

COMMENTARY

The First Chimpanzee Sanctuary in Japan: An Attempt to Care for the “Surplus” of Biomedical Research

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This article specifically examines several aspects of the human–captive chimpanzee bond and the effort to create the first chimpanzee sanctuary in Japan. We discuss our ethical responsibility for captive chimpanzees that have been used in biomedical research. On April 1, 2007, the Chimpanzee Sanctuary Uto (CSU) was established as the first sanctuary for retired laboratory chimpanzees in Japan. This initiative was the result of the continuous efforts by members of Support for African/Asian Great Apes (SAGA), and the Great Ape Information Network to provide a solution to the large chimpanzee colony held in biomedical facilities. However, the cessation of invasive biomedical studies using chimpanzees has created a new set of challenges because Japan lacks registration and laws banning invasive ape experiments and lacks a national policy for the life-long care of retired laboratory chimpanzees. Therefore, CSU has initiated a relocation program in which 79 retired laboratory chimpanzees will be sent to domestic zoos and receive life-long care. By the end of 2009, the number of chimpanzees living at CSU had decreased from 79 to 59 individuals. A nationwide network of care facilities and CSU to provide life-long care of retired laboratory chimpanzees is growing across Japan. This will result in humane treatment of these research animals. *Am. J. Primatol.* 73:226–232, 2011. © 2010 Wiley-Liss, Inc.

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BEGINNING OF THE CHIMPANZEE SANCTUARY UTO

The first captive chimpanzee (*Pan troglodytes*) care facility in Japan began in 1927 at Ten'noji Zoo, Osaka. Seventy years later, the captive chimpanzee population in Japan reached a peak of 393 individuals. By the end of 2009, 334 chimpanzees were living in 49 zoos, 3 institutes, and 1 sanctuary located throughout Japan [Great Ape Information Network (GAIN), personal communication; Ochiai-Ohira et al., 2006]. After the USA, Japan has the largest number of captive chimpanzees in the world.

As a response to the large number of captive chimpanzees, improving welfare standards and environmental enrichment has been of growing interest in Japan [Matsuzawa, 2006]. In 1997, a 15-m high climbing structure was introduced to the chimpanzees' compound at the Primate Research Institute of Kyoto University (KUPRI) in an effort to simulate the structure of natural forest [Matsuzawa et al., 2006]. At the Great Ape Research Institute, a 7,400-m² outdoor compound, mostly covered by secondary vegetation, was constructed in 2000 [Idani & Hirata, 2007]. Following these initiatives, by the end of 2009, 14 domestic zoos had furnished their chimpanzee enclosures with climbing structures and natural vegetation. Consequently, environmental

enrichment became a matter of public concern and public knowledge across Japanese zoos. In this context, the Chimpanzee Sanctuary Uto (CSU), the first sanctuary for retired laboratory chimpanzees in Japan, was founded on April 1, 2007 (Fig. 1).

Sanwa Kagaku Kenkyusho Co. Ltd. (Sanwa), a pharmaceutical company, was the forerunner of CSU with seven chimpanzees and three caretakers in 1978 (Table I). During the 1970s (before the ratification of CITES by Japan in 1980), an estimated 150 wild chimpanzees had been brought into Japan mainly for medical studies of hepatitis B and C. Chimpanzees at Sanwa were the survivors of that hepatitis project. The Japanese government suggested that the pharmaceutical company care for

