

- of the $2n = 49-50$ karyotype and that of a new hybrid. *J. Human Evol.* 9: 461–482.
- Ruppenthal, G. C., Moore, C. M., Best, R. G., Walker-Gellatt, C. G., Delio, P. J. and Sackett, G. P. 2004. Trisomy 16 in a pigtailed macaque (*M. nemestrina*) with multiple anomalies and developmental delays. *Am. J. Ment. Retardation* 109: 9–20.
- Segel, R., Peter, I., Demmer, L. A., Cowan, J. M., Hoffman, J. D. and Bianchi, D. W. 2006. The natural history of trisomy 12p. *Am. J. Med. Genet.* 140A: 695–703.
- Shaffer, L. G., McCaskill, C., Hersh, J. H., Greenberg, F. and Lupski, J. 1996. A clinical and molecular study of mosaicism for trisomy 17. *Hum. Genet.* 97: 69–72.
- Simpson, J. S. and Jones, A. C. 1982. Hybrid production in owl monkeys (*Aotus trivirgatus*). *Lab. Anim.* 16: 71–72.
- Sri Kantha, S. and Suzuki, J. 2006. Sleep profile and longevity in three generations of a family of captive Bolivian *Aotus*. *Int. J. Primatol.* 27: 779–790.
- Suzuki, J. and Sri Kantha, S. 2006. Quantitation of sleep and spinal curvature in an unusually longevous owl monkey (*Aotus azarae*). *J. Med. Primatol.* 35: 321–330.
- Weller, R. E., Wierma, E. L., Malaga, C. E., Baer, J. F. and LeMieux, T. P. 1991. Battelle Primate Facility. *J. Med. Primatol.* 20: 133–137.
- Yunis, E., Caballero, O. M. and Ramirez, C. 1977. Genus *Aotus* Q- and G-band karyotypes and natural hybrids. *Folia Primatol.* 27: 165–177.

FURTHER INFORMATION ON NEOTROPICAL MONKEYS REPORTED IN THE XVITH CENTURY: PART 2

Bernardo Urbani

This article presents new evidence on the manner in which Neotropical primates were perceived in the 16th century (after Urbani, 1999, 2004). It includes several aesthetic and artistic views of New World primates from the early Contact period. The *Florentine Codex* contains the first illustration of human / non-human primate interactions from the New World. Between 1540 and 1585, Friar Bernardino de Sahagún wrote a compendium of 12 books in Nahuatl, Latin and Spanish and illustrated these volumes with the cooperation of local assistants of Aztec descent. This work was the result of interviews with people of Tlaxtecolco, Tenochtitlán and Texcoco (today, the greater Mexico City metropolitan area). This text is considered one of the major illustrated treatises of the contact period in the New World. A drawing in Book 11 depicts a scene entitled *Captura de monos* (“capturing monkeys”; see Fig. 1). It is a representation of monkeys being lured and captured (Sahagún, 1963). The physical appearance of the primates illustrated suggests they might be spider monkeys (*Ateles geoffroyi*). As described in a previous report (Urbani, 1999), Sahagún indicated in 1555 that the Mexican Amerindians would use monkeys’ hands as omens for deciding when to sell their merchandise.

The other representations include early European paintings in which monkeys occupy a principal position posing with nobles. These suggest that Neotropical primates played an interesting role as preferred and “exotic” pets even during the early Contact period. The earliest painting is of Prince Edward of Wales with a marmoset, possibly *Callithrix jacchus* (Fig. 2a; Zuckerman, 1998). It was painted by the German Renaissance artist Hans Holbein (1497–1543), living at that time in Basel, Switzerland. The monkey might have been obtained by some of the English travelers that visited the northeastern part of South America during the 16th century (see Ribeiro and Araujo Moreira Neto, 1992). In Fig. 2b, the painting depicts the *Infanta* Isabela Clara Eugenia (1566–1633), daughter of Felipe II and Isabel de Valois, with a common marmoset (*Callithrix jacchus*) (Zuckerman, 1998). This painting by the Spanish Renaissance painter Alonso Sánchez Coello (1531–1588) is the most realistic pictorial representation of any Neotropical primate during the 16th century (see other figures in Urbani 1999, 2004, this study). These early European paintings (Figs. 2a and 2b) suggest the existence of an early international network of primate trade; the geographical distribution of these marmosets was a Portuguese territory in the New World (today northeastern Brazil), out of the colonial range of Spain and England.

