AV magazine

A PUBLICATION OF THE AMERICAN ANTI-VIVISECTION SOCIETY
2011 | Number 3 and 4

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American Anti-Vivisection Society

2011 Number 3 and 4

A Closer Look at Primates & Science

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Founded in 1883, the American Anti-Vivisection Society's (AAVS) mission is to unequivocally oppose and work to end experimentation on animals and to oppose all other forms of cruelty to animals. AAVS is a nonprofit education organization using legal, effective advocacy to achieve meaningful, lasting change.

AV magazine
VOLUME CXIX Number 3 and 4 ISSN 0274-7774

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AV Magazine (USPS 002-660) is published quarterly by the American Anti-Vivisection Society, which has been providing a magazine for members continuously since 1892. Annual membership dues: $25.00.

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First Word

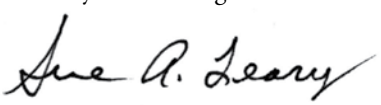
IN AUGUST 2005, AAVS and our affiliate, the Alternatives Research & Development Foundation (ARDF), signed a resolution of animal protection organizations worldwide calling for an end to the use of non-human primates in biomedical research and testing. The resolution, made at the Fifth World Congress on Alternatives and Animal Use in the Life Sciences in Berlin, urged governments, regulators, industry, scientists, and research funders to accept the need to end primate use as a legitimate and essential goal; to make achieving this goal a high priority; and to work together to facilitate this.

AAVS had already helped achieve legislation in the U.S. to retire chimpanzees to sanctuaries, and funded sanctuaries who cared for them and for other primates. And so, although we were no strangers to making primate research a priority, our pledge was a commitment to move forward. We began to research U.S. official records and track primate use, and became familiar with the agencies and the policies that either encourage primate research or regulate their trade and use. This issue of the *AV Magazine* provides a number of the pieces in the puzzle. The Special Report section is full of factual information and revelations. We will continue to work in the months and years to come, making the case to end primate research.

In addition to the animal protection organizations who signed the Berlin Resolution was the famous anthropologist and champion for chimpanzees, Jane Goodall. She was a keynote speaker at the conference. Running late as usual, I ended up in the elevator with Jane and her companion. Also there was her mascot, a child's stuffed chimpanzee, that she held tenderly. We exchanged pleasantries and I resisted the urge to gush, knowing that she was trying to focus on the talk before an audience of a thousand in just a few minutes. But her presence was calm and reassuring, and that is her gift. In spite of her philosophical differences with biomedical researchers who cling to their use of primates in experiments, they cannot help but admire her dedication and marvel at the world she opened up to all of us—the secret life of chimpanzees.

Many of us have been inspired by Jane Goodall, but I am also inspired every day by my colleagues and coworkers, the AAVS Board and of course, our members. It is inconceivable that this incredible dedication and smart, informed, determined advocacy will not succeed. Meanwhile, the hurt ones—the primates who have made it out of research to sanctuaries, need our help. I will be making a gift to AAVS's Sanctuary Fund this holiday season in honor of Jane Goodall. You might want to do the same.

Thank you for caring!



Sue A. Leary, President
American Anti-Vivisection Society

News

ISSUES AFFECTING ANIMALS

Animal Transport Leads to Monkey Deaths

Charges of animal cruelty were filed against two men after more than a dozen monkeys were found dead in their shipping crates at the Los Angeles International Airport. The men had conspired to deliver the animals from Guyana to Thailand where a buyer had purchased them for unknown purposes. Akhtar Hussain from Guyana hired Robert Matson Conyers from Florida to make the delivery. "It wasn't illegal for Conyers and Hussain to ship these animals," said attorney Don Cocek, "but the conditions inside of the shipping containers was [*sic*] horrendous and criminal."

Fourteen marmosets, six squirrel monkeys, and five white-faced capuchins were packed into wooden shipping crates and traveled through Miami to Los Angeles, and then to Chinese airports. However, the animals were refused transit into China because of a problem with their shipping documents, and were returned to Los Angeles. Once back in the U.S., officials found 14 monkeys had died from starvation and hypothermia, and another had to be euthanized. There was also evidence that living animals ate the carcasses of those who were deceased, just to survive.

The surviving animals were taken to the Los Angeles Zoo for emergency medical treatment and then transported to the San Diego Wild Animal Park for full recovery. U.S. Fish and Wildlife Services first investigated their case and then transferred it to prosecutors in Los Angeles. If convicted, both men face up to six months in prison and $20,000 in fines.

ALLERGAN WILL REDUCE ANIMAL TESTS

The makers of the popular anti-wrinkle injection, Botox, which is also used for some medical conditions, have long been criticized for their cruel use of animals in safety testing. But now, Allergan has announced it received approval from the Food and Drug Administration (FDA) to use a new test method that could reduce animal experiments for Botox by 95 percent worldwide.

Traditional testing methods for this product included the LD50 (Lethal Dose 50) test, in which animals—usually mice—are given specific amounts of a substance to determine the dosage that kills 50 percent of them. The test causes considerable pain and eventual death by asphyxiation. Moreover, every batch of Botox needed to be tested before going to market, because it is a biological product.

According to its press release, the California-based company spent more than 10 years and $65 million on researching the *in vitro*, cell based alternative that was submitted to the FDA and approved this year. The assay will immediately be put to use in production of Botox in the U.S., and the company stated that it will work to gain approval in other countries where it is distributed.

Class B Animal Dealer Shuts Down

Chestnut Grove Kennel, a random source Class B animal dealer whose owners were charged with conspiracy and fraud, closed its doors in September, and will no longer be selling dogs and cats to research. There are now only eight random source Class B dealers operating in the U.S.

Floyd and Susan Martin operated their business out of Shippensburg, Pennsylvania, the state's only random source Class B animal dealer. The Martins sold about 600 dogs every year to research facilities throughout the country.

Selling dogs and cats from random sources, such as pounds and shelters, to laboratories has been a hot-button issue for the past several years, and rightfully so. In 2009, the National Academies released a report stating that animals from random source Class B dealers are not needed in federal research, and last year, an audit of USDA's oversight of Class B dealers concluded that the agency is failing to ensure that dealer activities are lawful.

PHOTOS BY ISTOCKPHOTO AND BY VEER

Scientists Call for a Ban on Chimp Experiments

The widely respected magazine, *Scientific American*, recently published an editorial that calls for a ban on invasive research using chimpanzees. Recognizing that chimps feel pain and viable alternatives are emerging,

"IN OUR VIEW, THE TIME HAS COME TO END BIOMEDICAL EXPERIMENTS ON CHIMPANZEES."

they write, "In our view, the time has come to end biomedical experiments on chimpanzees."

The editorial tells the story of Bobby, one of the chimps used for biomedical research at the Coulston Foundation in Alamogordo, New Mexico. Born in captivity, he was first subjected to testing at a young age, and, the editors write, "by the time he was 19 he had been anesthetized more than 250 times and undergone innumerable biopsies in the name of science. Much of the time he lived alone in a cramped, barren cage. Bobby grew depressed and emaciated and began biting his own arm, leaving permanent scars."

Fortunately for Bobby, the Coulston Foundation closed in 2002, and he was sent to sanctuary at Save the Chimps in Florida. However, approximately 180 other chimps, who once served at Coulston, continue to be threatened with a return to research. The Institute of Medicine is currently finalizing a study as to whether the animals are "necessary" research subjects, and the findings may seal their fate.

The editors took a strong stand against invasive research on chimps. However, if it is not banned completely, they called for tighter regulations and an ethics committee specifically for this species. "The committee would need to include not just medical researchers but also bioethicists and representatives from animal welfare groups," they write. Moreover, the goal should be to move towards a day when all chimpanzee research is completely phased out.

New Mechanism Studies Brain Function

Brain research traditionally involves the highly invasive use of animals, including primates. However, some research aims may be met with *in vitro* models that investigate effects on a cellular level. In the past, researchers have had difficulty achieving a convincing level of complexity with these models to be considered useful, but recently, French scientists have had a breakthrough.

The new device, developed by Jean-Louis Viovy and his team at the Curie Institute in Paris, forms neuronal networks *in vitro*. It consists of two cell culture chambers connected by microchannels. Viovy and his team have managed to mimic living brain tissue by constricting nerve fibers so that they grow only from one chamber to the other, and not the other way around.

"I was struck by the simplicity of the system; it is beautiful," said Bonnie Firestein, a cellular neurobiologist at Rutgers University. "It is very easy to make and to use, and allows the recreation of what happens *in vivo* in an *in vitro* system," she remarked. What's more, the networks were able to be maintained for three weeks, allowing for both short- and long-term studies.

Viovy said his interest in this project originated from needing a model that could study the progression of brain damage in degenerative diseases such as Alzheimer's. In addition, he says the system could also be used to study brain development and cognitive science.

Why Monkeys Matter

BY SUE A. LEARY

PHOTO BY VEER

As an animal advocate, I have sat across the table from primate vivisectors and wondered, how can they do these things? How can they act so deliberately, taking an innocent being who looks at you with intelligent, expressive eyes, render him defenseless with drugs or physical restraint, and methodically cause suffering, and, eventually, death?

It's not just an anguished, idle thought. Understanding what factors drive the animal research enterprise leads to understanding what it will take to redirect it, and prevent the suffering of hundreds of thousands of non-human primates.

Recognizing that humans share so many qualities with our primate cousins, including the powerful bond between mothers and babies, and keen intelligence and adaptability, most people, including some researchers, have a higher level of concern about primates' ability to suffer. Consequently, the use of primates in experimentation is often challenged on ethical grounds.

In 2005, the Nuffield Council on Bioethics in the United Kingdom published an extensive report, "The Ethics of Research Involving Animals." Over a period of two years, members of a specially appointed committee reviewed available information and viewpoints on the welfare of animals used in laboratories. Trying to encompass all stages of an animal's life, they looked at: "breeding (including the use of wild-caught animals); transportation; housing; husbandry and care; handling; restraint; identification; adverse effects of scientific procedures (e.g. nausea from toxic compounds, discomfort and pain from induced syndromes, natural and experimental infections); and euthanasia."[1]

All these factors become magnified when considering primates in particular, because of their lifespan—up to 30 years for the commonly used rhesus monkeys. Largely because primates cost thousands of dollars each, they are typically 're-used' for experiments, traded between labs, and rented out. An article in the online magazine *Slate* called them "professionals—life-long civil servants."[2] Not surprisingly, the negative impact of life as a research subject has a cumulative effect. Primates who survive multiple experiments and make it to, perhaps, 10 years old, have a trail of horrible experiences behind them. Re-use is also controversial because it raises questions about the validity of scientific results. An animal's reactions may not be to a current test, but to past exposures, which can alter body chemistry.

WHO THEY ARE

The use of chimpanzees, who are apes, in research is rare and declining. But a few species of monkeys are commonly used in experiments.

New World monkeys (from Central or South America) used include marmosets, tamarins, and squirrel monkeys. Marmosets, from Brazil, with their characteristic white-tufted ears, are on

the smaller side, weighing only about a pound. That makes them economical for labs due to smaller cage sizes. Cotton-top tamarins have a shock of white hair on top of their heads, contrasting with their black faces, and are slightly larger than their marmoset cousins. They are highly endangered and no longer exported (legally, at least) from their native Columbia. They became highly prized as research subjects because they can develop colon cancer, and were taken from the wild by the tens of thousands in the 1960s and 1970s.[3]

Squirrel monkeys are larger still—about 2 pounds, and much more commonly used, with a life expectancy of 20 years or so. Remarkably active, flying through trees, they may travel almost two miles in a day—an instinct utterly frustrated in a lab cage.

Old World monkeys (from Asia or Africa) used in research include vervet (or green) monkeys, baboons, and the most common, macaques. Adult male vervets reach over 15 pounds and their unique appeal to researchers is that they can develop high blood pressure. Baboons are much larger. Adult males average over 60 pounds while adult females are less than 40 pounds. A famous baboon use was in 1984, when a newborn infant, "Baby Fae," received a transplant with a heart that was taken from a baboon[4]—as much an experiment on Fae, who only lived 20 days.

By far the most sought after and widely used monkeys used in research are rhesus macaques, long-tailed (or crab-eating) macaques, and pig-tailed macaques. Much less bulky than baboons, adult male macaques will weigh only a little over 20 pounds and females only about 12 pounds.

WHAT IS DONE

Although the U.S. does not gather specific information on the types of experiments that primates are used for, the European Union (EU) does, and due to the similarity in their research enterprise, we can infer what primates are subjected to in U.S. labs.

According to the most recent EU statistics from 2008,[5] toxicological and other safety testing accounts for 68 percent of primate use, with most of that for pharmaceutical drugs and devices. Another 13 percent of primate use is for research and development of new drugs and devices. Basic biomedical research accounts for another 13 percent.

In the U.S., although the pharmaceutical industry is certainly a dominant player in animal research, we might not expect quite the same numbers. It seems likely that basic research, the kind that goes on at universities, may account for a higher proportion of primate use than in Europe. The U.S. has a government-funded National Primate Research Center network with eight university-affiliated locations engaged in breeding and specialized experimentation. At these centers, cultivation of primate species as models is encouraged. For example, owl monkeys have been in limited use as a model for malaria research. If current attempts to improve breeding prove satisfactory, then they will surely gain popularity for other uses as well.

CHANCE PLAYS A ROLE

In fact, the 'popularity' of one species over another is often due to access and not for scientific reasons. In the 1950s, India permitted hundreds of thousands of rhesus macaques to be exported to the U.S. for polio research.[6] When they stopped the practice years later, scientists turned to other sources and then other species, meanwhile improving reproduction rates for those in captivity.

In recent years, scientists have called for locating primate research facilities in the countries where the primates are native, or at least nearby.[7] China has become a major user, and exporter, of primates in research—sometimes for the same pharmaceutical and chemical companies based in the U.S. and EU.

Ultimately, funding priorities and technology influence how all science is conducted. When the Decade of the Brain was declared by President George H. W. Bush in 1990, the National Institutes of Health directed funding to brain research. The journal, *Nature Neuroscience* was launched in 1998 to publish papers resulting from the boom in experiments, many of which involved primates. Since then, we've seen that some of the monkeys who arrive at sanctuaries supported by AAVS have scars from implanted brain devices that have been removed before they were 'retired' from labs.

In another example, after the attacks on September 11, 2001, the U.S. instituted new programs to research much-feared chemical and biological agents and ways to combat their effects. At a conference 10 years after 9/11, I saw a scientific poster from New Mexico's Lovelace Lab showing a full-strength mustard gas experiment on monkeys, and I prayed that the monkeys never awoke from the anesthesia because their suffering would have been unimaginable.

Women's health research, genetic research, drug testing, vaccine testing, infectious disease research, addiction experiments, behavioral studies, and more all consume primates and the demand from experimenters for unfettered access continues to be strong.[8] This was evident in Europe over the last few years during policy debates on animal testing. However, our EU advocacy partners posed tough challenges to regulatory requirements for primate experiments and achieved some concessions. Change will come as ethics provide the motivation and science provides the innovation to find alternatives to the shameful use of our primate cousins in science. **AV**

Sue A. Leary is the President of AAVS.

