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Carol Clarke, DVM, DACLAM
Docket No. APHIS-2014-0050
Regulatory Analysis and Development
PPD, APHIS, Station 3A-03.8
4700 River Road Unit 118
Riverdale MD 20737-1238

Docket ID: APHIS-2014-0098 Petition to Develop Specific Ethologically Appropriate Standards for Nonhuman Primates in Research

Dear Dr. Clarke,

The American Society of Primatologists (ASP) is a scientific organization whose purpose is to encourage the discovery, exchange and dissemination of information regarding nonhuman primates, including their biology, care, and conservation. On behalf of our institutional membership, the Primate Care Committee and the Board of Directors, we appreciate the opportunity to provide comments to assist APHIS (Animal and Plant Health Inspection Service, USDA) in its consideration of the "Petition To Develop Specific Ethologically Appropriate Standards for Nonhuman Primates in Research" (80 Federal Register 24840-41). On the basis of data presented in the Petition, we do not support the proposed amendments to the Animal Welfare Act.

As a group of scientists dedicated to the study and care of primates, the ASP endorses the premise that experts in primate behavior are critical to promoting the well-being of captive non-human primates in research settings. There are roles for both Applied Primate Behavioral Scientists and for Primate Behavior Managers in the research laboratory environment.

Applied Primate Behavioral Scientists study captive primate behavior in research laboratory conditions with the goal of understanding and improving their welfare. They typically hold a professional degree (PhD, MS) in a

relevant discipline (e.g., Psychology, Anthropology, Zoology, Ethology, Behavioral Ecology, Animal Welfare, or Biology), have expertise in the science of animal behavior, welfare science, and in managing the behavior of captive nonhuman primates. They may also hold advanced certifications such as being a Certified Applied Animal Behaviorist, an Associate Certified Applied Animal Behaviorist (these certifications are awarded through the Animal Behavior Society) or a Board Certified Veterinary Behaviorist (awarded through the American College of Veterinary Behaviorists).

Large and complex behavioral management programs are often run by Applied Primate Behavioral Scientists, and they frequently work closely with a Primate Behavior Manager. Commonly, in facilities with small NHP populations, the Attending Veterinarian may delegate implementation of a behavioral management program to a Primate Behavior Manager. Primate Behavior Managers are often responsible for implementing behavioral management programs (e.g., social housing, enrichment, and animal training). They typically hold bachelor's degrees in a relevant field (e.g., Psychology, Anthropology, Zoology, Ethology, Behavioral Ecology, Animal Welfare, or Biology), have experience working directly with primates and are knowledgeable about the behavior of individual primates held at their institutions.

An advanced level of behavioral expertise is required to meet the spirit of the Animal Welfare Act and to guide any changes in standards for primate behavioral management. Applied Primate Behavioral Scientists are in a position to be well informed on research results, conduct quantitative evaluations of practices, adopt changes in evolving best practices, develop new approaches to improving welfare, and publish their own findings. These experts are also in a position to be knowledgeable about the nature of research undertaken at a laboratory and the need to harmonize behavioral management plans with biomedical research. There are multiple strategies for addressing behavioral needs of primates, which can be tailored to the requirements of research studies. Applied Primate Behavioral Scientists may work closely with the biomedical research scientists to modify study design and procedures that will maximize the well-being of non-human primate study subjects.

If standards of care are to change as proposed by the petition, then the implementation of new standards could require substantial resources. It is

critical to use these resources in the most productive manner possible. Any changes to existing regulations must therefore be undertaken by individuals with the expertise needed to identify the requirements of the animals and to make science-driven decisions to ensure that resources are put toward effective changes. We do not endorse changes to existing practices in primate caregiving as proposed in the Petition. This view is further developed below in our responses to questions posed by the USDA.

USDA QUESTIONS

Should APHIS amend Section 3.81 of the Animal Welfare Act regulations: 1) to require research facilities to construct and maintain an ethologically appropriate environment for primates; and 2) to specify the minimum standards that must be met in order for an environment to be considered ethologically appropriate?

