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SPECIAL REPORT

PRIMATES BY THE NUMBERS

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

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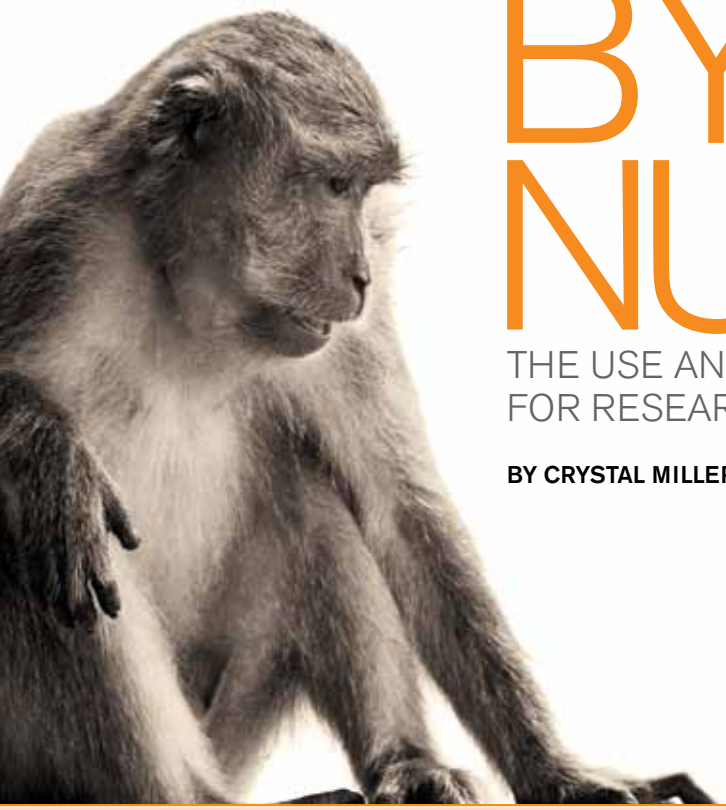


People connect with other primates. They are charismatic animals with whom we share many traits and feel a kinship. It is similar to our connection with companion animals such as cats and dogs, but sometimes more profound due to their uncanny resemblance. As a result, nonhuman primates' welfare is generally 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

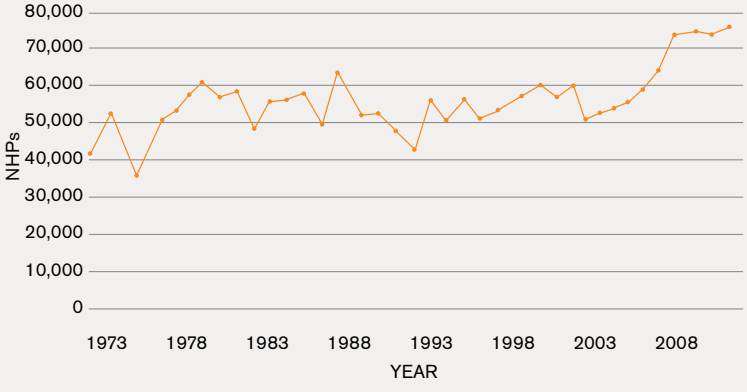
As in previous decades, in the early 2000s, the biomedical research community complained of shortages of monkeys for research and testing experiments,[2, 3, 4] and convened meetings to address the perceived shortage,[5] despite the tens of thousands of nonhuman primates who were held *in* labs but not 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.

MARMOSET
698 imported into U.S., 2005-2010

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

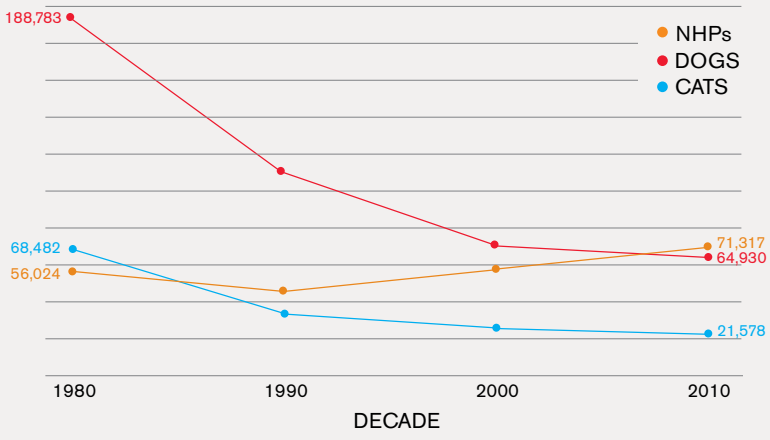
Each year, tens of thousands of nonhuman primates are sold by the "head" and packed into small crates bound for the U.S. Once the crates arrive after the grueling air journey, the primates are driven to a quarantine facility before reaching their final destination in a lab.