Citations

1 Nuffield Council on Bioethics (2005) The ethics of research involving animals.
2 Engber, D. (2009, June 5). Me and My Monkey: The confessions of a reluctant vivisector. Slate.com. http://www.slate.com/articles/health_and_science/pepper/2009/06/me_and_my_monkey.single.html.
3 Mittermeier, R. A., et. al. (2009). Primates in Peril: The World's 25 Most Endangered Primates 2008–2010. *Primate Conservation 24*: 1-57.
4 Altman, L. (1984, November 16). Baby Fae, Who Received A Heart From Baboon, Dies After 20 Days. *New York Times*. http://www.nytimes.com/1984/11/16/us/baby-fae-who-received-a-heart-from-baboon-dies-after-20-days.html.
5 European Commission. COM(2010) 511 final/2. Accompanying document to the Report From the Commission to the Council and the European Parliament--Sixth Report on the Statistics on the Number of Animals used for Experimental and other Scientific Purposes in the Member States of the European Union.
6 Rowan, A. N. (1984). *Of mice, models, and men, a critical evaluation of animal research*. (pp. 110-117). State University of New York Press, Albany.
7 Hau, J. and Schapiro, S.J. (2006). Non-human Primates in Biomedical Research. *Scandinavian Journal of Laboratory Animal Science, 33*(1), 9-12.
8 *Ibid.*

A Behaviorist's View

BY DEBRA DURHAM

Squirrel monkeys, like most primates species, live in groups and develop close family bonds.

BEHAVIOR IS A MODE OF COMMUNICATION that can tell us how an animal is feeling and help us understand the impacts of stress, pain, and suffering. As an animal behaviorist, I am always looking for clues that tell me how an animal may be feeling. A variety of behaviors and the right combination of these behaviors tells me that she is doing okay. In observing a monkey who doesn't do much of anything and always keeps to herself or is agitated and often upset, jumping from one activity and place to the next, I see indicators of depression or anxiety. When I see behaviors like self-mutilation or hyper-aggression, I worry about other serious psychological conditions. Paying attention to behavior is a first step to understanding animals and helping those who are in need.

AT ODDS WITH WHAT WE KNOW

I have witnessed the suffering of primates in labs firsthand, and I know that testing causes stress and suffering. When we think a little about the biology and natural history of primates, it's easy to see why the effects of testing are so devastating.

The biological group of animals known as primates share a number of common traits. Though these are familiar to us because humans are also primates, I share a few that are important for understanding this issue. For example, primates have large brains for their body size and are known for their intelligence and problem solving. To grow this big brain and develop impressive cognitive skills, primates tend to have long and relatively slow development as babies and youngsters. Primates are vulnerable and very sensitive to stress during early life. They spend an especially long period of time with their moms, whom they depend upon while growing up. The relationship with mom is significant, but most primates have a number of relationships with other family members and friends, too. These relationships are close, complex, and critically important to all aspects of primate life.

FROM THE FOREST TO THE LAB

The long, grueling journeys from monkey farms and shipping ports are another source of extreme stress for primates. Monkeys are packed into tiny shipping crates, trucked to an airport, and put through inspections just like luggage. The trips are long and arduous; animals are kept in their crates during loading, flights, layovers, transfers, and inspections. It's not uncommon for a long international journey to take 24 hours or more.

Once animals have endured capture and transfer to a lab facility, a totally different kind of life begins. Typical lab cages are about 2x2x3 feet. A 15-pound monkey can usually touch the floor, ceiling, and all four walls if he is standing in the center of such a cage. Think "shower stall." Now think about being stuck in one for your entire life.

Beyond being just standard equipment, a cage like that is entirely legal under the Animal Welfare Act. Cages are barren, perhaps having only a shelf for sitting and sleeping. They are stacked two high in most labs, with four or eight lined up against the walls facing other rows of cages. The lucky primates have mesh walls, so they can see their neighbors, but solid cage walls are common. Remember that big primate brain and the long developmental process I mentioned at the beginning? Then you won't be surprised to learn that this barren environment has devastating effects for primates in labs. For example, a study at Princeton University concluded that the regulation lab housing for monkeys was inadequate to promote normal brain development and function.[1]

Although there is growing recognition that social housing is preferable, many primates

are alone in their cages, so the very social nature that is a fundamental part of being primate is prevented and denied. A small proportion of primates are housed in one cage as a pair. Even fewer live in corrals or rooms as part of a small group. The majority live alone in a cage. Some cages have bars that allow limited touching, but, sadly, that is not the norm. Isolation and other social deprivation not only cause a great deal of stress and suffering but also cut off critical ways of coping, through grooming and touching, because normal social relationships and behaviors are impossible. Studies suggest that even relatively small events that last just a few minutes, like having blood taken or moving a cage from one room to another, are acutely stressful for primates in labs, and ultimately affect their physical health and even mortality risk.[2]

Confined, stressed, and without ways to cope or to soothe each other, monkeys in labs often develop serious psychological conditions. Under the impacts of stress, trauma, and the environment, key biological systems start to malfunction, including those in the brain. In addition to health problems, psychological symptoms are common. Large surveys done by the labs themselves report that nearly all monkeys—90-99 percent[3, 4]— show such psychological symptoms of abnormal behavior. If we think of these behaviors as signals of how the animals are feeling, the message is clear: the situation is bad for almost everyone. For the 15 percent or so who bite themselves or otherwise self-mutilate[5, 6] suffering is dire. These are figures that we would call a pandemic if reported for humans or even for wild animals. If it were a school or hospital, it might well be shut down.

PSYCHOLOGICAL TESTING

Barren cages and isolation are the day in and day out of every primate lab, but what about the tests and experiments themselves? There is too much variety to cover here, but I want to share some examples. In the 1950s, Harry Harlow became infamous for conducting maternal deprivation experiments where baby monkeys were taken from their mothers and raised with wire figurines or other surrogates. Unfortunately, maternal deprivation experiments are still going on today. In other experiments, monkeys are repeatedly addicted to alcohol, methamphetamine, heroin, or other drugs, and forced through withdrawals. The monkeys, cages, and the drugs are paid for by the government. At times, these types of studies are combined: baby monkeys are taken from their mothers, raised as orphans, and then later in life used in addiction or psychological experiments.

SURVEYS DONE BY THE LABS THEMSELVES REPORT THAT NEARLY ALL MONKEYS–90 TO 99 PERCENT–SHOW... PSYCHOLOGICAL SYMPTOMS OF ABNORMAL BEHAVIOR.

SANCTUARY FOR THE LUCKY FEW

Another important primate trait is a long life-span. A long life means that the suffering primates endure in labs can last a long time. Monkeys can easily live to be 20 years old, and chimpanzees can live to be 50 years or even older. A chimpanzee stolen from the wild in the 1960s could still be languishing in a lab cage today. A baby monkey born in a breeding farm tonight might have 20 years of experiments ahead of her.

But not all primates used in labs die there. A lucky few find their way to sanctuaries. For chimpanzees, some retirement is mandated by law. For monkeys, the story is a bit different because release to sanctuary is purely voluntary, and labs are rarely willing to bear the costs. As a result, sanctuaries are left to cover expenses for lifetime care.

Those primates who are relinquished to sanctuaries face challenges as a result of their physical and psychological health. Through my work, I have seen that the road to recovery is long and hard for some, but I am heartened when I see positive changes taking place. Sometimes it's a big transformation that takes place relatively quickly. Other times, it happens in baby steps.

The contrast between life in the lab and life in sanctuary is significant. Everything we know about primates indicates that they recognize this difference. For example, after arriving at sanctuaries, apes and monkeys stop pulling out their hair and decrease other behavioral pathologies. Importantly, many individuals choose to spend time playing, grooming, and relaxing with other monkeys to establish and develop relationships that will support the rehabilitation process over months or years.

TURNING THE PAGE ON PRIMATE TESTING

In September, a video of chimpanzees in Austria who were released to a sanctuary after 30 years in labs went viral on the internet. As the doors opened, they were overcome with excitement and joy. They hugged each other. They looked at each other and squealed with anticipation and excitement. Reassuring one another, they stepped out of the door, together, onto the green grass to experience the sunlight and a taste of freedom for the first time.

Think of those behaviors as a clear message demonstrating that primates are sensitive, intelligent, social individuals who value life, each other, and autonomy. No one has to do a doctoral dissertation to know what that means for the ethics of primate testing. **AV**

Debra Durham has a Ph.D. in animal behavior from the University of California, Davis, and her research focuses on animals' response to change and stress. She travels extensively, studying animals in the wild and captivity.

[1] Kozorovitskiy, Y., Gross, C.G., Kopil, C., Battaglia, L., McBreen, M., Stranahan, A.M., and Gould, E. (2005). Experience induces structural and biochemical changes in the adult primate brain. *Proc Nat Acad Sci, 102*:17478-17482.
[2] Capitanio, J.P., Lerche, N.W. (1998). Social separation, housing relocation, and survival in simian AIDS: A retrospective analysis. *Psychosom Med, 60*: 235-244.
[3] Bellanca, R.U., & Crockett, C.M. (2002). Factors predicting increased incidence of abnormal behavior in male pigtailed macaques. *Am J Primatol, 58*:57-69.
[4] Lutz, C., Well, A., & Novak, M. (2003). Stereotypic and self-injurious behavior in rhesus macaques: A survey and retrospective analysis of environment and early experience. *Am J Primatol, 60*:1-15.
[5] Bellanca, R.U., & Crockett, C.M. (2002). *See note 3*.
[6] Lutz, C., Well, A., & Novak, M. (2003). *See note 4*.

Chimpanzee Research & the Road to Retirement

By Kathleen Conlee and Jennifer Ball

If you ever meet a chimpanzee, you can't help but feel an instant connection. But, beyond the undeniable feeling of connectedness, science is showing us more and more just how much alike we are. What we have learned about the mental and emotional capabilities of chimpanzees since Dr. Jane Goodall first began observing wild chimps 50 years ago is remarkable. Chimps have complex social and emotional lives; they express a range of emotions, including pleasure, sympathy, fear, and depression. Their incredible intelligence is evidenced by problem solving, tool use, numerical skills, and even the ability to communicate in American Sign Language. Unfortunately, their similarity to us has kept chimpanzees in laboratories for the past several decades, but the tide may finally be turning in favor of these majestic individuals.

One of many baby chimps born at the New Iberia Research Center despite a breeding moratorium.

PHOTOS COURTESY OF THE HUMANE SOCIETY OF THE UNITED STATES

THE TRUTH BEHIND CLOSED DOORS

Decades ago, chimpanzees were used in a variety of experiments, such as testing the effects of space flight, toxic substances, and disease. Over time, ethical concerns and scientific advancements have significantly reduced their use. Today, only 10-20 percent of chimpanzees in labs are involved in active research protocols. Some claim chimpanzees are vital to hepatitis C and monoclonal antibody therapy research. However, recent reviews have shown that alternatives—such as *in vitro* modeling and well-designed, human epidemiological studies—are more effective and should be the way forward.[1, 2, 3]

Nonetheless, a 2009 unprecedented undercover investigation by The Humane Society of the United States (HSUS) at the largest chimpanzee laboratory in the world, the University of Louisiana at Lafayette's New Iberia Research Center (NIRC), revealed what life is like for chimpanzees behind laboratory doors. An investigator documented chimpanzees isolated in small, steel cages for months at a time; screaming when pursued with dart guns; and baby chimpanzees taken away from their mothers. We were also introduced to Sterling—a chimpanzee who mutilates himself—and Karen, who was 53 years old at the time of the investigation.

What everyone suspected was confirmed: the laboratory environment clearly cannot meet the extremely complex psychological and social needs of chimpanzees and, furthermore, is detrimental to their well-being. Additionally, recent studies show that chimpanzees formerly used in invasive research experience symptoms similar to post-traumatic stress disorder and other mood and anxiety disorders in humans.[4, 5, 6]

SANCTUARY FOR SOME

In the 1990s, the National Institutes of Health (NIH) requested that the National Research Council (NRC) examine chimpanzee research and long-term care. Among other suggestions, the NRC recommended that a sanctuary system be created for chimpanzees who were determined to no longer be needed for research. The committee also recommended against euthanasia of "surplus" chimpanzees, for ethical reasons.

These recommendations spurred passage of the Chimpanzee Health Improvement, Maintenance, and Protection Act in 2000, which established a government-supported sanctuary system for federally-owned chimpanzees that is currently run by Chimp Haven in Shreveport, Louisiana. The first residents were retired in 2005, and the facility now houses approximately 120 chimpanzees.

However, despite the creation of a national sanctuary, many chimpanzees are simply languishing in laboratories at a significant cost to taxpayers. A prime example of this is the number of federally-owned chimpanzees at the Alamogordo Primate Facility (APF) in New Mexico, all of whom have a heart-wrenching past.

The APF chimpanzees were once in a facility called The Coulston Foundation (TCF)—a laboratory with a long record of serious violations of the Animal

Welfare Act and other laws. TCF lost NIH funding in 2001, and NIH took ownership of approximately half of its chimpanzees, while those remaining were rescued by Save the Chimps, a chimpanzee sanctuary that has provided them permanent retirement.

Nine years later, in the summer of 2010, NIH announced an ill-advised plan to move the 202 mostly elderly chimpanzees remaining at APF to the Southwest National Primate Research Center, a laboratory in Texas where they would be more readily available for invasive experimentation. None of the chimpanzees had been used for research in nearly a decade. Thanks to a massive public outcry, NIH halted the transfer. Sadly, by this time, 14 of the APF chimpanzees had already been moved to the Texas lab.

Additionally, at the urging of some members of Congress, NIH is sponsoring a study to review and assess the need for chimpanzees in biomedical and behavioral research, which will be conducted by the Institute of Medicine (IOM) through the end of 2011. There has been some controversy around the process thus far. For instance, the scope of the study, as determined by NIH, does not address ethical issues surrounding the use of chimpanzees in harmful experiments. In addition, several of the committee members appeared to have conflicts of interest as well as strong affiliations with groups that defend any use of animals in research. Thankfully, following public pressure, three of the 15 original members are no longer serving on the committee, and the lone bioethicist on the panel was named chair.

As part of this study, the IOM committee recently held a public meeting in Washington, DC and invited several experts, including Jane Goodall, to provide testimony about the use of chimpanzees in various areas of research. The testimony confirmed that, despite claims otherwise, chimpanzees are not necessary for many areas of research, such as: monoclonal antibody testing, HIV, respiratory syncytial virus, drug development, malaria, and others. Additionally, many speakers suggested that it made little sense to discount ethical issues when making determinations on this matter.

Barren conditions were documented for many of the chimpanzees at the New Iberia Research Center.

CHIMPANZEE PROTECTION

Since 1990, the U.S. Fish and Wildlife Service (FWS) has recognized wild chimpanzees as "endangered" under the Endangered Species Act (ESA). However, chimpanzees held in captivity in the United States are not afforded any protection under the ESA. Their current status under the ESA has not only facilitated the harmful use of captive chimpanzees in research, entertainment, and the pet trade, but has also negatively impacted wild chimpanzee populations. Studies show that using chimpanzees in media and advertising, as well as keeping them as pets, contributes to the false notion that chimpanzees are not an endangered species.[7, 8]

In 2010, The HSUS and several co-petitioners, including the Jane Goodall Institute, the Association of Zoos and Aquariums, and Wildlife Conservation Society, filed a petition requesting that all chimpanzees—captive and wild—be listed as "endangered" under the ESA, which would provide protection to captive chimpanzees in the U.S. In September of 2011, FWS officially announced that sufficient evidence was presented in the petition to warrant a review of the status of chimpanzees under the ESA.

Legal challenges, increased public awareness, and scientific studies have been important factors in the battle to get chimpanzees out of labs. The best hope, however, is the Great Ape Protection and Cost Savings Act (H.R.1513 and S.810), championed by Senator Maria Cantwell (D-WA) and Representative Roscoe Bartlett (R-MD) and supported by a bipartisan group of cosponsors. This federal legislation will phase out invasive research on all of the approximately 1,000 chimpanzees in U.S. laboratories, and retire the approximately 500 federally-owned chimpanzees currently in laboratories to permanent sanctuary. This bill will save taxpayers nearly $300 million over the next decade due to the lower cost of sanctuary and the end of wasteful chimpanzee research.

If you haven't already, please contact your members of Congress to ask for their support on this important and groundbreaking bill. Chimpanzees deserve sunshine on their faces and grass under their feet, not lifetime confinement in laboratories. AV

Kathleen Conlee is the Senior Director of Animal Issues at The HSUS, and Jennifer Ball is the Project Manager for Chimps Deserve Better, a project of The HSUS.