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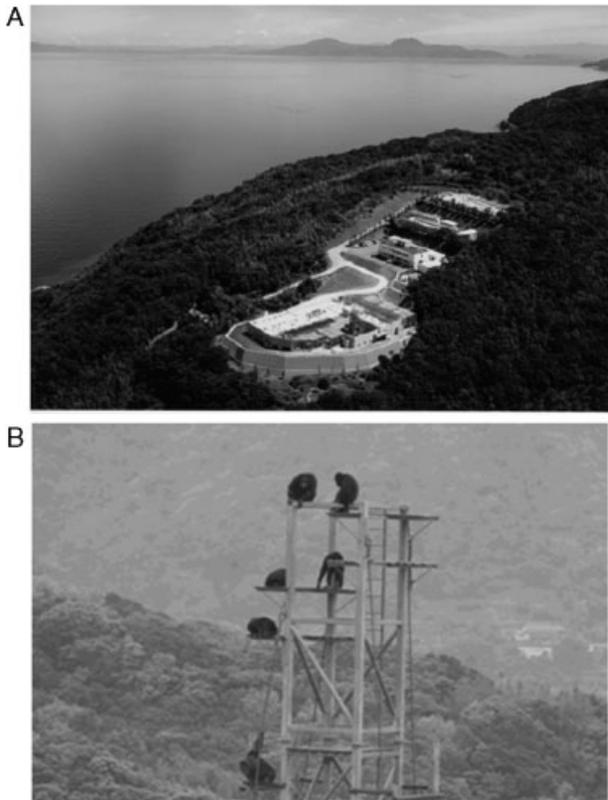


Fig. 1. A bird's eye view of CSU in the heart of nature's bounty (photo A). A 13-m high climbing structure (photo B) was introduced to the chimpanzees' compound at the Sanwa facility in 2000 (Photo by CSU).

these surplus chimpanzees. In 1982, Sanwa altered its focus from simply maintaining surplus chimpanzees to a captive chimpanzee breeding program. Consequently, the chimpanzee population at Sanwa grew to 117 individuals in 2000, burdening the private pharmaceutical company.

In the 1990s, the mission of the Sanwa facility shifted to cooperative services related to biomedical studies using their laboratory chimpanzees. After Sanwa changed the name of the facility from Sanwa-PC to Sanwa-KPP in 1995, Sanwa-KPP initiated gene-related medical research, malaria studies, and embryonic stem-cell research with ovulation-inducing drugs using chimpanzees. This research increased during the late 1990s and gene therapy projects involving hepatitis C were planned in 1996. They included the infection of previously non-carrier (intact and healthy) chimpanzees with the hepatitis C virus (Fig. 2). By the year 2000, Sanwa-KPP was the only facility for invasive studies using laboratory chimpanzees in Japan.

In an effort to halt this invasive research, Support for African/Asian Great Apes (SAGA) was launched on November 19, 1998. SAGA is a descendant of Committee for the Care and Conservation of Chimpanzees that was started by Jane Goodall in

1986. The main objective of SAGA was to mobilize scientists, zoo and media personnel, as well as the general public, to help conservation efforts and improve welfare standards for chimpanzees and other nonhuman great apes. More specifically, SAGA was based on three main principles: (1) to assist in the conservation of great apes and their natural habitats; (2) to enhance the quality of life of great apes in captivity; and (3) to prevent the use of great apes as subjects in invasive studies, and to promote their scientific understanding through non-invasive techniques. Even today, annual SAGA meetings are held that bring together researchers, zookeepers, and members of non-profit organizations in Japan. Dr. Jane Goodall has been a participant in each of the 12 annual SAGA meetings, which have been hosted by Japanese zoos since 2003 [SAGA website: <http://www.saga-jp.org/indexe.html>].

Chimpanzees are an endangered species that is included on the IUCN red list [IUCN, 2009]. The wasteful use of any individual chimpanzee held in captivity for purposes of biomedical research was opposed by SAGA. Important regulations related to animal husbandry—the domestic law on welfare and management of animals in Japan—was amended in 2005. This amendment requires the appropriate care of captive animals to promote their enrichment and well-being. Facilities that house great apes are subjected to these regulations that stipulate penalties for noncompliance. The circumstances surrounding captive chimpanzee care and the enforcement of these regulations have changed considerably in Japan over the past several decades.