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."

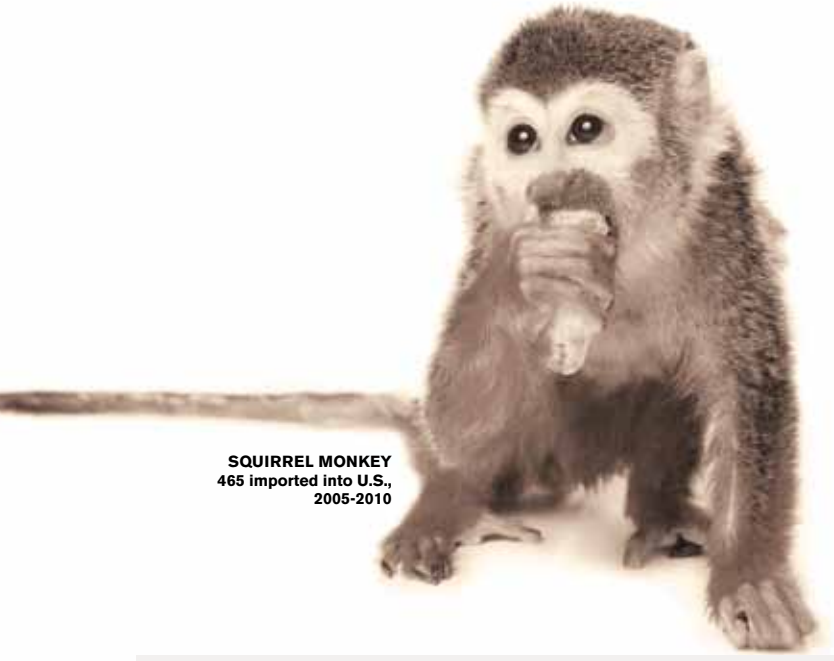
Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES)

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)



SQUIRREL MONKEY
465 imported into U.S., 2005-2010

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

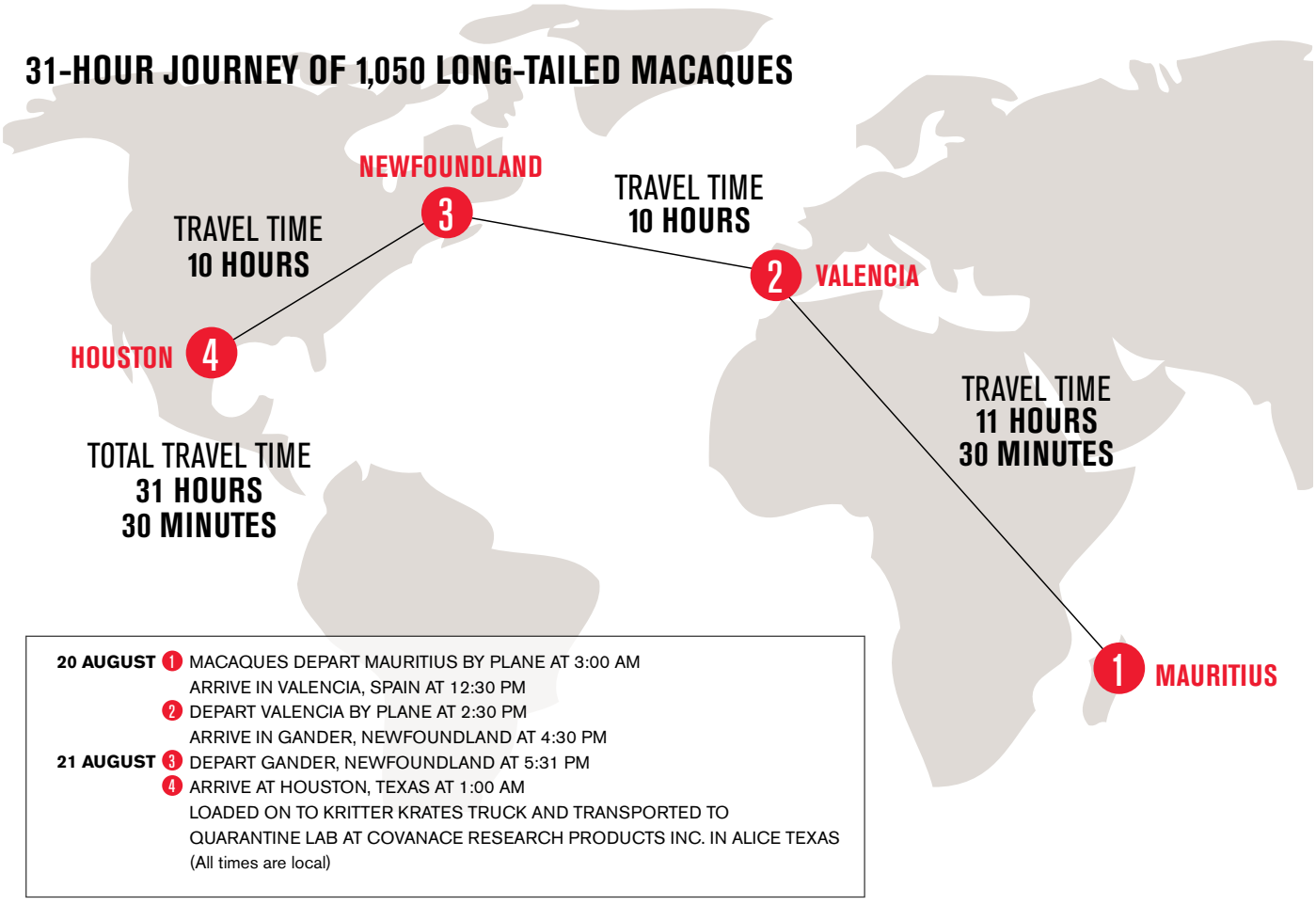
Based on LEMIS data, 492 of the nonhuman primates imported into the U.S. in 2010 were listed as wild-caught on Declaration Forms submitted to the USFWS, and 5,897 were born in captivity but bred from one or both parent(s) who were wild-caught. (These animals are identified as "F1" animals.) These figures 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.