[1] Bradshaw, G.A., Capaldo, T., Lindner, L., Grow, G. (2008). Building an Inner Sanctuary: Complex PTSD in Chimpanzees. *Journal of Trauma & Dissociation*, *9*(1), 9-34.
[2] Ferdowsian, H.R., Durham, D.L., Kimwele, C., Kranendonk, G., Otali E., et al. (2011). Signs of Mood and Anxiety Disorders in Chimpanzees. *PLoS ONE 6*(6): e19855. doi:10.1371/journal.pone.0019855
[3] Bailey, J. (2010). An assessment of the use of chimpanzees in hepatitis C research past, present and future: 1. Validity of the chimpanzee model. *ATLA, 38*(5), 387-418.
[4] Bailey, J. (2010). An assessment of the use of chimpanzees in hepatitis C research past, present and future: 2. Alternative replacement methods. *ATLA, 38*(6), 471-94.
[5] Bettauer, R.H. (2010). Chimpanzees in hepatitis C virus research: 1998–2007. *Journal of Medical Primatology, 39*(1), 9–23.
[6] Bettauer, R.H. (2011). Systematic Review of Chimpanzee Use in Monoclonal Antibody Research and Drug Development: 1981-2010. *ALTEX, 28*(2), 103-16.
[7] Ross, S.R., Lukas, K.E., Lonsdorf, E.V., Stoinski, T.S., Hare, B., Shumaker, R., Goodall, J. (2008). Inappropriate Use and Portrayal of Chimpanzees. *Science 319*(5869): 1487. DOI:10.1126/science.1154490.
[8] Ross, S.R., Vreeman, V.M., Lonsdorf, E.V. (2011), Specific Image Characteristics Influence Attitudes about Chimpanzee Conservation and Use as Pets. *PLoS ONE 6*(7): e22050. doi:10.1371/journal.pone.0022050

The Use of Primates in the EU

By Irmela Ruhdel and Ulrike Gross

The welfare of animals used for scientific purposes in the European Union (EU) is protected by a mutually agreed upon Directive, the latest of which was adopted in September 2010. Transposing the new Directive into individual Member State laws needs to be completed by the 27 EU Member States by November 2012 and be applied starting January 2013. During negotiations between the EU Commission, European Parliament, and Council of Ministers, the original EU Commission Directive proposal regrettably became considerably weakened, and the new Directive has not met the expectations of the animal protection community. However, we acknowledge the overall improvement of the protection of laboratory animals within the EU, especially in EU Member States that previously had no or incomplete regulations.

One special concern of animal welfare people is the use of nonhuman primates due to their closeness to humans, their highly developed social skills, and their ability to suffer, which is very similar to that of humans. European animal welfare organizations lobbied hard to implement a ban on their use but failed; however the use of primates has been restricted.

The 'recitals' (similar to a preamble) to the Directive contain some strong statements of intent with regard to the use of primates. It is recognized that the use of primates raises specific ethical and practical issues in terms of meeting their behavioral, environmental, and social needs in a laboratory environment. The additional suffering caused by the capture of wild animals is also recognized, and strong public concern is acknowledged. It is stated that their use should be restricted to the study of potentially life threatening or debilitating conditions in humans.

PHOTO BY VEER

USE OF GREAT APES

The Directive states that "great apes shall not be used in procedures." However, if a Member State has justifiable grounds, it may adopt a provisional measure for their use that has to be agreed upon by a committee of the European Commission.

From our point of view, experimenting on great apes cannot be ethically justified. It is for this reason that some EU Member States, including Great Britain, the Netherlands, Sweden, Belgium, and Austria, have already prohibited experiments on great apes. Within the EU, statistics show that the last great ape experiments were performed in 1999. For the transposition into national law, we are asking for a ban on their use without exceptions.

OTHER PRIMATES

Although the Directive stipulates that "[nonhuman] primates shall not be used in procedures" with the exception of those meeting certain criteria, the allowance is quite broad. Drug testing and basic research are permitted, as is translational or applied research investigating "the avoidance, prevention, diagnosis, or treatment of debilitating or potentially life-threatening clinical conditions in human beings."

From the point of view of animal protection, experiments on monkeys other than great apes are also ethically unjustifiable. The initial half-clause, "primates shall not be used in procedures," acknowledges this. However, exceptions mentioned in the Directive essentially nullify any prohibition. For example, clinically speaking, "debilitating" generally refers to serious, long-lasting, often incurable diseases like multiple sclerosis or late stage cancer. But the provision meant to restrict clinical research in primates to "debilitating" conditions is reduced to pointlessness, since the term is far too often defined as "a reduction in a person's normal physical or psychological ability to function." This means that even research into the common cold can be considered licit.

Further restrictions with regard to primates include use of only purpose-bred primates from self-sustaining colonies (dependent on a feasibility study that will take at least 11 years); retrospective assessments of all projects using primates; and annual inspections of all breeders, suppliers, and users of primates. The Directive also specifically allows Member States to ban the use of primates in procedures involving severe pain, suffering, or distress that are likely to be long-lasting and cannot be ameliorated.

JUDICIAL SCRUTINY

The future use of primates in Europe will depend not only on the transposition of the Directive. Court cases will also influence the application of the law, and already have to some extent in Germany and Switzerland, where invasive brain research using primates was challenged on ethical grounds.

Both cases involved similar research in which electrodes were surgically inserted into the brains of monkeys, who were strapped in chairs and had bolts cemented to their skulls to keep their heads still. Each animal spent hours concentrating on a screen and performing visual tasks for the experiments, and cooperation of the monkeys was forced by restricting drinking water. Brain activity was recorded, and at the conclusion of the experiments, the monkeys were killed.

In each country, new legal concepts deriving from constitutional amendments re-evaluating animal rights are being tested.

In Germany, for example, the Constitution guarantees freedom of research. In 2002, the German Constitution was amended to include animal protection as a target provision. This meant an upgrade of animal welfare against freedom of research. Consequently, in 2008, when a researcher applied to continue invasive brain research in monkeys, the Health Authority ruled that the suffering of the primates outweighed the possible benefit for the community, and denied a new license. The researcher filed suit against the Authority's decision at the local Administrative Court and applied successfully for a preliminary injunction to continue his experiments until the decision. In May 2010, the Court overturned the denial of the license by the Authority. It did not issue a blanket license, however, but ruled that the Authority had to re-evaluate the case. The Authority appealed, and the case is pending. Probably the argument will have to be decided by the German Constitutional Court or even the European Court of Justice.

In Switzerland, the Constitution has explicitly protected the dignity of animals since 1992. Also, the Canton of Zurich permits appeals against animal experimentation licenses. Based on this unique legal situation, the Cantonal Advisory Committee on animal experimentation filed appeals against two licenses for invasive brain research in macaques to the Cantonal Council in 2006. Both appeals were approved and the experiments banned. The researchers appealed, first to the Cantonal Council, and when it upheld the ban, to the Canton's Administrative Court. It, too, upheld the ban and the researchers appealed to the Swiss Supreme Court, which confirmed the ruling in both cases. This is the first successful appeal against a license for animal experimentation, and the first time that dignity of animals and the violation thereof has been acknowledged to be legally significant.

A general prohibition of primate use in experiments may not be realizable when transposing the new Directive into national law. Animal protection organizations, therefore, are advocating that authorization policies should at least aim at approving primate experiments only in quite exceptional circumstances and only after thorough scrutiny of each individual case. AV

...the use of primates raises specific ethical and practical issues in terms of meeting their behavioral, environmental, and social needs in a laboratory environment.

Dr. Irmela Ruhdel and Ulrike Gross work with the German Animal Welfare Federation and its Animal Welfare Academy in Germany.

PROFILE

Shirley McGreal

Founder, International Primate Protection League

A true global citizen, Shirley McGreal, Ed.D., was born and raised in England, and lived in Thailand, France, and various parts of U.S. before settling in South Carolina at the gibbon sanctuary she established in 1977. Originally planning a career as a college professor, Dr. McGreal was unexpectedly drawn into a more adventurous life. As a result of her work confronting international animal smugglers, she has gone undercover to investigate primate smuggling rings and laboratories, received death threats from illicit animal dealers, and been the target of groundless lawsuits. In recognition of Dr. McGreal's work, in 2008, AAVS presented her with the Caroline Earle White Award, named in honor of our founder.

AAVS had the opportunity to sit down with Dr. McGreal and talk about the founding of her group, the International Primate Protection League (IPPL), and her work as an animal advocate.

AAVS: How did IPPL start?

DR. McGREAL: IPPL started when I was living in Thailand, and I saw all the abuses of animals at places like the markets and the airport. Back then, a lot of people had gibbons in their homes. We ended up getting two gibbons from a family—there were actually two and then later another one from a family who was leaving the area. Then we learned there was a gibbon lab in Bangkok—a U.S. Army Southeast Asia treaty organization lab. I wanted to find out what was going on, and this nice man who worked there gave me some annual reports and told me what they were doing. They were in fact exporting gibbons for research in the United States. I thought, I have to get in touch with a group that's working on these particular problems—but I found that there wasn't any. So I started one. It was just me, and then a couple of friends.

How long did that take?

I got interested in these in issues in '72, and started the group in '73.

You acted quickly. How did your group expand?

We got some publicity going in Singapore, and checked out the smuggling there—I was able to infiltrate two of the most notorious smugglers, pretending to be interested in making an illegal shipment. They told me all their tricks. And there was an article that the *Bangkok Post* wrote with me, called "The Singapore Connection," which went worldwide on the Associated Press.

That's great exposure! Sounds dangerous, though. Are activists working on smuggling issues today at risk?

It's not safe to be an activist in some countries. In Indonesia, we have activists whom we work with to block the traffic in monkeys. One time, these Indonesian activists blocked the road where the Ministry of Forestry was driving, demanding that the Javan langur be given protection. This Minister was just about to run them down, but he stopped to talk, and the young people got what they wanted.

Can you tell us about Thailand's ban on primate exports?

We had a project in the airport where we got university students, about 50 of them, all going 'round the clock 'round the airport looking for animal shipments and logging every single one—the conditions, whether the animals had food, the size of the cages, the ventilation—all the things that are very much important to safe transport. You could walk anywhere

PHOTOS COURTESY OF THE INTERNATIONAL PRIMATE PROTECTION LEAGUE

around the cargo areas at Bangkok airport in '75. But now you couldn't do that.

What did you do with all the info?
The students produced huge reports, and Thailand's Prime Minister was so horrified about the number of animals who were leaving Thailand that he banned all export of primates and almost every other mammal.

Wow. A similar story happened with India, right?
India was exporting monkeys, and when we learned about the Armed Forces Radio Biology Research Institute, I managed to get permission to go and see it. I saw the monkeys, and learned what the Institute was doing. We did press releases to every single Indian newspaper about these horrible experiments. *The Times of India* did a very good editorial calling for a ban on exports. We also had a connection to the then-Prime Minister, Morarji Desai, who banned all exports in 1977. Since then, no monkeys have legally left India for research or any other purpose.

It's great the ban has held up that long.
It was so important that when Mrs. Gandhi replaced Morarji Desai— he was totally anti-experiments—I wrote to her asking, "Would you please keep the ban?" And she wrote me back, assuring me that India will continue the ban.

Wonderful!
Then after that, Bangladesh got a ban. [There were] radiation experiments where the monkeys were trained to run on a treadwheel, then irradiated, then put back on the treadwheel, where they'd literally collapse. They were vomiting. It was just dreadful. We talked to the government of Bangladesh, and we found that they'd signed a contract with a U.S. company to export 70,000 monkeys. When we got letters in the papers, the head of Bangladesh threw the U.S. company out.

Great victory! What about smuggling? Can you tell us about case?
Matthew Block was (and still is) a big importer of monkeys to the United States. He dealt with the primate centers and people who bought monkeys—but that part was legal. We learned that there was a sordid underside, that he was also involved in this very prominent smuggling case of six baby orangutans who were seized from the Bangkok airport. Most of them died, but they were alive for at least three months. We did our own investigation and finally got Fish and Wildlife Service on the case. It was eventually prosecuted. Matthew Block went to prison, sentenced for 13 months on felony conspiracy counts.

When primates are found, do they go to a sanctuary?
Sometimes they do, or sometimes they get placed in a zoo. Now there's a network of sanctuaries across Africa, and that has really done a lot of good because before, when animals were being smuggled and caught at the airport, the governments didn't have a place to send them. But now they have a group of very good sanctuaries. Sierra Leone's chimp trade is completely dead now, and has been for years, since they started up a chimp sanctuary called Tacugama.


Veteran lab gibbon and IPPL resident, Arun Rangsi, 32 years old.

One thing you encourage activists to do is write letters to foreign government officials. It definitely seems to work.
Yes. We like that, and we also like letters to the ambassadors of the foreign countries. When an embassy gets hundreds of letters, they'll send them to the foreign office at home, which is more aware of the public relations implications than, say, the wildlife department. So we try to get a variety of officials for people to write to, including their own governments.

IPPL also has a sanctuary in South Carolina. Can you tell us why this is an important part of your mission?
We have 33 gibbons, many of them ex-lab gibbons. They've been here a very long time. It's important because people like knowing individual animals and what's happened in their lives. We also help support primates in overseas sanctuaries, including chimpanzees, baboons, and woolly monkeys. Half of our program costs are concentrated on providing financial help to small activist groups and rescue centers around the world.

Funding for most sanctuaries is difficult, isn't it?
Yes. We're also concerned about the imbalance [of primates in sanctuaries] because some of the chimpanzee and great ape sanctuaries have more funding compared to the monkey sanctuaries—for every chimp in research, there are probably more than 100 or so monkeys. They deserve to retire also.

Sanctuary work must be stressful. So many primates are in need . . . it can be overwhelming. How do you keep going?
I've been around the animal movement a long time, and I think the reason I'm not burnt out is because every day I talk to the gibbons. I see them and remember their histories and the horrible things that happened to them. And they tell me, "You keep hanging on for my cousins!" So I think sanctuary is important. It's very important because the animals, who have been treated so shockingly, deserve peace and a peaceful retirement. **AV**

For more information on IPPL and the gibbon sanctuary, visit www.ippl.org.

PROFILE

John Gluck

University of New Mexico and Kennedy Institute of Ethics at Georgetown University

Dr. John Gluck with rescued horse Marigold.

John Gluck, Ph.D., is a trained psychologist and primotologist. After spending years working with macaques in a research laboratory, he was moved to see animals in a different light, and his work now focuses solely on research ethics. Dr. Gluck is a highly respected advocate for primates, particularly chimpanzees, and has been an outspoken proponent for chimp retirement. He is the co-author of *The Human Use of Animals: Case Studies in Ethical Choice*, and is currently working on a book tentatively titled *Released: the Rediscovery of Ambivalence in the Use of Animals in Research*.

Recently, AAVS met with Dr. Gluck to discuss his unique perspective on animal research and our relationship with primates. We hope our readers find his candor and insight poignant and thought-provoking.

AAVS: What drew you to the psychology field?

DR. GLUCK: I had family members who were subject to various neuropsychiatric disorders. My grandmother suffered terribly from depression; my father had Parkinson's Disease, which also evolved into dementia; and I had an aunt who was 'housed' in one of those classic psychiatric facilities that kept people for decades and decades. As a high school student, trying to pick up books on psychology and psychotherapy, nothing really gave me a great deal of insight. So when I left for university, I thought I'd either become a veterinarian or a psychologist. The desire to do something beneficial for people like my family made me pursue psychology.

That field naturally involved animals?

When I was an undergraduate in the 1960s, animal use was very dominant. You know, everybody got a chance to run rats through mazes, and the thought was that that's the way you got at complex human problems, by studying so-called 'simpler organisms.'

Did you work with Harry Harlow as a grad student?