Under pressure from SAGA and the Primate Society of JAPAN, a committee comprising chimpanzee experts was organized at Sanwa Kagaku Kenkyusho Co. Ltd., in 1998. The committee immediately decided to halt chimpanzee breeding. To reduce chimpanzee numbers at Sanwa further, 20 chimpanzees were moved to Shanghai Zoo, China. Finally, with the collaboration of SAGA, Sanwa sought a solution for the surplus of ex-biomedical chimpanzees: the Great Ape Information Network (GAIN) was established in 2002.

The GAIN project was based on the voluntary engagement of chimpanzee researchers from the University of Tokyo and Kyoto University, and received a small amount of financial support from the government. As an alternative to invasive research of living chimpanzees, GAIN played a key role in promoting the postmortem utilization of captive chimpanzees. The information gained from donated animal tissues and corpses provides a databank for researchers in various scientific disciplines.

In contrast with European countries and New Zealand, there are no regulations or law in Japan that protect great apes from invasive experiments [Knight, 2008]. Like Japan, the USA has no legislation against invasive research but it does have a plan

TABLE I. Timeline of Chimpanzee Care History in CSU and Related Matters in Japan

Year	Timeline toward the establishment of Chimpanzee Sanctuary Uto	Activities
1927		Beginning of chimpanzee care in Japan at Ten'noji Zoo
1978	Start of chimpanzee care at Sanwa	
1982	Launch of the Primate Center of Sanwa (Sanwa-PC)	
1983	The first chimpanzee babies born in Sanwa, named Ken and Suzu	Beginning of registration system of captive chimpanzees in Japan by Japan Association for Zoos and Aquariums (JAZA)
1992	Biomedical studies began in Sanwa	
1994	Number of chimpanzees in Sanwa exceeds 100	
1995	Sanwa-PC was transformed to Sanwa-KPP	First construction of a high climbing structure in the chimpanzee compound in Primate Research Institute of Kyoto University
1996	Sanwa-KPP accelerated biomedical research	Number of chimpanzees in Japan reached to the maximum level ($n = 393$)
1998	Founding of the Chimpanzee Committee of KPP Beginning of the moratorium	Launch of Support for African/Asian Great Apes (SAGA)
2000	Number of chimpanzees in Sanwa reached its maximum level ($n = 117$) and relocated 20 chimpanzees to Shanghai Zoo	Construction of a chimpanzee compound of 7,400 square meters with natural vegetation in the Great Ape Research Institute (GARI) of Hayashibara Biochemical Institute Co. Ltd
2002		Beginning of the National Bio Resource Project in Japan
2003		Start of the Great Ape Information Network (GAIN) project Start of the host zoo system following the annual meeting of SAGA
2006	End of invasive biomedical research at Sanwa	
2007	Launch of Chimpanzee Sanctuary Uto (CSU) Primate Research institute of Kyoto University managing CSU	
2008	Wildlife Research Center of Kyoto University managing CSU Start of the relocation program of chimpanzees to domestic zoos All chimpanzees are socialized	Launch of the Wildlife Research Center of Kyoto University
2009		Chimpanzee births by ex-CSU chimpanzees in two zoos

for retired laboratory chimpanzees. In 2000, the US Congress passed the Chimpanzee Health Improvement, Maintenance, and Protection Act, and the NIH Chimpanzee Management Program was established, as was federal funding for sanctuaries, such as Chimp Haven [e.g., Brent, 2007; Dolins, 2001; Gagneux et al., 2005]. Without changes in the current law, the risk of an increase in invasive research on chimpanzee in Japan may occur as long as any pharmaceutical companies remain interested in pursuing such research.