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

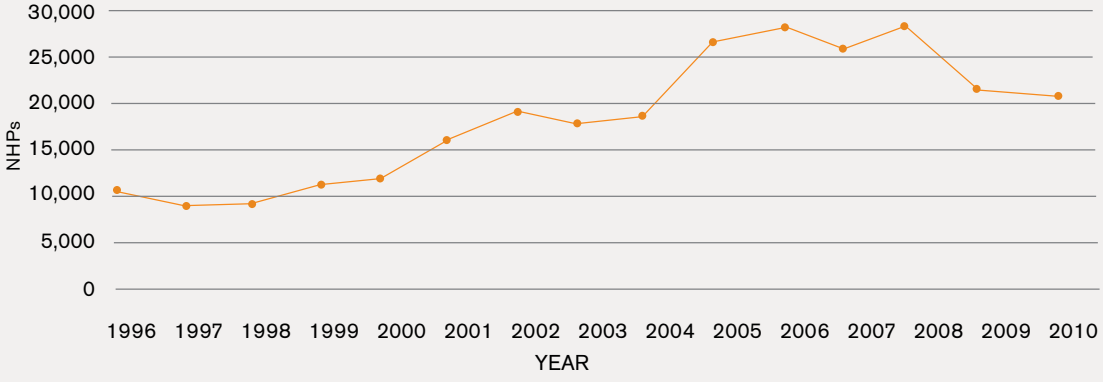


FIGURE 8

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

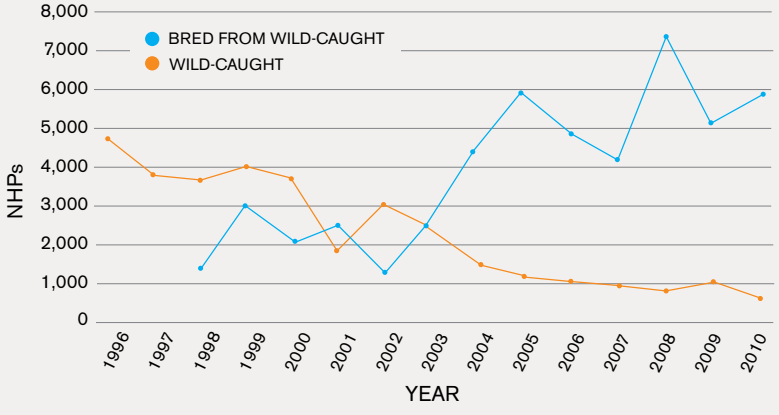
FIGURE 9

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.

Macaque

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.*

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