No, APHIS should not amend the Animal Welfare Act to require ethologically appropriate environments or to specify minimum standards for such environments. The premise of the petition is faulty and it should be rejected. Any amendments to Section 3.81 of the Animal Welfare Act (AWA) regulations should be guided by the behavioral needs of the animals. Practices that are consistent with any new minimum standards should be data-driven performance standards based on peer-reviewed published literature. These approaches should also be functionally-based (i.e., the approach should balance primate care with research goals and unique characteristics of the laboratory setting) rather than relying on features that only superficially resemble the physical and social environments of wild primates. Some recent edited volumes that deal with broad aspects of behavior and ecology of wild primates attest to the diverse habitats, social settings, physical environments, and population structures that define the more than 400 species of wild primates (e.g., Campbell et al., 2011; Garber et al., 2009; Mitani et al., 2012; Veiga et al., 2013). Attempting to mimic wild conditions misses the mark of what is required for the health and well-being of captive primates. Established metrics for evaluating psychological well-being are already developed and they should be employed. Such metrics include formalized behavioral assessments and physiological measures of stress. Use of these assessments will do more to promote animal welfare than specification of new engineering standards.

The premise of the petition was to request changes to the AWA by asserting that environmental enhancement programs have stagnated over the past decades. This premise is false. The research community has made, and continues to make, the physical and psychological well-being of nonhuman primates a high priority. Since implementation of §3.81, research facilities have undertaken significant efforts to meet the complex needs of these animals. In fact, behavioral experts, in collaboration with veterinary and colony management personnel at laboratory facilities, have developed and implemented programs that promote and maintain species-typical behavioral repertoires indicative of psychological well-being for their primates. In a large survey of laboratories housing primates, 90% reported recent improvements in their enhancement programs (Baker et al., 2007). In addition to jobs in animal care and veterinary care, there are now people holding positions that reflect specializations in animal behavior, environmental enrichment, training of primates using positive techniques, socialization methods, and behavioral management. These types of positions are ubiquitous in modern primate labs, although 30 years ago, virtually none existed. As far back as 2002, laboratory facilities employed individuals with advanced degrees to oversee their enhancement programs (41% PhDs, 36% DVMs, 18% MSs), and 82% reported having an individual with expertise in well-being on their Institutional Animal Care and Use Committees (IACUCs) (Baker et al, 2007).

Modern behavioral management programs include social housing, environmental enrichment, animal training, and behavioral assessment. Housing primates with socially compatible partners is the most effective means of supporting their well-being (DiVincenti and Wyatt, 2011; Wolfensohn and Honess, 2005) and we note that substantial progress has been made to achieve this goal. For instance, 73% of nonhuman primates were housed socially in the early 2000s (Baker et al 2007; not one-third of the primates as incorrectly stated in the petition), but by 2014, this figure has risen to 84% of the NHPs being maintained in social groups or in social pairs (Bennett, 2015). Social housing is the current default housing system and the vast majority of research primates are housed socially (Baker et al 2007; Bennett, 2015). Social housing has been a tremendously successful tool in achieving NHP well-being. In stark contrast to the claims found in the Petition, this progress clearly indicates that the number of animals being singly housed has declined significantly since the enactment of the current standards contained in §3.81.

In addition, primate research facilities have environmental enrichment programs geared toward increasing the stimulation of species-appropriate behaviors. In one survey, all participant programs indicated that they included feeding enrichment, manipulable objects, and positive interaction with humans in their programs, and most also used a variety of enrichment devices and structural forms of enrichment (Baker et al, 2007). Progress is also evidenced by the fact that a number of commercial companies have been established which provide enrichment supplies and equipment to the laboratory primate community.

New and improved animal training methods have been pioneered at research facilities (Bloomsmith et al, 1994; Laule et al, 2003; Perlman et al, 2009) and these approaches have proven to be extremely useful in improving primate welfare (Lambeth et al, 2006; Clay et al, 2009; Coleman et al, 2008). Laboratory primates are now being trained to voluntarily cooperate with husbandry, veterinary, and research procedures using positive reinforcement training techniques. In the early 2000s, 55% of facilities surveyed reported the use of positive reinforcement training, with 9% employing dedicated trainers (Baker et al 2007), and this has increased in recent years. A 2009 survey found that all of the National Primate Research Centers had positive reinforcement training programs and 50% employed training coordinators (Perlman et al 2009), indicating continuing progress.
Dependent measures to evaluate psychological well-being including behavioral assessment and physiologic measures have been established (Capitanio, 1998; Doyle et al, 2008). Behavior of research primates is routinely reassessed to identify potential problems, and treatments are implemented as warranted. Abnormal behaviors are documented and there is a wealth of information published by behavioral scientists on identifying risk factors and remediating these behaviors through animal management changes (Crast et al., 2014; Gottlieb et al., 2013; Lutz et al., 2003; Lutz et al., 2007; Lutz et al., 2013; Lutz et al., 2014, Rommeck et al., 2009).