Yes. When I left undergraduate school, I was admitted to the University of Wisconsin and I had a number of mentors who were responsible for me. Harry Harlow was one.

He become notorious for terrible maternal deprivation experiments, but you went down this very different path. What kind of influence did he have on you?

[He was a] strong personality. The difference was that he was not a dominating person: he wasn't demanding academically; he wasn't a bully in the sense of, "This is what you'll do, and get to it, and get me the data!" That wasn't him at all. As a student you got the feeling that he trusted you. He didn't demand any of his students to follow his particular research direction.

What sort of person was Harlow?

He was a humorous person, [and] generous in a lot of ways. When people graduated, he provided equipment and monkeys for starting new laboratories. I know I have a different view of that now, but at the time, I really got the feeling he was concerned about his students' welfare. I would also say he was an exceptionally lonely person. He had been married twice. When his second wife died, he immediately got re-involved with his first wife, which I think illustrated what a lonely person he was. He wasn't somebody who was going to live by himself.

PHOTO BY JONATHAN LEWIS (THIS PAGE) AND BY VEER (OPPOSITE)

Do you think that part of his personality drew him to maternal deprivation experiments?

The question I've had for a long time is how he missed the animal welfare implications of his work. Harlow was basically the person who carried a long needle and popped the theoretical bubbles of other researchers. But when he became the focus of people's criticism, he was lost.

He felt his work was justified?

He had a personal investment in producing models of psychiatric disorders in monkeys because he knew well the "black dog" of depression. When he received the National Medal of Science, he went into a very serious depression where he was hospitalized, and I can distinctly remember him saying, "Well, this is an award you get only once your career is over, when you are basically washed up." I think he got into some of the more gruesome animal studies as a way to prove that he wasn't washed up, that he was going to push the boundaries even further. And I think in so doing, he lost contact with what are important ethical limits.

How so?

He was one of the first psychologists to be starkly against describing animals as little motorized vehicles. Cognitively speaking he saw them capable of complex problem solving and hypothesizing. So, here he is saying these things about the capabilities and emotional lives of monkeys, and he doesn't get that these have ethical implications. He missed it. And not only did he miss it, but a lot of people missed it—I include myself in that.

Having him as a mentor, what led you to change your views?

There's so many factors. I remember a local newspaper did a long spread on the work that was going on in the primate lab I created, and that brought a lot of criticism from the public. I can't say I was 100 percent surprised.

What about university students?

When I was running a particular experiment, say one that involved the use of electric shock, occasionally I had students who would say, "It's not like I can't do it; I *won't* do it." I remember one graduate student who acknowledged the death of a monkey in his dissertation. I opened the manuscript to the acknowledgements page wanting to see what nice things he'd said about me. And instead of reading that, I read this remorse about a monkey dying.

The students obviously connected with the animals they worked with.

Let me give you one other story that may be illustrative as well. There was a young woman who was a graduate student, and she was interested in mother-infant interaction. I said, "Well, I have a group of stumptail macaques living on the roof of the psychology building. Why don't you spend the summer watching these monkeys and how they interact? Then you may have some ideas about experiments you could do to test attachment in the fall." So she did that, and come September, I said, "OK, do you have any research ideas?" And she said, "Actually, I'm going to take a leave of absence from the university. I need to have a baby."

Really?

Yes, she said that during that summer there were two infants born in the group. And she was so struck by the intensity of the relationships between the mothers, fathers, and infants that she felt a connection with these animals. Instead of thinking in terms of, "Well, what kind of experiment could I do to disrupt this?" it just related to her as a person. I thought that was really quite incredible.

It certainly is!

I also observed that I was avoiding the lab. I was finding all sorts of reasons not to be there. It was just too unpleasant. But I figured I had to spend more time there to see what was actually taking place. And when I did that, I saw how absolutely limited those animals' lives were, the ones who were individually caged.

What did you do then? You had all these years of research and this direction you were going in…

I made some terrible mistakes. I realized I wanted to at least separate myself from the work…I feel like I sold monkeys down the river. I started reading more of the animal welfare literature at that time—Peter Singer, Tom Regan. And I started to teach courses in research ethics. Eventually I did a fellowship in bioethics at Georgetown [where I met influential animal welfare advocates]. That was when I committed myself to improving the situation in animal research.

Do you think researchers' attitudes today towards animals, particularly primates, has changed from when you were a grad student?

I think they recognize that you're under more scrutiny when you do this work, so therefore, you have to be more careful. But I have to say that I think their ethics are not all that different. I think they're more responsive to regulation.

Researchers seem to be a tight-knit group.

That goes for animal researchers in general. I've seen that time and time again, where somebody does something horrific—let's say doing research without IACUC approval—and the reaction by and large is that people surround the person and protect them. I see that way too much.

Let me ask you a little more about animal use itself. We hear a lot about 'career lab animals.' Can you tell us what that means?

It's a term that reflects an economic situation. From a financial perspective, monkeys aren't rats. They're too expensive to euthanize after an experiment. And so they become career animals, career research subjects.

But if a macaque is used in a drug testing experiment, how can he later be used in biomedical research? Wouldn't that have an effect?

It's interesting. From a historical perspective, if you asked Harlow why it was that he built a breeding colony, he would've told you, "In a breeding colony, I know precisely how they were raised." And that's how the individual caging got started. But these animals have all sorts of experiences. How do you know how or if these previous experiences are influencing your results now? Most people assume that if you're doing neuroscience or looking at how the endocrine system works, or something big like that, previous histories are not going to have a substantial influence. Now, that's the belief, but it's convenience, really. If you're doing a pharmacokenetics study, and you're just studying where these drugs go into different organs, they would say there's nothing wrong with doing that with another drug. But we really don't know whether the previous experiences are influencing or not.

Macaques are often used for research. Is that also a convenience?

Macaques are, as some people put it, the second most successful primate on the face of the earth—humans being number one. Some people refer to them as 'weed species.' If you put 'em some place, they prosper. Whether it be in Himalayan mountains or semi-arid, quasi-desert environments or mango swamps, they manage to make it work. At one time, there was a great deal of importing from India and southern Asia. Then people learned, like Harlow, how to breed them. So there's all this knowledge about how to breed them in captivity.

Since primates are such adaptive and social animals, how important is enrichment? Can it affect a research study?

It's crucial; there's no question about it. But there's something else about enriched environments—and this is not an argument against them. They serve to deflect criticism.

How so?

I recently visited a laboratory. It was one of the best structural primate laboratories I'd ever seen. The monkeys lived in large enclosures with good perching and vertical exercise equipment. But, it took me days to see any problems. Then I realized it was too quiet. The monkeys weren't vocalizing. Why weren't they vocalizing? Well I came to suspect that they were hard of hearing from experimental noise exposure. And there were high levels of liquid deprivation, so they weren't moving around a lot in order to keep their respiration down. I was there for a week before I really got a chance to pick up these subtleties.

This isn't a reason not to provide enrichment, of course. But it's eye candy to deflect you from seeing what's going on inside the door, or at least it serves that purpose. It doesn't convert them to natural animals.

You've been so outspoken against the use of chimpanzees in invasive research. Do you ever see an end for them, or for all primates?

I think chimps are on the way out. I think the momentum is heading in that direction. I remember interacting with [New Mexico] Senator Jeff Bingaman's science advisor. It was like he was saying, "Oh, you should be telling NIH." The guy was so completely convinced that the only people who should be making any decisions about chimps were scientists, like nobody else was a stakeholder. And yet somehow—maybe with pressure from animal protection groups in New Mexico—Bingaman changed his mind and got together with [New Mexico Senator Tom] Udall and Senator Tom Harkin of Iowa to write a letter to NIH to get the Institute of Medicine to study the issue. And the Chair of the Institute of Medicine Committee was insistent that ethical issues be discussed. When that shift took place, my optimism increased, and I'm not an optimistic person by nature.

How do you think the study's results will impact chimp research?

The study can't say there's a broad consensus that chimps are needed for biomedical research because that's not what the testimony was. There were people who said, yeah, they needed them. But it was much narrower than that. The study might well come out and say that the use of chimpanzees must be limited to a couple of areas like hepatitis C and non-invasive behavioral studies, but should be off limits for other uses. I would also expect that the report will provide an in-depth ethical justification for any uses they support as well as the ethical basis for protection. This will have the effect of focusing the debate. I believe that chimpanzee research will end in my lifetime, and I am already past middle age. **AV**

Dr. Gluck is emeritus professor of psychology at the University of New Mexico and is a research professor at the Kennedy Institute of Ethics at Georgetown University.

PHOTO BY VEER

SPECIAL REPORT

PRIMATES BY THE NUMBERS

THE USE AND IMPORTATION OF NONHUMAN PRIMATES FOR RESEARCH AND TESTING IN THE UNITED STATES

BY CRYSTAL MILLER-SPIEGEL, MS, POLICY ANALYST

People connect with other primates. They are charismatic animals with whom we share many traits and feel a kinship. It is similar to our connection with companion animals such as cats and dogs, but sometimes more profound due to their uncanny resemblance. As a result, nonhuman primates' welfare is generally more highly regarded than animals such as mice or rats, and they are considered to have unique requirements due to their levels of intelligence and sentience (not to mention their genetic relatedness to people). Despite these perceptions, a decline in their use in experiments in the European Union, and a general decline in the use of other favored animals like cats and dogs in the U.S., the use of nonhuman primates in laboratory experiments in the United States has increased over the last decade. It is now at a record high since the U.S. Department of Agriculture began publishing these data in 1973.

Similarly, the importation of nonhuman primates into the U.S. has grown steadily over the past decade. Monkeys intended for use in biomedical research and testing experiments and/or breeding for use in experiments are the majority of the nonhuman primates imported into our country.[1] Fortunately, compared to more recent years, the number of nonhuman primates imported to the U.S. slightly decreased in 2010.

Using original data obtained from federal agencies through Freedom of Information Act requests, this Special Report will examine trends in the use and importation of nonhuman primates in the United States.

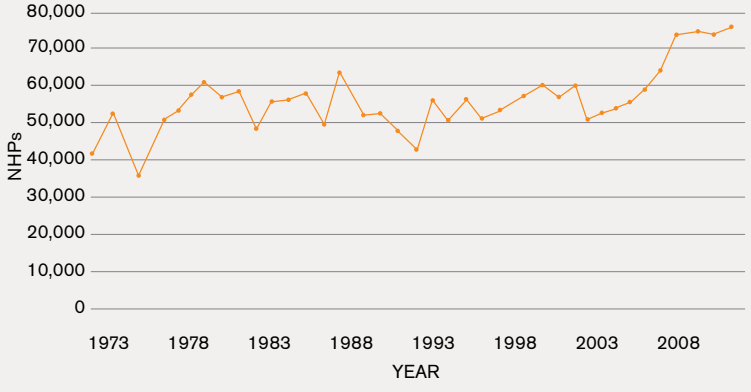
TRENDS IN USE

As in previous decades, in the early 2000s, the biomedical research community complained of shortages of monkeys for research and testing experiments,[2, 3, 4] and convened meetings to address the perceived shortage,[5] despite the tens of thousands of nonhuman primates who were held *in* labs but not used[6] in experiments and the increasing trend in outsourcing or conducting animal experiments in other countries to avoid animal welfare-related regulatory oversight or financial burdens.

Data obtained from laboratories' Annual Reports submitted to the U.S. Department of Agriculture (USDA) indicate that the use of nonhuman primates in laboratory experiments has climbed in recent years (Figure 1), and the future remains uncertain.

FIGURE 1

NHPs Used in Experiments, 1973–2010



Data do not include all nonhuman primates in laboratories, just those used in experiments during these years. Sources: U.S. Department of Agriculture Animal and Plant Health Inspection Service Enforcement Reports, electronic data received through a Freedom of Information Act request, and USDA APHIS Annual Report - Animal Usage by Fiscal Year. Online at: http://www.aphis.usda.gov/animal_welfare/efoia/downloads/2010_Animals_Used_In_Research.pdf

Recently, the use of most other animals regulated by the USDA for research and testing (e.g. cats, dogs, guinea pigs, rabbits etc.)[7] has been largely declining, but in recent years, the numbers of nonhuman primates *used in experiments* rose from 57,518 in 2000 to 71,317 in 2010. (Figure 2) **This is the largest number of nonhuman primates used in experiments in a single year since the USDA began tracking such data in 1973.**[8] When nonhuman primates *used for breeding or otherwise held in labs* are included in the totals for 2010, the number of nonhuman primates in U.S. labs totals 125,752. (Figure 3)

Although the USDA does not indicate the species or common names of apes, monkeys, and prosimians when recording the number of animals in the category of "nonhuman primates," the majority of them are rhesus macaques (*Macaca mullata*) and long-tailed (or crab-eating) macaques (*Macaca fasicularis*). There are just over 1,000 chimpanzees in U.S. labs.

In 1999, the top users and largest populations of nonhuman primates in the U.S. were primarily located at universities (or as part of the Regional Primate Research Centers, now called National Primate Research Centers, which are supported by the federal government). Data from 2010, however, show that several private companies, such as Charles River Laboratories, SNBL USA, Ltd., and Covance Labs (all of which import, sell and/or conduct experiments on nonhuman primates and other animals), have become the nation's top users of primates and have some of the largest captive populations. (Figures 4 and 5)

In 2010, laboratories self-reported using 30,808 nonhuman primates in procedures or experiments involving pain and distress, which represents 43 percent of the nonhuman primates used in experiments that year.[9] Further, 1,395 of those nonhuman primates were reported as having been used in experiments or procedures involving *unalleviated* pain and distress. Figure 6 shows the top five laboratories using nonhuman primates in such experiments in 2010. These labs conduct infectious disease, toxicity, biowarfare, and other related experiments.

[1] Importation data include nonhuman primates imported for zoos and other exhibition. However, the majority of them are imported for use in or breeding for biomedical research and testing.
[2] Cohen, J. (February 11, 2000). "Vaccine studies stymied by shortage of animals." *Science. 287*:959-960.
[3] Lueck, S. (May 14, 2002). "Monkey deficit crimps labs." *Wall Street Journal.*
[4] National Center for Research Resources. (2002). *Survey of NIH-funded investigators who use nonhuman primates: Report on survey findings.* Bethesda, Maryland.
[5] Miller-Spiegel, C. (2003). "Weeds, pests, needs, and surplus: The rising use of non-human primates in the United States." *AV Magazine*, Summer 2003: 2-6.
[6] Each year, tens of thousands of nonhuman primates are held in U.S. labs but not actually used in experiments. Here we distinguish between the total numbers of primates used in experiments and those who are otherwise held in laboratories (e.g., for breeding, future use, etc.).

TRENDS IN IMPORTATION

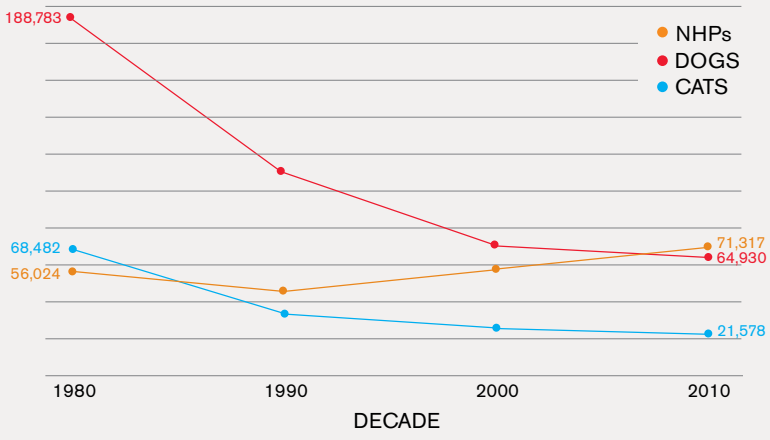
Each year, tens of thousands of nonhuman primates are sold by the "head" and packed into small crates bound for the U.S. Once the crates arrive after the grueling air journey, the primates are driven to a quarantine facility before reaching their final destination in a lab.