Finally, scientists from SAGA and GAIN decided to establish the CSU, the first chimpanzee sanctuary in Japan. CSU was formed as a result of the reorganization of Sanwa-KPP. It was decided that Sanwa should continue to maintain the facility and the chimpanzees (Fig. 3), but the KUPRI should take the responsibility of management. Sanwa financially assisted KUPRI to hire professional academic staff to manage the sanctuary. KUPRI is one of 14 research institutes at Kyoto University and has established an

excellent reputation for the study of wild and captive chimpanzees. Consequently, CSU became a part of KUPRI; moreover, it is a part of the national university, which is supported by the government. The missions of CSU are as follows: (1) establishment of captive care for both the physical and psychological well-being of chimpanzees; (2) promotion of scientific studies of chimpanzees using noninvasive techniques for understanding human nature; (3) practice of environmental education through care during the entire life of chimpanzees; and (4) reduction of the number of sanctuary chimpanzees and establishment of a nationwide network for their captive care and management.

Because of continuous efforts of SAGA and GAIN, CSU became a sanctuary for retired laboratory chimpanzees on April 1, 2007. Then, on August 1, 2007, CSU formally became a part of Kyoto University, at least in terms of its management. At that point, there were 79 chimpanzees (40 males and 39 females) at CSU, and the promotion and practice

of strong welfare standards and environmental enrichment began. CSU also initiated a relocation program to move chimpanzees to zoos throughout Japan.



Fig. 2. Individual cage built by Sanwa for biomedical studies in 2000.

SOCIAL LIFE FOR CHIMPANZEES AT CSU

Initial efforts at CSU focused on the implementation of environmental enrichment programs: particularly social enrichment. At the start of 2007, 22 of 79 (28%) chimpanzees were individually housed in indoor cages or rooms. The first goal of CSU was to encourage social interaction among the chimpanzees. Almost all females were put into several single-male and multiple-female groups. Furthermore, an attempt was made in 2008 to form bachelor groups of the remaining 14 males, who had all been kept previously in solitary confinement. Based on a tried and tested introduction technique [Teramoto et al., 2007], adjacent rooms were connected and new males were added to a group one-by-one. Consequently, two new all-male groups were created: one with six males, and the other with eight males (Fig. 4).

By virtue of the daily efforts by caretakers at CSU, all chimpanzees apart from one blind individual were able to enjoy group social life. Because of her blindness, the 17-year-old female named Kanako was unable to live in a group. Efforts were made to find an alternative solution for her. Through face-to-face contact, Etsuko Nogami, one of the caretakers in CSU, established a good relationship with Kanako in the hopes of providing her with social stimulation. Then, a 20-year-old female chimpanzee named Chiko joined the training program. When Kanako and the caretaker stayed in the same room, Chiko was invited to stay in the neighboring room (Fig. 5). The caretaker supported and encouraged the mutual interaction of the two female chimpanzees using a previously established chimpanzee-human bond as a scaffold. As a result, all chimpanzees in CSU now enjoy some form of social living.

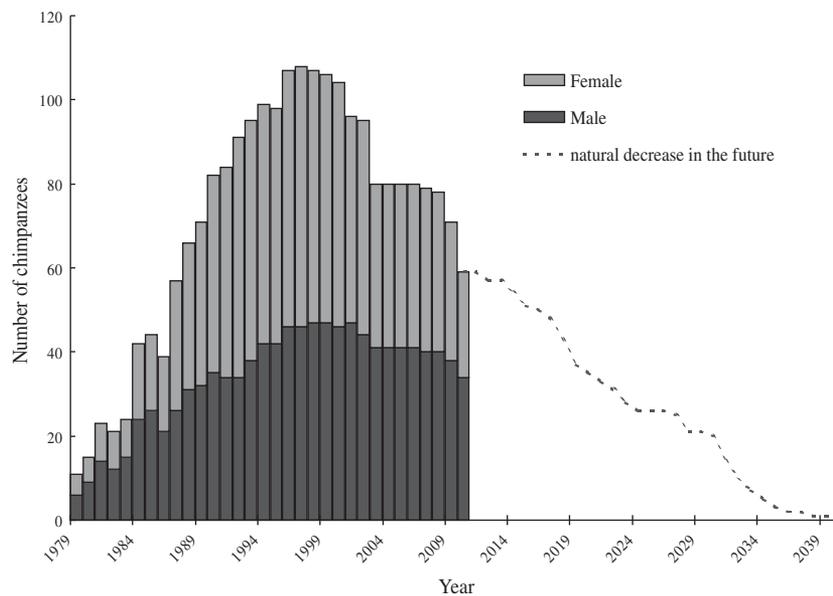


Fig. 3. The bar graph shows the population dynamics of chimpanzees at CSU and its predecessors (Sanwa facilities). The dashed line shows the estimation of its future size under the moratorium based on the average lifespan of 40 years.

