)).^{xi}

The elephant's foot has a thin horn layer of weight bearing surface (about 10 mm in captive environments). The horn wall grows between 5-8 mm/28 d, depending on feet and species. Thin horn layer of the weight bearing surface, averaging 10mm in captive elephants is an important contributor to foot problems leading to osteoarthritis. Poor horn quality in captive elephant's hooves (decayed marrows of the horn tubules, vacuoles in the stratum spinosum, e.g) and loci of minor resistance were detected (e.g. micro cracks close to the papillae in the pad segment) in captive animals during a study done in 2005 at Veterinar-Anatomisches Institut der Vetsuisse-Fakultat Universitat Zurich. (The elephant's hoof: Macroscopic and microscopic morphology of defined locations under consideration of pathological changes).

Utilizing Seilkopf (1959)ⁱ, Salzert (1972)ⁱⁱ and Kuntze (1980)ⁱⁱⁱ and Mikota et al. (1994)^{iv} the results showed that many captive elephants died or were euthanized due to episodes of foot disorders leading to degenerative joint disease and laminitis. Mikota reported disorders of the musculoskeletal system as common and 586 cases out of 1323 involved the feet. 50% of the study population was affected and occurred at 63 of 69 zoos. 30% of elephants examined had more than one episode. During the study, seven elephants were euthanized for chronic pododermatitis. At the same time elephants in natural environments had very low occurrence of pododermatitis.

Schmitt (2003) states that in 50% of captive elephants, foot problems occur at some point in their lifetime. Pododermatitis chronica suppurativa et proliferativa or foot rot can bring about osteoarthritis or lameness due to the excessive weight bearing upon the front feet of the elephant. The occurrence of pododermatitis seems to be more frequently in the front feet than the rear. Overgrown and untrimmed horns can cause deformity and the weight bearing surface becomes an irregular shape with a layered appearance. Insufficient wear on the horn by lack of movement (Ruedi,1995)^v or improper trimming and husbandry on moist floors leads to secondary infections and abscessations (Mikota et al.,1994).^{iv} Chronic laminitis can also lead to nail overgrowth (Boosman et al.,1991).^v

Pododermatitis acuta aseptica diffuse or laminitis (severe lameness) can be caused by keeping elephants on hard surfaces as well as a feeding pattern of too much soluble carbohydrate, leading to acidosis and laminitis (Clauss and Keifer,2003).^{vii}

2. What, if any, foot care practices have been used on elephants to maintain healthy feet?

Filing with grooved knives, rasps and files has been done to keep elephant nails trimmed and simulating normal wear. Elephants in captivity do not wear the toenails and pads as intensely as in their natural environment. Circus elephants walking in sawdust need additional trimming over other captive situations. If these procedures are not followed on regular and as needed basis, problems described in the above section occur and cannot be reversed in a timely fashion. Foot radiographs are required to be performed at zoos housing elephants with chronic foot disorders (AZA Elephant Standards). Fifty-two percent of participating zoos are not currently in compliance with those standards (Elephant Managers Survey, 2005).^{viii}

All current practices of foot care (trimming nails, scrubbing and disinfecting pads, filing and rasping) would be unnecessary in wild populations. Natural substrates, freedom of movement and natural exercise would allow for normal wear of the pads and nails. This would also keep from bacteria buildup and eliminate damp cold and hard surfaces. A study done by C. Buckley provides natural habitat husbandry techniques (Captive Elephant foot care, C. Buckley, 2001).^{ix}

3. What floors are best for captive elephants? Are there any flooring conditions that promote foot problems?

Natural and varied substrates are the best solutions combined with large space requirements for normal wear of the feet combined with freedom of movement and choice of substrates. Rubberized mats and padded flooring used by some zoos crack and are pulled apart by elephants causing bacteria and wet or damp conditions.^{xii} Hard surfaces such as concrete and asphalt contribute to elephant foot problems and lead to arthritic conditions. Long travel in boxcars and trucks not only because of hard surfaces but also because of continual standing in feces and urine, add to foot problems in elephants. Wild elephants have the ability to avoid standing in their own excreta, where captive elephants rarely can escape these conditions. Elephants left unattended at night in barn stalls suffer the same waste build up. Urine is corrosive and fecal matter contains a host of bacteria and organisms that may cause infections if not washed consistently.

4. Do captive elephants require a certain amount of exercise (i.e. walking) to maintain healthy feet?

The fact that wild elephant populations do neither show chronic arthritis conditions nor pododermatitis the way that captive populations do, maintains that elephants need exercise on a constant basis. Exercise is an important factor in wearing the pads and the nails of elephants under normal environmental conditions. Sufficient space requirements allowing the elephant freedom of movement in natural surroundings eliminates the need for prepared and forced exercise routines.^{xv} Choice of substrates and environmental conditions for elephants changes the philosophy from a management perspective to one allowing elephants to care for their own herds. Given sufficient space, elephants will create their own exercise program which may include walking, knocking over trees, bathing and playing. This also eliminates many captive behavioral problems that occur from daily stress factors. Removing stereotypic repetitive behavioral patterns stops the shifting of weight and consistent standing in one place. This can only be achieved, if at all, by creating enormously larger areas similar to the two existing elephant sanctuary facilities.

* * *

Thank you for your consideration. Please contact me if you have any questions.

Sincerely,

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xvi. Statement by Amboseli Scientists (Attached as Appendix A).

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