According to U.S. Fish and Wildlife Service (USFWS) Law Enforcement Management Information System (LEMIS) data analyzed by AAVS, the importation of nonhuman primates into the U.S. nearly doubled over the past decade from 10,530 animals in 1996 to 21,135 animals in 2010. (Figure 7) Though these data on are not strictly limited to animals imported for biomedical research and may include animals imported to zoos or the entertainment industry, the large majority of the nonhuman primates are destined for laboratories.

Imports of nonhuman primates into the U.S. appeared to be at an all-time high in the late 1950s,

FIGURE 2

Cats, Dogs, and NHPs Used in Experiments by Decade, 1980–2010



Data do not include all cats, dogs, and nonhuman primates in laboratories, just those used in experiments these years. Sources: U.S. Department of Agriculture and Plant and Health Inspection Service Enforcement Reports, electronic data received through a Freedom of Information Act request, and USDA APHIS Annual Report - Animal Usage by Fiscal Year. Online at: http://www.aphis.usda.gov/animal_welfare/efoia/downloads/2010_Animals_Used_In_Research.pdf

FEDERAL OVERSIGHT

U.S. Department of Agriculture (USDA)

USDA is charged by Congress to enforce the Animal Welfare Act (AWA), which includes regulations regarding the handling, treatment, use, and domestic and international transport of certain species used or intended for use in research, testing, education, exhibition, breeding, and sale of pets. The AWA includes minimal standards for carriers and intermediate handlers, primary enclosures used to transport nonhuman primates, mode of transport, food and water requirements, care in transit, transit terminal facilities, and handling.

U.S. Fish and Wildlife Service (USFWS)

The USFWS regulates the importation, exportation, and interstate trade and transportation of live and dead nonhuman primates and their parts. Its authority derives from two U.S. laws: the Lacy Act, which prohibits the transport of mammals and birds into the U.S. under inhumane and unhealthful conditions; and the Endangered Species Act (ESA), which restricts the importation, exportation, and interstate transport of animals classified under the Act as "threatened" or "endangered."

Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES)

An international treaty intended to protect globally traded wild animals and plants, CITES is enforced in the U.S. through the ESA. CITES Appendix I includes species who/which are threatened with extinction. Their commercial trade is prohibited, but import/export permits for scientific research may be allowed. CITES Appendix II includes animals and plants who/which may become threatened without some protection, and export (or re-export) permits must be issued by the exporting country before they can be transported. All nonhuman primates are listed on either CITES Appendix I or II.

Centers for Disease Control and Prevention (CDC)

Part of the U.S. Department of Health and Human Services, the CDC is responsible for protecting public health. This includes enforcement of regulations aimed to prevent the introduction, transmission, and/or spread of communicable diseases from foreign countries into the U.S. As such, it regulates the importation of animals who have the potential to carry a communicable disease by monitoring the permitting and registration of imports and their quarantine. The CDC requires that nonhuman primate importers register with the agency, and certify that the nonhuman primates will be imported only for use in "bona fide" exhibition, education, or scientific purposes, not as pets. CDC must review proposed plans for each shipment of nonhuman primates arriving in the U.S., and it also monitors shipments upon arrival at ports of entry and the quarantine facilities, where imported animals must be kept for at least 31 days after arrival.

with an approximate 223,000 nonhuman primates imported in 1958 alone, primarily due to the use of rhesus macaques in experiments to develop a polio vaccine.[10] There are conflicting data, but primate imports may have numbered well over 100,000 individuals each year through the 1960s.[11, 12] At that time, many animals came from central and south America and were imported for the pet trade. Legal restrictions, including the Endangered Species Act and the Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES), and trade bans/restrictions in Peru, Bolivia, Columbia, Bangladesh, and India regarding the capture and export of nonhuman primates led to a significant decline in imports through the 1970s.[13] The trade in all nonhuman primates is regulated on some level by CITES. (See Federal Oversite, page 19)

According to global trade data analyzed by the Species Survival Network, long-tailed macaques, or crab-eating macaques, (*Macaca fascicularis*) are by far the most common nonhuman primates currently imported for laboratory experiments. In fact, they are the "most heavily-traded mammal[s] currently listed on the CITES appendices."[14] Rhesus macaques are second. Compared to trade during the years 1999-2003, global trade in long-tailed macaques more than doubled between 2004-2008 to 261,823.[15]

Figure 8 illustrates that 19,063 long-tailed macaques were imported into the U.S. in 2010. Rhesus macaques (*Macaca mulatta*) are the second most commonly imported primates with approximately 1,738 individuals imported into the U.S. in 2010. Other highly-imported primates include grivet/vervet monkeys, pig-tailed macaques, common marmosets, and squirrel monkeys.

Covance Research Products, Inc., a company that conducts preclinical drug testing on animals and also sells animals to other laboratories, imported 8,258 monkeys in 2010, which represents 39 percent of the nonhuman primates imported that year and making Covance the largest nonhuman primate importer in 2010. Other private companies conducting research, testing, breeding and/or selling for research, Charles River Laboratories, SNBL USA, Ltd., Worldwide Primates, Inc., and Primate Products, Inc. followed Covance as the top importers of 2010. (Figure 9)

FIGURE 3

Total Numbers of NHPs Held in Labs, 1999-2010

YEAR	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
TOTAL NHPs IN LABS	83,092	95,381	91,377	96,229	93,568	100,976	106,757	116,542	121,068	126,599	124,385	125,752

Sources: U.S. Department of Agriculture electronic data obtained through FOIA request and USDA APHIS Annual Report - Animal Usage by Fiscal Year. Online at: http://www.aphis.usda.gov/animal_welfare/efoia/downloads/2010_Animals_Used_In_Research.pdf

[7] 'Purpose-bred' mice and rats are the most commonly used animals in biomedical research and testing labs, but their use is not regulated by the USDA.
[8] A previous analysis of nonhuman primate use in the 1960s included similar or larger numbers, but it is based on a different data set. See: Held, J.R. & Wolfle, T.L. (1994). "Imports: Current trends and usage." *American Journal of Primatology*, 3485-96.
[9] These data are based on laboratories' annual reports to the USDA, and are considered to be subjective because the labs themselves decided whether or not an experiment or procedure caused pain and/or distress. Also, some labs may have not submitted data for 2010 by the time of our request.
[10] Rowan, A. N. (1984). *Of mice, models, and men, a critical evaluation of animal research.* (pp. 110). State University of New York Press, Albany.
[11] *Ibid.*
[12] Held, J.R. & Wolfle, T.L. (1994). "Imports: Current trends and usage." *American Journal of Primatology*, 3485-96.
[13] *Ibid.*

FIGURE 4
Top 10 Labs Holding the Largest Numbers of NHPs, 2010

LABORATORY	USED IN EXPERIMENTS	HELD FOR BREEDING/ OTHER	TOTAL NHPS ONSITE
Charles River Wilmington, MA	5,546	4,664	10,210
SNBL USA Everett, WA	3,396	4,528	7,924
University of Louisiana/New Iberia Research Center, Lafayette, LA	1,773	5,716	7,489
Tulane University New Orleans, LA*	1,383	4,949	6,332
University of California Davis, CA**	3,049	3,263	6,312
Covance Labs Madison, WI	5,210	816	6,026
Manheimer Foundation Homestead, FL	511	4,773	5,284
Oregon Health & Sciences University, Portland, OR*	3,432	1,187	4,619
Emory University Atlanta, GA*	2,369	1,735	4,104
Southwest Foundation for Biomedical Research, San Antonio, TX*	1,309	2,751	4,060
All Other Sites	43,339	20,053	62,299
TOTAL FROM ALL U.S. LABS	71,317	54,435	125,752

FIGURE 5
Labs Using Largest Numbers of NHPs, 2010

LABORATORY	USED IN EXPERIMENTS
Charles River Wilmington, MA	5,546
Covance Labs Madison, WI	5,210
University of Puerto Rico San Juan, PR	3,469
Oregon Health & Sciences University, Portland, OR*	3,432
SNBL USA Everett, WA	3,396
MPI Research Inc. Mattawan, MI	3,136
University of California Davis, CA*	3,049
National Institute of Health Bethesda, MD	2,846
Emory University Atlanta, GA*	2,369
University of Texas Houston, TX	2,176
All Other Sites	36,688
TOTAL FROM ALL U.S. LABS	71,317

Sources: U.S. Department of Agriculture electronic data obtained through FOIA request and USDA APHIS Annual Report - Animal Usage by Fiscal Year. Online at: http://www.aphis.usda.gov/animal_welfare/efoia/downloads/2010_Animals_Used_In_Research.pdf

*National Primate Research Center

Countries exporting nonhuman primates into the U.S.

Asian countries have been a main supplier of nonhuman primates to the rest of the world for decades. After an overwhelming demand from U.S. researchers for rhesus macaques to use in radiation experiments, India banned primate exports in 1978, and Bangladesh followed a year later.[16, 17] Since 2000, China has been the top exporter of nonhuman primates to the U.S. and the numbers of nonhuman primates exported into the U.S. from China have increased dramatically. For example, in 2000, it exported 4,137 nonhuman primates into the U.S., but the numbers have since tripled to 13,096 exported to the U.S. in 2010. China has at least 40 monkey breeding facilities.[18] As of 2008, there were 170,000 long-tailed macaques and 40,000 rhesus macaques, who are mainly used for exportation to biomedical research and testing, on breeding farms in China. According to an article in *Nature*, facilities in China are exhausting natural populations of non-human primates as they supply offspring of wild-caught animals to laboratories.[19]

Though it exports significantly fewer nonhuman primates than China, Mauritius (an island off of the southeast coast of Africa, near Madagascar) is the second largest exporter of monkeys to the U.S., having exported 2,940 macaques in 2010.

[14] Species Survival Network (July 2, 2011). "Selection of the long-tailed macaque (*Macaca fasicularis*) for inclusion in the review of significant trade (Resolution Conf. 12.8 (Rev. COP13)." Retrieved September 29, 2011, from http://www.ssn.org/Meetings/ac/ac25/SSN_Macaque_STR.pdf.
[15] *Ibid.*
[16] Blum, E. (1995). *The monkey wars.* (p. 120). Oxford University Press, New York.
[17] Rowan, A. N. (1984). *Of mice, models, and men a critical evaluation of animal research.* (pp. 111-117). State University of New York Press, Albany.
[18] Jiang, Z., Meng, Z., Zeng, Y., Wu, Z, and Zhou, Z. (2008.) CITES non-detrimental finding for exporting *Macaca* from China. International Expert Workshop on CITES Non-Detriment Findings. Cancun, Mexico, November 17th-22nd, 2008. Retrieved October 6, 2011, from http://www.conabio.gob.mx/institucion/cooperacion_internacional/TallerNDF/Links-Documentos/WG-CS/WG5-Mammals/WG5-CS5&6%20Macaca/WG5-CS5&6-P.pdf.
[19] Anonymous. (June 13, 2002). "Supply and demand." *Nature*, 417:684.

Macaques are trapped in the wild for export or used for breeding for export. A recent news article highlighted a possible cull of monkeys at a breeding facility on Mauritius because there is a "world 'overproduction'" of monkeys for biomedical research.[20]

In 2010, Kampuchea (formerly Cambodia) exported 2,400 nonhuman primates to the U.S., making it the third largest exporter to the U.S., and Vietnam (1,680 nonhuman primates) and Indonesia (541 nonhuman primates) rounded out the top five countries.

Three of the top five companies exporting primates to the U.S. in 2010 are based in China: Huazheng Laboratory Animal Breeding Centre (2,980 monkeys), Guangxi Weimei Biotech Co, Ltd. (1,920 monkeys) and Angkor Primate Center, Inc. (1,560 monkeys).

FIGURE 6

Top 5 Labs Using Most NHPs in Experiments Involving Unalleviated Pain and Distress, 2010

LABORATORY	NUMBER OF NHPS
BATTELLE MEMORIAL INSTITUTE COLUMBUS, OH	284
U.S. ARMY MEDICAL RESEARCH INSTITUTE OF INFECTIOUS DISEASE, FREDERICK, MD	202
LOVELACE RESPIRATORY RESEARCH INSTITUTE, ALBUQUERQUE, NM	167
NATIONAL INSTITUTES OF HEALTH BETHESDA, MD	91
UNIVERSITY OF MICHIGAN ANN ARBOR, MI	85
ALL OTHER LABS	566
TOTAL	1,395

Sources: U.S. Department of Agriculture electronic data obtained through FOIA request. Data based on laboratories' self-reporting on annual reports.

Nafovanny, based in Vietnam and considered to be the world's largest primate breeding facility, exported 1,680 monkeys in 2010, and Bioculture Mauritius, Ltd. exported 1,442 monkeys.

Wild-caught non-human primates

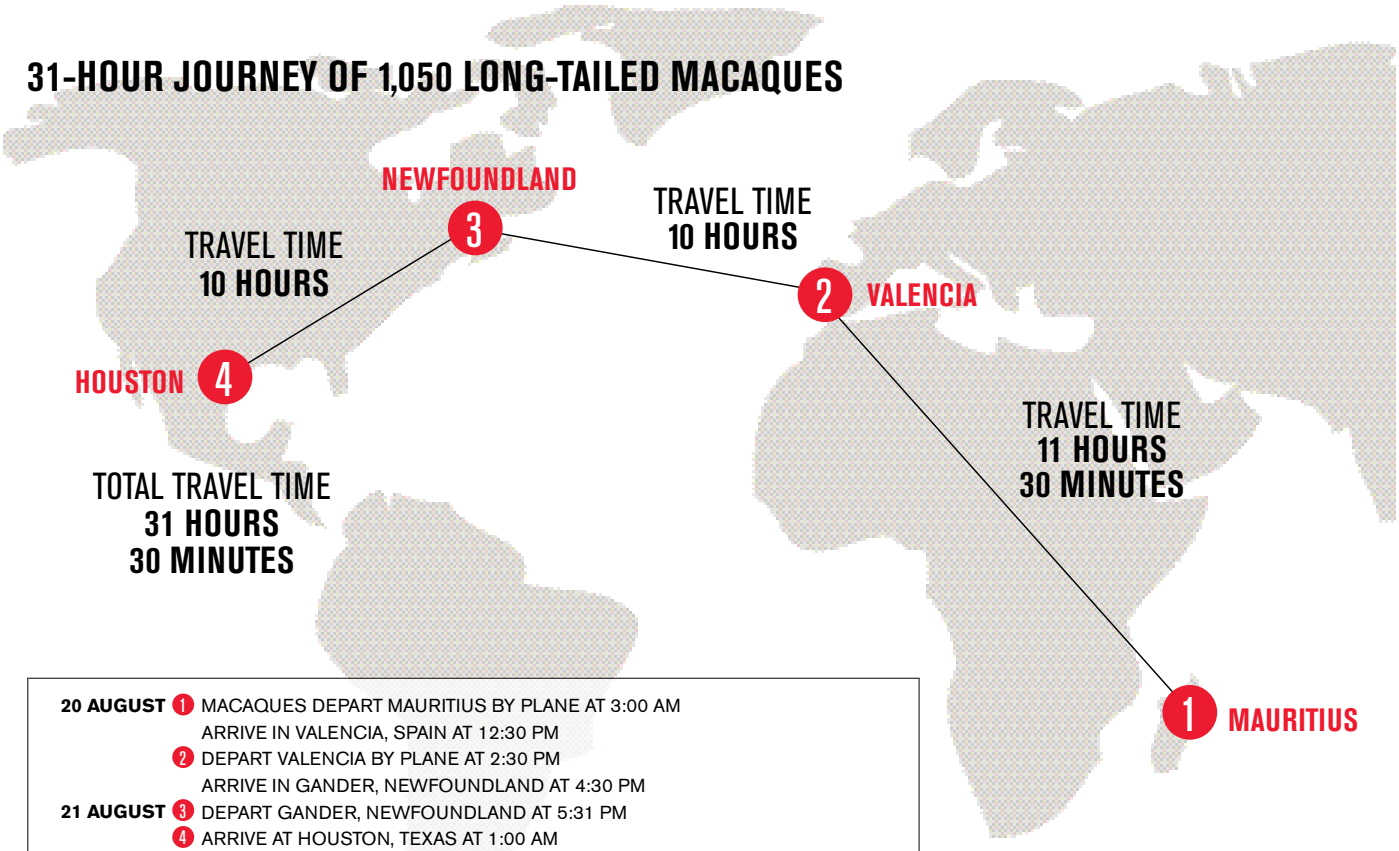
Based on LEMIS data, 492 of the nonhuman primates imported into the U.S. in 2010 were listed as wild-caught on Declaration Forms submitted to the USFWS, and 5,897 were born in captivity but bred from one or both parent(s) who were wild-caught. (These animals are identified as "F1" animals.) These figures mean that 30 percent of nonhuman primates imported into the U.S. in 2010 originated from the wild or were bred from one or both monkeys who were wild-caught. Nearly half of the F1 monkeys imported in 2010 were from Mauritius and most others come from Kampuchea. Most of the wild-caught monkeys came from Mauritius, China, and St. Kitts and Nevis.