NATIONWIDE MANAGEMENT OF CHIMPANZEES

The Primate Research Institute of Kyoto University founded a new independent research



Fig. 4. Chimpanzees in an all-male group of eight individuals sometimes play with others (photo A). Several individual rooms that had been isolated were connected to form their new residence (photo B). Fission–fusion emulation, a routine group formation by repeated separation and unification of group members, was introduced first for their aggression control at CSU (Photo by Etsuko Nogami).

center—the “Wildlife Research Center” (WRC) of Kyoto University—on April 1, 2008. In addition, CSU moved from KUPRI to a sister institute, WRC, that is intended to promote the research and the conservation of endangered species. From the beginning, WRC assumed a key role in forming conventions between Kyoto University and major cities, such as Kyoto, Nagoya, Yokohama, and Kumamoto, designed to enhance collaboration in renovating city-run zoos. As a result, CSU became a branch facility of WRC, which has been promoting a chimpanzee relocation program between CSU and domestic zoos.

A sanctuary for animals is a protected area that ensures the safety of animals for the remainder of their lives. This is especially important for chimpanzees because they can survive beyond 50 years of age. Given the persistent risk of being returned legally to invasive chimpanzee study in Japan, the relocation program from CSU has reduced that risk by dispersing chimpanzees to zoos that have committed to providing life-long care to the chimpanzees. The relocation program also helps maintain genetic diversity in the captive chimpanzee population in Japan. By December 2009, the number of chimpanzees living at CSU had decreased from 79 to 59 individuals. Two years after the start of CSU, five chimpanzees had passed away—four of those five were hepatitis C carriers. Because hepatitis C carriers may have a shorter life span, the remaining carriers are being monitored carefully. In addition, CSU succeeded in relocating 17 chimpanzees to five domestic zoos. In return, CSU accepted two males from the zoos. Moreover, CSU and its predecessor, the Sanwa facility, have 30 years of experience in chimpanzee care and including some 100 pregnancies [Udono et al., 1999]. The chimpanzee relocation program is an attempt to disseminate care-related techniques and information to domestic zoos in an effort to enhance welfare standards for captive chimpanzees.

As part of the relocation program, CSU took the initiative and proposed plans for chimpanzee care at the destination zoos. For example, social groups



Fig. 5. Kanako (right) and Chiko (left) stay with a caretaker, Etsuko Nogami, in a face-to-face situation for a daily health check-up.



Fig. 6. Photograph taken in the destination zoo in the relocation program. Koyuki, a nulliparous female, carefully watches a twin on the belly of Sango, ex-CSU chimpanzee mother. It was the first experience for Koyuki and other females to interact with baby chimpanzees (Photo by Takaomi Yoshikawa).

should be a minimum of five individuals and should comprise multiple males and multiple females if conditions permit. Group formation had begun at CSU before the relocation at a destination zoo. We also have found that it is stressful for the chimpanzees to form social groups with unfamiliar individuals in a novel place, especially with unfamiliar caretakers. To reduce such stress, zoo caretakers and veterinarians participate in new group formation at CSU. In addition, visits to CSU by caretakers from the destination zoos provided opportunities for interactions between future caregivers and chimpanzees. A similar procedure was used when chimpanzees are transferred from a zoo to CSU. In July 2007, two adult chimpanzee males—Kenny and Toon—came to CSU. For the first 6 months after their introduction, CSU chimpanzees acted aggressively toward the new males, although over time they were successfully accepted into the group.