Underlying much of the advancement in the behavioral management of research primates is a rapidly expanding body of peer-reviewed, scientific literature and educational programs. There are now many hundreds of publications related to the well-being of laboratory primates that are guiding the way toward meaningful change. There are also relevant books (Novak and Petto, 1991; National Research Council, 1998; Wolfensohn and Honess, 2005)

and practice-oriented publications ("The Enrichment Record"; "Laboratory Animal Science Professional") widely available to individuals working with laboratory primates. A number of conferences are devoted to behavioral management issues ("Enrichment Extravaganza"; "Social Housing of Laboratory Animals Conference") and workshops or symposia teach methods to improve laboratory primate well-being ("Primate Training and Enrichment Workshops"; "Primadaption Workshops"; "Chimpanzees in Context"). In addition to the ASP, several professional associations allocate growing segments of their programs to behavioral and psychological aspects of primate well-being (e.g., American Association for Laboratory Animal Science; Association of Primate Veterinarians; Public Responsibility in Medicine and Research). Indeed, scientific literature and the education programs developed around this science have been major drivers of the extensive expansion of programs that has occurred in the last 20 years. We use evidence-based decision making concerning all components of environmental enhancement programs as well as the analysis of potential signs of impaired well-being and interventions to ameliorate behavioral problems.

What constitutes an ethologically appropriate environment for a primate? Does this differ among primate species? If so, how does it differ?

We presume that "ethologically appropriate environment" is a synonym for "behaviorally appropriate environment." As such, it may be defined as an environment that provides captive primates with a social and physical setting that is supportive of the maintenance of species-typical behaviors. It is not the replication of specific habitats in which primates evolved or wild primates occupy today, and the petition fails to recognize this point.

Our ability to characterize the behavioral and ecological strategies of wild primates continues to expand in the face of increasingly dire conservation predictions (e.g., Haddad et al., 2015; Laurance et al., 2014; N'goran et al., 2012). Wild primates occupy positions on a broad continuum of habitat use from relative specialists (e.g., South American uacaris that inhabit flooded forests; gibbons that are limited to intact tropical forests in Asia) to relative generalists (e.g., several species of macaques, baboons, vervets, capuchins and marmosets). While species vary in their ability to respond to environmental conditions, most primates adapt to a wide range of physical settings. Primates are also relatively large-brained and long-lived mammals with slow

reproductive strategies although they express some range of variation in socio-sexual strategies. Thus wild primates express considerable intra-specific variation in habitat use and social structure on the basis of geography, ecology, demography, and season. It is not surprising that primates in captivity, particularly in research colonies, tend to be ecological and social generalists. Rhesus macaques, for example, are highly adaptable as indicated by their success in maintaining populations in many different environments including cities (e.g., the so-called "weed species" of macaques as noted by Richard et al., 1989). Because wild primates can exhibit considerable intra-specific variation with regard to their behavior, diets, use of space and social grouping patterns, there is no single environment that is "ethologically appropriate" for any given species.

The management of captive primates regularly employs knowledge acquired from studies of wild primates to identify the psychological needs of nonhuman primates. Behavioral management programs are tailored to individual species to achieve functional similarities with wild primates; they are not intended to be, nor could they replicate wild conditions. Psychological needs may be met without replicating the conditions in which primates live in the wild, and there is a wide variety of ways to address these needs. The focus should be on function rather than on an attempt to replicate wild conditions—this focus on function already guides environmental enhancement programs, which aim to provide opportunities for species-appropriate behavior.