Over the past decade, imports of wild-caught primates have declined while imports of animals born from wild-caught parent(s) have quadrupled. (Figure 10) Since 1998, 26,145 wild-caught monkeys and 51,279 monkeys born from one or both wild parents were imported.

Illness, injury, and death

Nonhuman primates imported in to the U.S. must be held in a quarantine facility for 31 days upon arrival. Twenty-four facilities are registered with the Centers for Disease Control and Prevention (CDC) and are allowed to receive imported nonhuman primates for quarantine.[21] It has been estimated that 200, or one percent, of nonhuman primates die each year in quarantine.[22] Officials from the CDC have reported that in fiscal year 2009, 582 imported monkeys died in quarantine (537 of them were euthanized for positive tuberculin skin test (TST) reactions or exposure to TST-positive animals).[23] In fiscal year 2010, 44[24] nonhuman primates died in quarantine and three were found dead upon arrival to the U.S.[25] In fiscal year 2011, 45 nonhuman primates died in quarantine, and three were found dead upon arrival to the U.S.[26] Causes of death of these nonhuman primates in

[20] Jeory, T. (September 18, 2011). "Horror of monkey cull on tropical island." *Sunday Express.* Retrieved September 20, 2011, from http://www.express.co.uk/posts/view/271963/Horror-of-monkey-cull-on-tropical-island.
[21] Centers for Disease Control and Prevention, National Center for Infectious Diseases, Division of Global Migration and Quarantine. (2011). "Registered importers of nonhuman primates for scientific, educational, and exhibition purposes as of October 19, 2011."
[22] Capuano, S. (2011). Transportation issues with nonhuman primates. In Institute for Laboratory Animal Research. (2011). *Animal research in a global environment: Meeting the challenges: Proceedings of the November 2008 international workshop.* (pp. 239-240). National Academies Press, Washington, DC. Retrieved October 17, 2011, from http://www.nap.edu/openbook.php?record_id=13175&page=239.
[23] Mullan, R.J. "Nonhuman Primate Importation and Quarantine: United States Fiscal Year 2009." Presentation to Association of Primate Veterinarians Workshop, November 2009.
[24] Five monkeys were euthanized due to positive tuberculin skin test reactions.



20 AUGUST
1. MACAQUES DEPART MAURITIUS BY PLANE AT 3:00 AM
   ARRIVE IN VALENCIA, SPAIN AT 12:30 PM
2. DEPART VALENCIA BY PLANE AT 2:30 PM
   ARRIVE IN GANDER, NEWFOUNDLAND AT 4:30 PM

21 AUGUST
3. DEPART GANDER, NEWFOUNDLAND AT 5:31 PM
4. ARRIVE AT HOUSTON, TEXAS AT 1:00 AM
   LOADED ON TO KRITTER KRATES TRUCK AND TRANSPORTED TO QUARANTINE LAB AT COVANACE RESEARCH PRODUCTS INC. IN ALICE TEXAS

shipping and quarantine include bloat, pericarditis, hemorrhagic enteritis, pneumonia, dehydration, trauma, stress, pulmonary edema, rectal prolapse, and parasitic worm infestation.

Two recently published papers by U.S. based laboratory veterinarians indicate that neither new shipments of nonhuman primates,[27] nor established colonies of nonhuman primates[28] are immune to infectious diseases. One paper described the euthanasia of 80 macaques who were imported to the U.S. from China, and it calls into question the validity of disease diagnosis and management of newly imported animals in quarantine.[29] The second paper cited the importation of foreign animals as being a significant factor for introduction of infectious diseases.[30] Regardless of the credentials of origin and destination labs, it is impossible to protect animals from infection when transporting them internationally by commercial or charter airlines over long distances and through potentially several layovers.

Stress from transport

The stress endured by animals of various species, including nonhuman primates, in transportation–even just being moved within the same building–is well known.[31, 32] Studies have been published about experimental and routine commercial transportation of monkeys to monitor stress indicators before, during, and after transport.[33] For nonhuman primates, many

[25] Mullan, R.J. "Nonhuman Primate Importation and Quarantine: United States Fiscal Year 2010." Presentation to Association of Primate Veterinarians Workshop, October 2010.
[26] Mullan, R.J. "Nonhuman Primate Importation and Quarantine: United States Fiscal Year 2011." Presentation to Association of Primate Veterinarians Workshop, October 2011.
[27] Panarella, M.L. & Bimes, R.S. (2010). A naturally occurring outbreak of tuberculosis in a group of imported cynomolgus monkeys (*Macaca fascicularis*). *Journal of the American Association of Laboratory Animal Science*, 49(2): 221–225. Retrieved on August 31, 2011, from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2846012/.
[28] Bailey C., & Mansfield K. (2010). Emerging and reemerging infectious diseases of nonhuman primates in the laboratory setting. *Veterinary Pathology*, 47(3):462-81.
[29] Panarella, M.L. & Bimes, R.S. (2010). A naturally occurring outbreak of tuberculosis in a group of imported cynomolgus monkeys (*Macaca fascicularis*). *Journal of the American Association of Laboratory Animal Science.* 49(2): 221–225. Retrieved August 31, 2011, from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2846012/.
[30] Bailey C., & Mansfield K. (2010). Emerging and reemerging infectious diseases of nonhuman primates in the laboratory setting. *Veterinary Pathology*, 47(3):462-81
[31] Honess, P.E., Johnson, P.J., & Wolfensohn, S.E. (2004). A study of behavioural responses of non-human primates to air transport and re-housing. *Laboratory Animals, 38*, 119-132.

of whom are transported internationally, the duration of transport can last up to three days.[34, 35]

The animals are usually moved several times before reaching the destination, including: capture from their cage to transport cage, holding in quarantine cage, transfer to airline transport cage, truck transport to airport, loading on to aircraft, travel aboard aircraft, possible transfer to other aircraft, unloading from aircraft, loading on to truck, unloading in laboratory quarantine facility, and eventual transfer to laboratory cage.

A Covance Routing and Contact Sheet Flight Itinerary that AAVS obtained through the Freedom of Information Act from the U.S. Fish and Wildlife Service shows one shipment in 2006 of 1,050 long-tailed macaques (packed in 210 crates that

FIGURE 7

Numbers of NHPs Imported into the U.S., 1996–2010

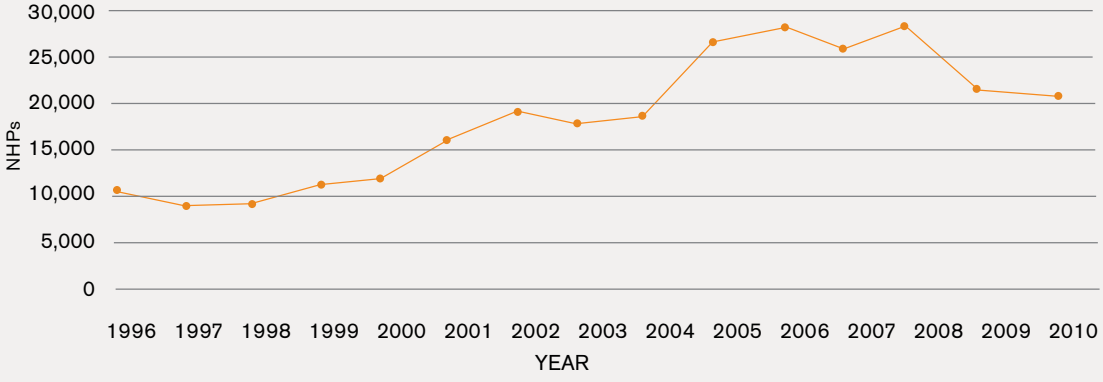


FIGURE 8

Top 5 Most Commonly Imported NHPs, 2005–2010

	2005	2006	2007	2008	2009	2010
LONG-TAILED/CRAB-EATING MACAQUES	24,689	25,978	24,196	26,632	19,989	19,063
RHESUS MACAQUES	1,221	1,420	1,106	838	1,596	1,738
SQUIRREL MONKEYS	81	188	36	120	0	40
GREEN/VERVET MONKEYS	0	190	417	390	388	130
COMMON MARMOSETS	179	275	0	244	0	0

Data include nonhuman primates imported mainly for biomedical research, but also include those imported for zoos/entertainment. Sources: United States Fish and Wildlife Services Law Enforcement Management Information System (LEMIS) data obtained by AAVS through several Freedom of Information Act requests.

[32] Wolfensohn, S.E. (1997). Brief review of scientific studies of the welfare implications of transporting primates. *Laboratory Animals, 31*, 303-305.
[33] Fernström, A.L., Sutian, W., Royo, F., Westlund, K., Nilsson, T., Carlsson, H.E., Paramastri, Y., Pamungkas, J., Sajuthi, D., Schapiro, S.J. & Hau, J. (2008). Stress in cynomolgus monkeys (*Macaca fascicularis*) subjected to long-distance transport and simulated transport housing conditions. *Stress, 11*(6), 467-476.
[34] Swallow, J., Anderson, D., Buckwell, A.C., Harris, T., Hawkins, P., Kirkwood, J., Lomas, M., Meacham, S., Peters, A., Prescott, M., Owen, S., Quest, R., Sutcliffe, R., & Thompson, K. (2005). Guidance on the transport of laboratory animals. *Laboratory Animals, 39*, 1-39.
[35] Honess, P.E., Johnson, P.J., and Wolfensohn, S.E. (2004). A study of behavioural responses of non-human primates to air transport and re-housing. *Laboratory Animals, 38*, 119-132.
[36] Fernström, A.L., Sutian, W., Royo, F., Westlund, K., Nilsson, T., Carlsson, H.E., Paramastri, Y., Pamungkas, J., Sajuthi, D., Schapiro, S.J. & Hau, J. (2008). Stress in cynomolgus monkeys (*Macaca fascicularis*) subjected to long-distance transport and simulated transport housing conditions. *Stress, 11*(6), 467-476.
[37] Honess, P.E., Johnson, P.J., & Wolfensohn, S.E. (2004). A study of behavioural responses of non-human primates to air transport and re-housing. *Laboratory Animals, 38*, 119-132.

are 4 ft. x 1.4 ft. x 1.6 ft.) from Mauritius to Houston, Texas. The monkeys were shipped via Air Transport International, LLC, a private air carrier, for at least 27 hours, which included three flights, with stopovers in Valencia, Spain and Gander, Newfoundland before reaching the airport in Houston.

Another flight itinerary obtained by AAVS shows a shipment of 100 pig-tailed macaques (packed into 21 crates that are 4 ft. x 1.4 ft. x 1.6 ft.) from Indonesia to Louisiana in January 2010. The macaques were shipped by air from Jakarta, Indonesia to Manila, Philippines, and then to San Francisco, California. Upon arrival in the U.S. the crates of monkeys were loaded on to a truck and driven to New Iberia, Louisiana. This journey lasted longer than 56 hours.

Stress studies have indicated that shipping monkeys in pairs can reduce, but in no way eliminate, their stress levels.[36] The amount of time it took for the monkeys to return to normal behavior and physiological levels after arriving at a facility after transport has also been examined. Monkeys traded internationally may acclimate to the quarantine facility, only to be moved again to another laboratory. The long-term effects of stress in monkeys can confound the results of research experiments. One behavioral study of young male long-tailed macaques found that they had not returned to normal behavior after one month, [37] and another study of wild-caught vervet monkeys showed that it took eight months for them to recover physiologically from removal from the wild to captive conditions.[38]

STANDING UP FOR PRIMATES

Advocating for primates has required international cooperation. Several major companies have outsourced animal experimentation or established foreign laboratories for pre-clinical testing in other countries, particularly for experiments on non-human primates who are bred in or native to those countries. This allows the companies to cut costs, and avoid campaigns by U.S. and European animal advocates, who question the caliber of animal welfare laws and oversight in other countries.

However, in addition to export bans by India

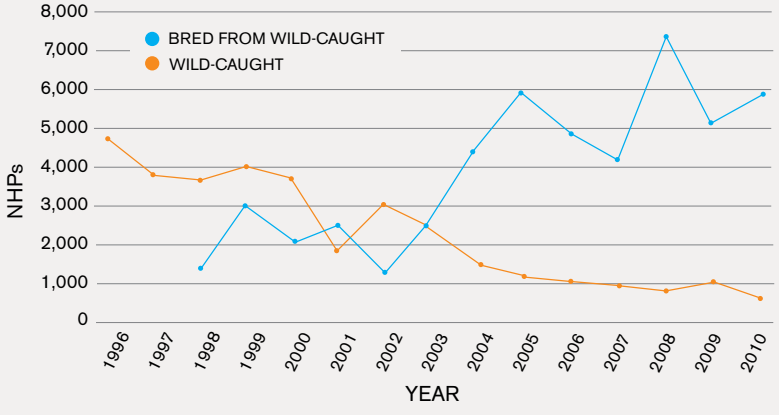
FIGURE 9

Companies Importing the Largest Numbers of NHPs, 2010

COMPANY	NHPs	NUMBER	%
Covance Research Products, Inc.	Long-Tailed Macaques	7,802	
	Rhesus Macaques	456	
	Total	**8,258**	**39%**
Charles River Laboratories (All Sites)	Long-Tailed Macaques	5,963	
	Rhesus Macaques	60	
	Total	**6,023**	**28%**
SNBL USA, Ltd	Long-Tailed Macaques	2,620	
	Rhesus Macaques	107	
	Total	**2,727**	**13%**
Worldwide Primates, Inc.	Long-Tailed Macaques	761	
	Rhesus Macaques	526	
	Common Squirrel Monkeys	40	
	Green/Vervet Monkeys	28	
	Tufted Capuchins	11	
	Total	**1,366**	**6%**
Primate Products, Inc.	Long-Tailed Macaques	825	
	Total	**825**	**4%**

FIGURE 10

Imports of Wild-Caught NHPs vs Those Bred from Wild-Caught Parents, 1996 - 2010



Data include nonhuman primates imported mainly for biomedical research, but also include those imported for zoos/entertainment. Sources: United States Fish and Wildlife Services Law Enforcement Management Information System (LEMIS) data obtained by AAVS through several Freedom of Information Act requests.