CSU continues to maintain frequent communication with the destination zoos. In the spring of 2009, three infants were born at two of the zoos. A female named Sango gave birth to twins at the Noichi Zoological Park, Kochi; the other female, named Miki, had a male infant at the Asa Zoo in Hiroshima. The two mothers have good infant-rearing skills. Their presence provides an opportunity for nulliparous females in each zoo to observe maternal care and to communicate with the infants (Fig. 6). The relocation program promotes social environmental enrichment at CSU and also facilitates the sustainable population management of chimpanzees in Japan. Furthermore, it decreases the numbers of chimpanzees at CSU.

In Japan, collaboration among scientists halted invasive studies using laboratory chimpanzees, and

succeeded in the establishment of the CSU. The activities of CSU during the last several years have served to develop strong institutional bonds across zoos, research, and caregiving facilities. In addition, a strong chimpanzee–human bond formed the basis of chimpanzee care and aided group formation and training programs at CSU. This effort has expanded to include strong social interactions and bonds between handicapped and healthy chimpanzees and between chimpanzees and their human caretakers. This model of chimpanzee care, based on a familiar relationship mutually connecting chimpanzees and humans, has been transferred to domestic zoos via a nationwide network of caretakers and relocation programs. Consequently, the relationships between chimpanzees and human at CSU are growing across Japan. We call this a living social network. The CSU chimpanzees will be guaranteed life-long safety through this nationwide network independent of biomedical laboratories. Moreover, the mutual interaction based on the expanding bond between chimpanzees and humans is expected to provide a window for the advancement of our understanding of our closest living relatives, balancing a need for welfare and conservation.

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REFERENCES

- Brent L. 2007. Life-long well being: applying animal welfare science to nonhuman primates in sanctuaries. *Journal of Applied Animal Welfare Science* 10:55–61.
- Dolins FL. 2001. Potential solutions to managing a population of surplus research chimpanzees. *Laboratory Primate Newsletter* 40:11.
- Gagneux P, Moore JJ, Varki A. 2005. The ethics of research on great apes. *Nature* 437:27–29.
- Idani G, Hirata S. 2007. Studies at the Great Ape Research Institute, Hayashibara. In: Washburn DA, editor. *Primate perspectives on behavior and cognition*. Washington, DC: American Psychological Association. p 29–36.
- IUCN. 2009. IUCN Red List of Threatened Species, Version 2009.1. Available at: www.iucnredlist.org
- Knight AD. 2008. The beginning of the end for chimpanzee experiments? *Philosophy, Ethics, and Humanities in Medicine* 3:16 (online).
- Matsuzawa T. 2006. Sociocognitive development in chimpanzees: a synthesis of laboratory work and fieldwork. In: Matsuzawa T, Tomonaga M, Tanaka M, editors. *Cognitive development in chimpanzees*. New York: Springer. p 3–33.
- Matsuzawa T, Tomonaga M, Tanaka M. 2006. Cognitive development in chimpanzees. New York: Springer. 522p.
- Ochiai-Ohira T, Kurashima O, Akami R, Hasegawa T, Hirai M, Matsuzawa T, Yoshikawa Y. 2006. Past and present of great apes in Japan. *Reichorui Kenkyu/Primate Research* 22:123–136. (In Japanese with English summary.)
- Teramoto M, Mori Y, Nagano K, Hayasaka I, Kutsukake N, Ikeda K, Hasegawa T. 2007. Successful formation and maintenance of all-male groups in captive chimpanzees (Japanese with English abstract). *Reichorui Kenkyu/Primate Research* 23:33–43.
- Udono T, Teramoto M, Hayasaka I. 1999. A review of 100 pregnancies in chimpanzees at the Sanwa Kagaku Kenkyusho (Japanese with English abstract). *Reichorui Kenkyu/Primate Research* 15:243–250.