Should research facilities be required to identify species-specific ethologically appropriate environments, we believe the strategy for developing those standards would require thorough literature reviews for each species or group of closely related species, including behavior and ecology in the free-ranging environment and behavior in the captive setting; interviews with experts in captive care for the species; identification of convergence of thinking from scientists working with the species in laboratories, zoos, and the field on major environmental features needed by the species; a gap analysis to determine what critical areas have not yet been addressed in the existing research/scientific literature; funding to support the conduct of that needed research; and mechanism for integrating research findings into standards. If this is to be undertaken, our organization could suggest individuals to be involved who are expert on these topics.

Does an ethologically appropriate environment for primates that are used in research differ from an ethologically appropriate environment for primates that are sold or exhibited? If so, how does it differ?

The desired behavioral outcomes for nonhuman primates are the same regardless of whether they are used in research sold, exhibited, or housed in sanctuaries, and there are multiple potential environments that can be used to promote those behaviors. However, the approach taken to support well-being must harmonize with the goals of the facility in question (e.g., research goals in a laboratory setting, and exhibition and educational goals in a zoo). Because of different facility characteristics, it is essential that performance standards remain the focus. This is most easily achieved by the use of objective scientific analysis as various environmental conditions can be tested and implemented when proven to provide benefit.

In order to improve conditions for all captive primates, the focus on these three contexts in which nonhuman primates are held should be broadened. Addressing conditions for captive primates in other situations, such as those privately owned in the pet trade and those that are illegally imported is critical. There is minimal or total lack of oversight for these primates, thus they are totally outside of the care system provided for research or zoo animals.

Are there any environmental conditions that make an environment ethologically inappropriate for a primate? If so, what are they? Do they differ among primate species?

A key condition for most nonhuman primates is social housing. The *Guide for the Care and Use of Laboratory Animals* (*The Guide*) (2011) and the Association for Assessment and Accreditation of Laboratory Care, International (AAALACi) (2013) call for social housing as the norm for all facilities housing NHPs unless there are valid scientific or veterinary reasons for exemption. The 2011 revision of *The Guide* specifically states, "Social animals should be housed in stable pairs or groups of compatible individuals unless they must be housed alone for experimental reasons or because of social incompatibility."[p. 51] and "like all social animals, nonhuman primates should normally have social housing…" [p. 58]. Therefore, social housing is the current default and is endorsed by the Association of Primate Veterinarians and the American Society of Primatologists. In fact, the vast majority of

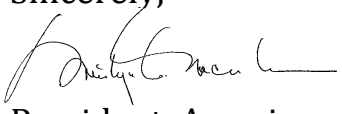
primates housed in research facilities are currently housed in social configurations, as described above (Baker et al 2007; Bennett 2015). This transition was gradual due to the need to generate objective data and establish processes for the introduction of animals as well as for modifications in cage design. Social housing has been and continues to be a significant focus by IACUCs, veterinarians, behavioral managers, and voluntary accreditation agencies such as AAALACi, as well as federal regulatory agencies.

Who should make the determination regarding the ethological appropriateness of the environment for primates at a particular research facility – the attending veterinarian for the facility, APHIS, or both parties? If both parties should jointly make such a determination, which responsibilities should fall to the attending veterinarian, and which should fall to APHIS?

Nonhuman primates have varied needs, depending on species, sex, age, past experience, and individual personality. Therefore, the determination regarding the most appropriate environment should involve the input of individuals who have formal training and expertise in the behavioral and/or clinical care of nonhuman primates, namely the Applied Primate Behavioral Scientist in collaboration with the Attending Veterinarian. APHIS should provide guidance regarding procedures that have been successful at other facilities, especially for smaller facilities that may not have a full-time Applied Primate Behavioral Scientist on staff.

In summary, the American Society of Primatologists does not believe that APHIS should amend the Animal Welfare Act to require ethologically appropriate environments or to specify minimum standards for such environments. The premise of the petition to make such changes is faulty and it should be rejected. ASP does support further improvements in the care and welfare of laboratory primates by continuing to improve the implementation of behavioral management programs and by further expansion of the scientific basis for making species-specific improvements to address the needs of laboratory primates.

Sincerely,



President, American Society of Primatologists

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