[38] Kagira, J.M., Ngotho, M., Thuita, J.K., Maina, NW, & Hau, J. (2007). Hematological changes in vervet monkeys (*Chlorocebus aethiops*) during eight months' adaptation to captivity. *American Journal of Primatology, 69*, 1053-63.
[39] British Union for the Abolition of Vivisection. "BUAV UK Primate Trade Campaign: An Open Letter to the Prime Minister." Retrieved September 15, 2011, from http://www.buav.org/our-campaigns/primate-campaign/uk-primate-trade-campaign.
[40] Eudey, A. A. (2008) "The crab-eating macaque (*Macaca fascicularis*): Widespread and rapidly declining." *Primate Conservation 23*: 129-132.
[41] Species Survival Network (July 2, 2011). "Selection of the long-tailed macaque (*Macaca fasicularis*) for inclusion in the review of significant trade (Resolution Conf. 12.8 (Rev. COP13)." Retrieved September 29, 2011, from http://www.ssn.org/Meetings/ac/ac25/SSN_Macaque_STR.pdf.
[42] Eudey, A. A. (2008) "The crab-eating macaque (*Macaca fascicularis*): Widespread and rapidly declining." *Primate Conservation 23*: 129-132.
[43] British Union for the Abolition of Vivisection. "Cargo for cruelty." Retrieved September 18, 2011, from http://www.buav.org/take-action/send-a-letter/cargo-for-cruelty.

and other countries enacted in the 1970s and 80s, there have been more recent successes and attention paid to important issues. Since 1997, the UK has prohibited the use of wild-caught primates in laboratory experiments. Organizations and globally-recognized primate experts have urged the UK government to extend this ban to those animals born from a wild-caught parent or parents.[39]

Wildlife protectionists have alerted international wildlife conservation organizations about the decline in wild populations of long-tailed macaques and significant concerns about the capture of wild monkeys for commercial trade for biomedical research or testing.[40, 41] It has been reported that long-tailed macaques are captured in the wild and either smuggled into China and Vietnam or intentionally mislabeled as "captive bred." According to one report, "Observers from non-governmental organizations (NGOs) question whether the breeding farms are illegally buying and selling macaques, as numbers of monkeys show extreme fluctuations and the numbers of infants may exceed adults. Although 'factory farming' of infant macaques (that is, removing the infant from its mother at birth to accelerate her resuming ovulation) now may occur, export of wild-caught monkeys still is suspected…."[42]

Advocates have focused on transportation as well. Although major airlines such as Delta, Northwest, and American Airlines no longer transport nonhuman primates for biomedical research, others such as Air Canada, Continental, Air China, and Air France[43] still do, and researchers and laboratories maintain strong ties to foreign laboratories, suppliers, and breeders that will export animals to the U.S. Because commercial airline transport is limited, charter airlines are also commonly used. A recent campaign by animal advocates against IBC Airways, a Florida-based charter airline company, successfully convinced IBC to no longer transport monkeys for research.[44] Similar campaigns have effectively influenced other airlines, such as Amerijet International, Surinam Airways, and Caribbean Airlines, to stop transporting monkeys for use in laboratory experiments.[45] **AV**

AAVS RECOMMENDATIONS

It is clear that there has been a surge in the use and importation of nonhuman primates in the U.S. There can be no justification by the biomedical community for a continued increase in access to monkeys for experimentation when over 54,000 'surplus' or breeding nonhuman primates are already in U.S. laboratories.

Due to the insurmountable ethical problems with the use of primates in research and testing, the American Anti-Vivisection Society supports the goal of a total ban on primate experimentation. As shown in this Special Report, the research enterprise is unable to even conduct sourcing of primates without causing serious harm. In order to address immediate concerns and priorities, AAVS recommends:

- Redirecting government funding away from programs that breed and find new uses for primates in experimentation, and instead, fund development of non-animal alternatives to primate use. Prioritize by immediately halting reuse of primates and painful experiments.
- Protecting wild nonhuman primates and their native habitats from further exploitation and destruction. Importantly, prohibit the importation of wild-caught monkeys or those born from wild-caught monkeys.
- Enacting a moratorium on commercial and charter air transportation of nonhuman primates for any purpose into the United States until new, meaningful transportation guidelines can be written. Current rates of suffering, neglect, and death from transport and during quarantine, are simply unacceptable.

These recommendations focus on the critical issues of increasing numbers and transportation of primates in research and testing. Please refer to www.aavs.org/Primates for additional information.

[44] Animal Rights Foundation of Florida. "Airlines cut ties with cruel international primate trade." Retrieved September 29, 2011, from http://www.animalrightsflorida.org/Media.html#080811.
[45] *Ibid.*

What is Enrichment?

By Crystal Schaeffer

Perhaps the most important variable affecting quality of life for captive nonhuman primates, especially for those used in research, is environmental enrichment. Although there may be little disagreement over the need to include enrichment in laboratory environments, debate exists regarding the breadth of enrichment. Nonetheless, it is well documented in the literature, and generally accepted within the regulating and research communities, that psychological health is important for nonhuman primate well-being, and that enrichment can play a significant role in facilitating more normal species-specific behavior.[1]

AMBIGUITY & THE LAW

In 1985, the Animal Welfare Act (AWA) was amended to include provisions for enrichment by providing environments "adequate to promote the psychological well-being of primates."[2] Corresponding regulations require facilities to "develop, document, and follow an appropriate plan for environmental enhancement" that is "in accordance with…currently accepted professional standards."[3] Although specific examples of physical enrichment ("perches, swings, mirrors…; objects to manipulate; varied food items;"[4] etc.) are included in the regulations, further enrichment requirements, particularly in terms of social needs, are not.

This ambiguity manifested itself in primate research laboratories, and was documented in a 1999 USDA compilation report of surveys that discussed inspector concerns regarding the "vague language and nature" of the regulations, which make it difficult to determine compliance, and their recommendation for "clearer requirements for documentation of implementation."[5] Concerns also included discrepancies over what constitutes an "appropriate" enrichment plan, as inspectors noted some facilities providing only one perch, one toy, and grapes for singly housed primates, or failing to address a full range of species-specific behavior. Additionally, although regulations allow animals under certain criteria to be exempt from enrichment programs, inspectors stated "too many primates were unnecessarily single-housed."[6]

Although USDA previously indicated that it would re-assess laboratory conditions and perceptions regarding enrichment for nonhuman primates,[7] to date it has failed to do so.

SOCIAL NEEDS

In the wild, the majority of primate species, particularly those used in laboratory environments, live in groups, often with complex communication and familial/social structures. This social interaction can be such a necessary and integral part of primate life that in captivity, some nonhuman primates will choose companionship over food.[8] Because of that, social housing, often done in pairs, is viewed by many to be an essential form of enrichment for nonhuman primates and promotes "a wide variety of species-typical activities,"[9] such as grooming, play, vocalization, and foraging. Additionally, social housing can also reduce the development of abnormal and stereotypic behavior, such as self-injury like hair pulling, and rocking, pacing, and spinning.[10]

Despite this, individually-housed adult nonhuman primates are common in laboratory facilities.[11]

PROMOTING WELL-BEING

By USDA's own admission, the AWA was "intended to promote the psychological well-being of nonhuman primates, not just prevent abnormal behaviors from occurring."[12] In other words, absence of abnormal behavior does not necessarily indicate well-being.[13] Rather, the well-being of an animal is dependent not only on his/her present environment but also on his/her early experiences and prior environments.[14] For example, two living conditions known to produce abnormal behavior lasting into adulthood are 1) restricted social environments in early life and 2) separation of an infant from the mother.[15]

So, what is meant by enrichment? Humans may debate over the term, but to nonhuman primates, it is the difference between a barren existence and at least some moments of comfort, pleasure, and satisfaction. Ultimately, enrichment is meaningless unless it is practiced. AV

Crystal Schaeffer, MA Ed., MA IPCR, is the Outreach Director for AAVS.

[1] USDA. (July 15, 1999). Final Report on Environment Enhancement to Promote the Psychological Well-Being of Nonhuman Primates. Retrieved October 26, 2011, from http://www.nal.usda.gov/awic/enrichment/Environmental_Enhancement_NonHuman_Primates.htm.
[2] Animal Welfare Act. 7 U.S.C. § 2143(a)(2)(B) (2010).
[3] Animal Welfare Act regulations. Environment enhancement to promote well-being. 9 C.F.R. § 3.81 (2008).
[4] Animal Welfare Act regulations. Environment enhancement to promote well-being. Sec. 3.81. (b)
[5] Kulpa-Eddy, J. A., Taylor, S. & Adams, K. M. (2005). USDA Perspective on Environmental Enrichment for Animals. *ILAR Journal 46*(2), 87.
[6] *Ibid.*
[7] *Ibid.*
[8] Dettmer, E. & Fragaszy, D. (2000). Determining the Value of Social Companionship to Captive Tufted Capuchin Monkeys. *Journal of Applied Animal Welfare Science 3*(4), 293.
[9] USDA. (July 15, 1999). *See note 1.*
[10] Lutz, C. K. & Novak, M. A. (2005). Environmental Enrichment for Nonhuman Primates: Theory and Application. *ILAR Journal 46*(2), 178.
[11] Lutz, C. K. & Novak, M. A. (2005). Page 188. *See note 10.*
[12] USDA. (July 15, 1999). Page 6. *See note 1.*
[13] USDA. (July 15, 1999). Page 8. *See note 1.*
[14] Martin, J.E. (2002). Early life experiences: Activity levels and abnormal behaviours in resocialized chimpanzees. *Animal Welfare 11*: 419-436; and Novak, M. A. (2003). Self-injurious behavior in rhesus monkeys: New insights into its etiology, physiology, and treatment. *American Journal of Primatology 59*:3-19; from Kulpa-Eddy, J. A. (2005). *See note 5.*
[15] USDA. (July 15, 1999). Page 8. *See note 1.*

ARDF AWARDS INNOVATION

Earlier this year, the Alternatives Research & Development Foundation (ARDF), AAVS's affiliate, awarded grants to four scientists for their efforts to develop novel methods of investigation that do not use animals or that can replace their use altogether. Through its 2011 Alternatives Research Grant Program, ARDF has awarded over $150,000 to worthy scientists developing alternative methods in a variety of areas of biomedical research, testing, and education.

ARDF congratulates the 2011 Alternative Research Grant recipients:

CHRISTOPHER H. CONTAG, Ph.D.
Stanford University; Stanford, CA
A Viable Human Tissue Model for the Development of Cancer Imaging Agents

Dr. Contag and his research team aim to develop new imaging technologies, including a unique endoscopic tool called a miniature dual-axis confocal microscope that is being designed to aid in the early detection of cancer. This highly specialized technology creates images of tissue structure in three dimensions with enough clarity and resolution to identify precancerous tissues. Typically, mice are used to evaluate imaging agents such as these. However, what makes this highly specialized microscope unique is that it is designed to study cancer cell processes and interactions specifically in human tissue, and, as such, the systematic use of human tissues is the only means of evaluating this tool. This translational research project demonstrates that non-animal methods of discovery and investigation are not only possible but will also help to reduce the overall number of animals used in research.

L. RAY WHALEN, DVM, Ph.D.
Colorado State University; Fort Collins, CO
Support for the Virtual Canine Anatomy and Virtual Equine Anatomy Programs in Development at Colorado State University, College of Veterinary Medicine and Biomedical Science

This project is developing two unique and unprecedented instructional computer programs—canine and equine—that will replace animal specimens with computerized simulations. Virtual Canine Anatomy will help students learn anatomy through interactive photographs that allow them to highlight structures of interest and to virtually rotate specimens, while the Virtual Equine Anatomy will contain a database of equine dissections with similar interactive elements. Providing a viable alternative to dissection in the classroom, these virtual instruction tutorials not only significantly reduce the number of animals used in anatomy instruction, but they also allow for more complete study and higher rates of student success.

JOHN F. EBERTH, Ph.D.
University of Houston; Houston, TX
Physical Model of Hemodynamic Wave Propogation on Traumatic Brain Injury

Historically, animal models (dogs, pigs, sheep, rodents, nonhuman primates) have been used to study traumatic brain injury. This project's objective is to create a human surrogate head and torso model, complete with lifelike skeletal and vascular systems, that has nearly identical mechanical properties as a human. The model will be exposed to shock waves that mimic the injurious effects of high explosives. From this, researchers hope to learn more about the causal relationship of chest injury and interrupted blood circulation to the brain, which could aid emergency personnel in preventing further neurological injury. Development of a highly accurate cardiovascular human surrogate model would enable researchers to create alternative strategies for protective equipment both quickly and efficiently, without causing animal harm and suffering.

STUART K. WILLIAMS, Ph.D.
University of Louisville; Louisville, KY
Human Blood Vessel Mimics as In Vitro Aneurysm Models for Evaluation of Endovascular Devices

An aneurysm is an abnormal widening of an artery caused by a weakened blood vessel wall and is often treated using a stent graft. These medical devices require preclinical evaluation that involves implanting them in animals such as dogs, cows, and sheep to assess their safety and effectiveness. Absence of *in vitro* aneurysmal blood vessel models has forced investigators to utilize animal models for device testing. In this study, Dr. Williams and his team are developing a novel, three-dimensional *in vitro* human aneurysm model to mimic blood vessel injury for the evaluation of stent grafts used in vascular repair. The model has the potential to be used in screening medical devices, helping to guide selection of the most promising stent graft designs in a group of prospective new devices, and it will replace a significant number of animals who would typically be used instead.

Animalearn Rewards Excellence in Teaching


Animalearn Director Laura Ducceschi (L), Humane Educator of the Year Michelle Galaria, Animalearn Associate Director Nicole Green (R).

In October, Animalearn presented Michelle Galaria, a California high school biology teacher, with the 2011 Humane Educator of the Year Award. She was honored at the National Association of Biology Teachers Professional Development Conference at the Anaheim Marriott in Anaheim, an event which draws thousands of educators from around the country.

"After learning that I was selected as Animalearn's Humane Educator of the Year, I was overwhelmed with excitement, appreciation, and inspiration to accomplish more," said Galaria. "The Award is a positive beacon moving our school forward after difficulties we faced throughout the year and the difficulties we have ahead. Mostly, this Award reminds me to celebrate the compassion that surrounds me when I am dealing with resistance."

Ms. Galaria was honored for the remarkable progress she made in assimilating humane teaching methods into her school district's curriculum. By using dissection alternatives in her own classroom, Ms. Galaria demonstrated to fellow teachers, administrators, and students the benefits of alternative methods over the traditional use of animals. In recognition of her leadership and passion as an educator, Ms. Galaria was recently elected co-chair of her science department, and hopes to one day see a no-dissection policy in her school district.

"When making the decision to select a Humane Educator of the Year, Ms. Galaria was the clear choice for us," said Nicole Green, Associate Director of Animalearn. "She has been working tirelessly to make a difference for animals used in education, all the while inspiring her students to also choose compassionate paths in the field of science."

As part of the Award, Animalearn donated $1,000 worth of alternatives in Ms. Galaria's name to her school, where they will be useful for years to come.

Leaping Bunny Meets Hugo

Recently, Kim Paschen, Marketing Manager for the Leaping Bunny Program, which is chaired by AAVS, had the pleasure to meet Hugo and Debra Saavedra, the founders and owners of Hugo Naturals, a Leaping Bunny certified company. Kim spoke with Hugo and Debra about their company and values, and below shares some insights into their conversation with our readers.

Since Hugo Natural's inception, the Saavedras have always believed in doing the right thing. "We are equally passionate about beauty and enhancing peoples' lives, and we founded our company on these principals," says Debra. Hugo adds, "We came up with a way to make ordinary, daily personal care products extraordinary by using only the purest oils and food grade ingredients."

Kim Paschen with Debra and Hugo Saavedra, founders of Hugo Naturals.

"We started Hugo Naturals just over five years ago, making soaps in our own kitchen, using oils extracted from local herbs," recalls Hugo. They have since broadened their line to include scrubs, lotions, lip balms, hair care products, and bath bombs. Though they began selling soaps in farmers markets, they are now in over 1,000 stores nationwide.

At its core, Hugo Naturals has always been about both purity and synergy with ecological systems, and strives to better not only their customers' lives but also the lives of all creatures. "We applied for Leaping Bunny certification as soon as the company was operational," said Hugo. "In addition to being cruelty-free, all of our products are vegan and gluten-free."

Their delicious scents, including lemon verbena and bergamot; vanilla and sweet orange; and sea fennel and passion flower, are infused into body butters and scrubs so pure you could eat them. Inspiration for new fragrances comes from what is real and comes from nature.

"Helping animals is also very important to us," says the couple. They work with a community group that rescues cats, have a roof garden to cultivate the local bee population, and are very mindful of resident gophers who coexist peacefully on the farmland where their botanicals grow.

To learn more about Hugo Naturals, visit www.hugonaturals.com.

Giving

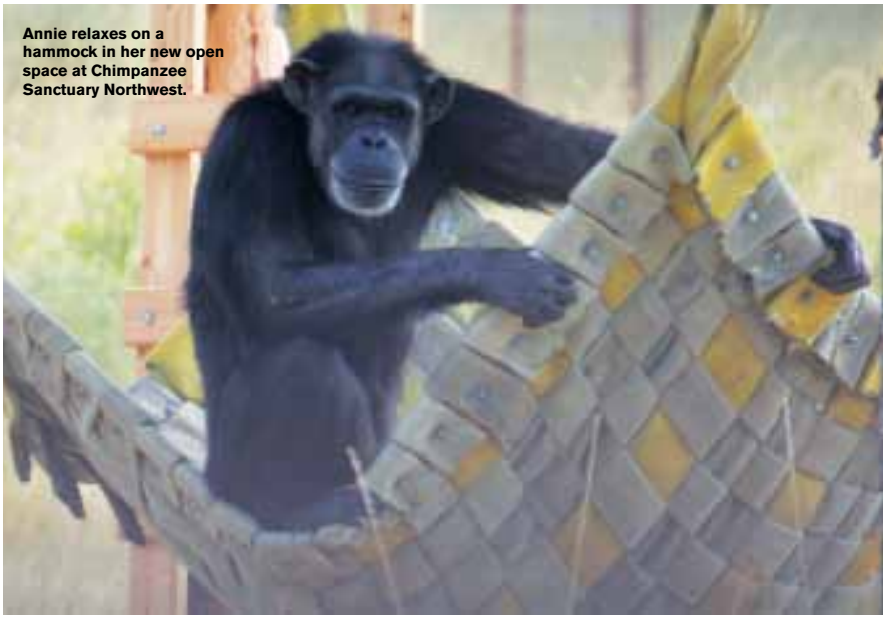
SUPPORT THE AAVS MISSION

THE TINA NELSON SANCTUARY FUND

LOCATED IN CLE ELUM, WASHINGTON, Chimpanzee Sanctuary Northwest opened its doors to seven chimpanzees relinquished from a laboratory holding facility in 2008. The chimps—Annie, Burrito, Foxie, Jamie, Jody, Missy, and Negra—range in age from 28 to 40 years, with the majority of those years spent in 3 x 5 foot laboratory cages where they were used for hepatitis B testing and breeding purposes. No longer tools for biomedical research, these highly intelligent and social animals now enjoy lives enriched with proper diets, skilled veterinary care, and the opportunity to interact and play. And earlier this year, the chimps' living space was expanded to include a large outdoor recreational area complete with toys, climbing platforms, an artificial termite mound, bamboo for snacking, and even a water fountain. Most of the chimps were born in captivity, and only Negra is known for sure to have been born in the wild, where she was captured as an infant, making this open space a well-deserved retreat for all.

Peaceful havens like Chimpanzee Sanctuary Northwest are an oasis for the few fortunate animals who are "retired" from their dire existence as test subjects. There are many worthy sanctuaries that provide shelter, food, medical care, and love to animals previously exploited for scientific and medical research. However, caring for multiple animals—often for decades—represents an enormous investment. AAVS created the Tina Nelson Sanctuary Fund as a way for our members to directly support carefully screened sanctuaries that conduct exceptional work. Please help by making a contribution to this Fund. You'll give animals a second chance and help them recover and live in peace.

You may designate a gift to the Sanctuary Fund using the enclosed envelope. To donate online and learn more about the facilities that have benefitted from an AAVS grant, visit www.aavs.org/SanctuaryFund.



Annie relaxes on a hammock in her new open space at Chimpanzee Sanctuary Northwest.

Planned Giving

Providing for AAVS in your estate is a powerful way to ensure your longtime legacy of protecting animals and to help us reach our goal of ending the use of animals in science. These gifts can include life insurance, real estate, annuities, trusts, and retirement funds. There are many benefits of planned giving for both you and AAVS. As a donor, benefits can include: providing additional lifetime income for you or a loved one; passing assets to your family at a reduced tax cost; reducing income tax; avoiding capital gains tax; and making a significant gift to a cause that is important to you. AAVS truly could not sustain our activities for the animals without the legacies we receive, and we are deeply grateful for each and every one.

For information on planned giving, leadership gifts, recurring gifts, or other support, contact Chris Derer, Director of Development & Member Services, at cderer@aavs.org or 800-SAY-AAVS. When including AAVS in your estate plans or sending a donation, please use our legal title and office address: American Anti-Vivisection Society, 801 Old York Road, Suite 204, Jenkintown, PA 19046-1611. EIN: 23-0341990. AAVS is a not-for-profit 501(c)(3) organization to which contributions are 100% tax deductible under federal and state law.

PHOTOS COURTESY OF CHIMPANZEE SANCTUARY NORTHWEST AND BY ISTOCKPHOTO

TRIBUTES

HONORING LOVED ONES

You can honor or memorialize a companion animal or animal lover by making a donation in his or her name. Gifts of any amount are greatly appreciated. A tribute accompanied by a gift of $50.00 or more will be published in the *AV Magazine*. At your request, we will also notify the family of the individual you have remembered. All donations are used to continue AAVS's mission of ending the use of animals in biomedical research, product testing, and education.

In memory of Michelle Renfield.
Richard Renfield
Falls Church, VA

In memory of Rusty.
Harry Russo
Jackson, NJ

In memory of Sprite, who taught me more about love and forgiveness than any human ever could.
Amanda Scarcella
Thornwood, NY

In memory of Mysti.
Linda Shanks
Aurora, CO

In memory of Donald R. Parks.
Karen Stanley
Cape Fair, MO

In honor and loving memory of Breezy, beloved companion horse and patient friend of 19 years to Jean Bezoir-Hanson. As he was deeply loved, Breezy will be deeply and sorely missed by all who had the privilege of knowing him.
Wendy Klarsfeld
New York, NY

In memory of Eeyore, Bertha, and Abby.
Edward Wiegand
Ridgecrest, CA

In memory of Patches and Lucky.
Geoffrey Madison
Greensboro, NC

In memory of Zsa Zsa, Kahlua, Tuffy, and Jiffi, our beloved Kuvaszs who passed away. We have rescued others in their memory.
Manuel and Consuelo Vazquez
Miami, FL

In memory of Roxy.
Kelley Labonty
Shelby Township, MI

On behalf of all God's animals.
Berta Festge
Cross Plains, WI

In memory of Sebastian. You were the most loving cat ever. Your other four felines miss you too.
Sandra Bounds
Shreveport, LA

In memory of Fluffer-Nutter. You were a declawed and spayed stray when I brought you home on November 2, 2008. For 20 short months, you were my beautiful girl, but you passed away much too soon on July 30, 2010. Rest in peace, pretty girl. Love, cat momma.
A.R. Morlan
Ladysmith, WI

In memory of Maya Urdaneta.
Jose Urdaneta
Phoenix, AZ

In memory of William J. Warren.
Deborah Warren
South Glastonbury, CT

In memory of Brutus.
Anonymous

In loving memory of my darling Miss Kitty. When life became a burden here, your love meant everything. I'm sorry you became ill and I had to let you go. And now, without your love, what do I do with the burden of your loss? I'll remember you fondly, 'til I draw my last breath.
Raymond Nash
Westminster, MD

In honor of Jane Goodall.
Sue Leary and Rob Cardillo
Ambler, PA

In memory of Julie Rich, who was a very gifted pet communicator. Over the years, Julie helped an impressive number of animals, as well as their owners. She will be missed by animals and people alike.
Simone Benthien
Clearwater, FL

In memory of Sophie Delphie, my dearest friend and the best therapy dog ever.
Christopher Kende
New York, NY

In memory of Buddy (Kozian) and Lucy (Elizabeth) Poirier, who were blessings to everyone for 15 years; angels on Earth.
Susan Wagner
Dearborn Heights, MI

In memory of Kyra, my faithful Rottweiler.
Joyce Calkin
Cos Cob, CT

In memory of Rosie and Ralph. Thanks for the memories.
Linda Bennett
Lakewood, CA

In memory of my beloved dog, Bamboo. I love you more than you will ever know.
Joe Hallen
Davie, FL

In memory of Richard Feil and his love for the animals he saved.
Danila Feil
Philadelphia, PA

In honor of Charlotte.
Malissa Ryder
Athens, GA

Members' Corner

I freely admit that I've never been especially enthusiastic about primates. Perhaps my disinterest in simians stems from their remarkable similarity to humans, which I've always found somewhat disconcerting. Yet these traits are undeniably fascinating, and as inspiration for this installment of the Members' Corner, I recently viewed several primate-related videos.

First up was an episode of the PBS series *Nature* titled "Clever Monkeys." It shows the behaviors of various colorful and extraordinary species in South America, Africa, and Asia. It is amazing to see how primates learn to use tools, find food, communicate, and even administer medicine! This knowledge is passed from generation to generation as the young adapt to their surroundings and contribute to the survival of their familial unit. Primates live within complex social systems involving individual relationships, class hierarchies, and power struggles. They exhibit a range of emotions as varied as our own, experiencing anxiety, depression, aggression, and sympathy. While primates may not perceive death as humans do, their emotional display suggests that the difficulty accepting loss of life is a shared trait.

Next, I took in a bit of Hollywood monkey business in the form of *Rise of the Planet of the Apes*, a popcorn movie in theaters this past summer. This premise of this prequel to the classic science fiction series involves the use of chimpanzees in biomedical research, which is an unfortunate fact in the real world. The computer-generated primates are far more animated and compelling than the live actors; however, I found the film enjoyable, not just as an action vehicle, but also as a statement on the deplorable subjugation and exploitation of animals by humans.

Finally, I watched the documentary feature *Project Nim*, which details a controversial experiment conducted in the 1970s in which a new-born chimpanzee was taken from his mother and raised by humans in an effort to develop heightened communication skills. Named Nim Chimpsky (after linguist Noam Chomsky) by the Columbia University professor who initiated the project, the chimpanzee resided with several families as he grew older and more difficult to manage. While Nim did learn over 100 phrases of sign language, this limited achievement came at a great cost—attempting to 'humanize' Nim compromised his well-being, and many caregivers were in danger along the way. As frustrating as it is fascinating, *Project Nim* explores a far too intimate relationship with a wild animal, and a tragic failure of human hubris.

Showcasing the similarities and differences between our respective species, these films collectively revised my perspective on our relatives in the wild. I would recommend them for both their entertainment and educational value. If you've seen any of these presentations, feel free to send me your thoughts and reviews; I'd love to hear from you.

Chris Derer
Director of Development & Member Services

PHOTO BY VEER

PRIMATE THREATS

Of the more than 600 species of monkeys, apes, and other primate species and subspecies living throughout Central and South America, Africa, Madagascar, and Asia, nearly half are in danger of extinction, in large part do to the callous actions of humans. Conservation efforts are now critical to prevent the disappearance of these magnificent creatures.

GREATEST THREATS TO PRIMATE SURVIVAL

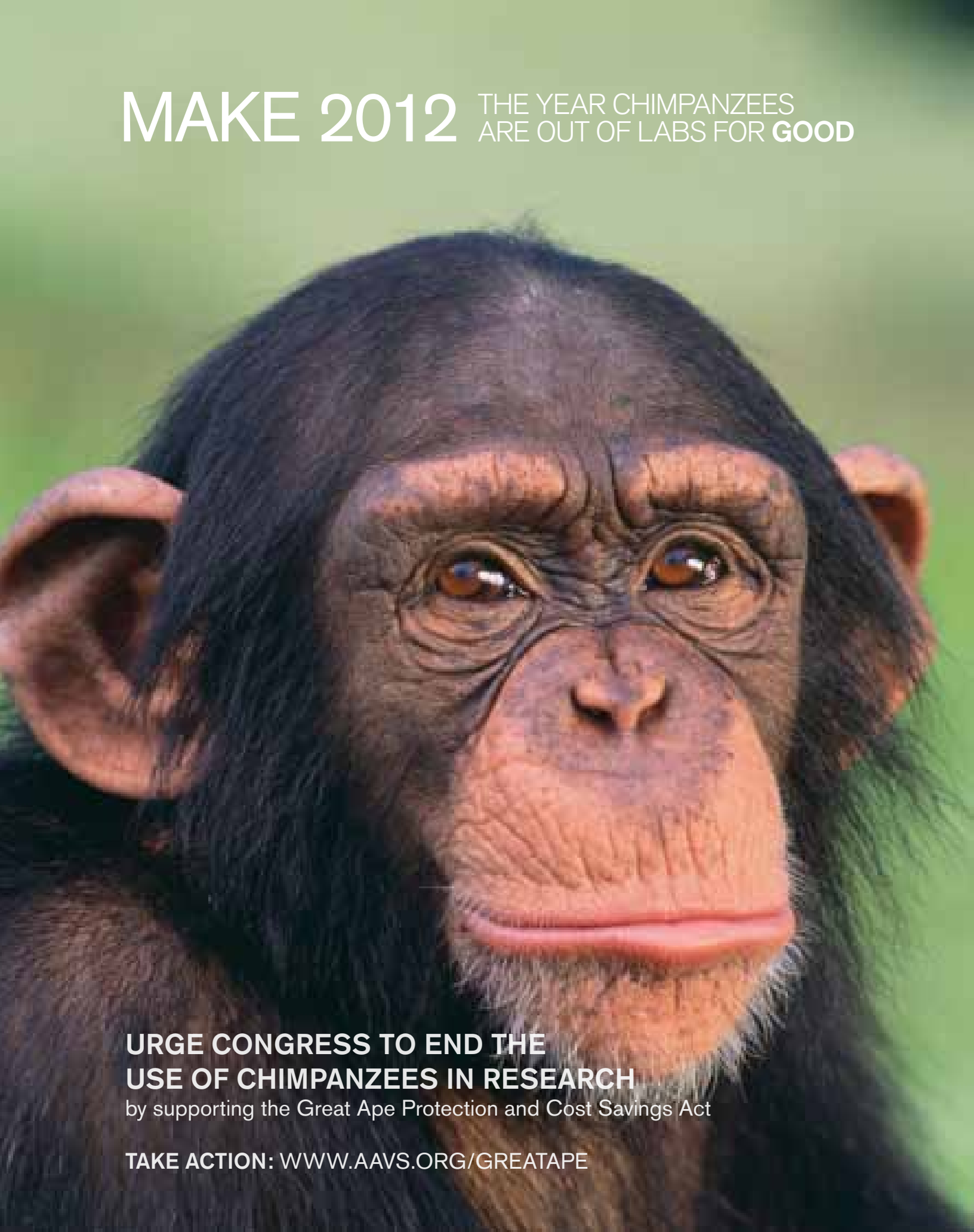
Habitat loss and fragmentation: Devastating deforestation in tropical areas due to increased demand for wood and other forest products and agriculture use is leaving many animals homeless.

Hunting: Bushmeat from primates is widely consumed in Africa and other areas, and dead primates and their parts are desired as 'trophies.'

Illegal Trading: Tens of thousands of primates, both live and dead, are sold annually for food, medicinal use, research purposes, and as pets.

Research: Recent reports indicate that local populations of monkeys are shrinking due to capture for breeding for research.

Based in part on information found in Conservation International's *Primates in Peril*, 2008-2010.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