Finally, Lucas Hombolte (1494–1544) painted a portrait of Catarina de Aragón y Castilla (1509–1533) of Spain with a capuchin monkey (Fig. 2c; Zuckerman, 1998; Fragaszy *et al.*, 2004). It is neither a tufted capuchin nor a white-faced capuchin, but may be either *Cebus albifrons* or *Cebus olivaceus*. Venezuela was the first Spanish territory to be



Figure 1. Obtaining monkeys by the Mexican Amerindians.

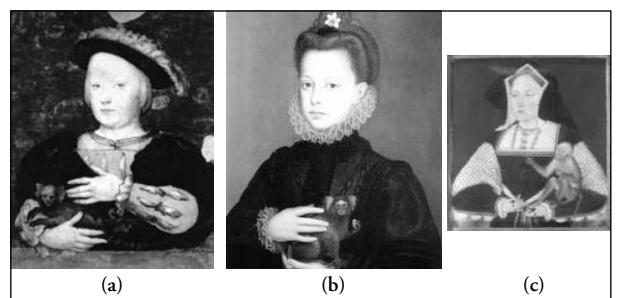


Figure 2. (a) Prince Edward of Wales with a marmoset; (b) The *Infanta* Isabela Clara Eugenia and a common marmoset; (c) Catalina de Aragón y Castilla with a capuchin monkey.

explored, between 1500 and 1535, and so this brown un-tufted capuchin monkey species is most likely *C. olivaceus*. Finally, it is interesting to note that Catalina de Aragón y Castilla was married to Prince Arthur of Wales; therefore it is feasible to suggest that among the members of the Tudor dynasty of England there was particular interest in primates as pets.

Acknowledgements

Thanks to Paul Garber for his suggestions. The author is supported by a UIUC Assistantship and I would appreciate any comments and references for future updates.

Bernardo Urbani, Department of Anthropology, University of Illinois, 109 Davenport Hall, 607 S. Mathews Ave., Urbana, Illinois 61801, USA and Centro de Antropología, Instituto Venezolano de Investigaciones Científicas, Caracas, Venezuela, e-mail: <burbani@uiuc.edu>.

References

- Fragaszy, D., Fedigan, L. and Visalberghi, E. 2004. *The Complete Capuchin: The Biology of the Genus Cebus*. Cambridge University Press, New York.
- Ribeiro, D. and Araujo Moreira Neto, C. de. 1992. *La Fundación de Brasil: Testimonios, 1500–1700*. Biblioteca Ayacucho, Caracas.
- Sahagún, B. de. 1963. *The Florentine Codex. A General History of the Things of New Spain, Book 11* (Translation by A. Anderson and Ch. Dibble). University of Utah Press, Santa Fe.
- Urbani, B. 1999. Nuevo mundo, nuevos monos: Sobre primates neotropicales en los siglos XV y XVI. *Neotrop. Primates* 7(4): 121–125.
- Urbani, B. 2004. Further information on Neotropical monkeys reported in the XVI century. *Neotrop. Primates* 12(3): 146–147.
- Zuckerman, S. 1998. *The Ape in Myth and Art*. Verdigris Press, The Knowes, Scotland.

species (V. Pacheco, pers. comm.). The number of primate species is likely to increase further as new species are recognized and described or with changes in taxonomic arrangements. However, the exact geographic distribution and aspects of the biology of most Peruvian primates remains poorly known or even unknown (Aquino and Encarnación, 1994). This lack of knowledge within scientific circles is matched by a low degree of public awareness of local primates, even when they inhabit forests surrounding human settlements. Surveys conducted in towns within the distribution of Peru's endemic primates showed that if local people are aware of the presence of primates, they usually know them as "chimpanzees," "gorillas" or just "monkeys" (Shanee, unpubl. data).

There is an urgent need to save the endemic primates of Peru and their habitats due to the great extinction risk they face. Cities and communities within the habitat of many of Peru's endemic and endangered species are also the areas where poverty, deforestation, unsustainable land use and immigration are highest (Elgegren, 2005) which is the main reasons for the rapid decline of primate populations in these areas (Leo Luna, 1984). At present, the main cause of the present conservation problem is the lack of education for creating conservation awareness (Pacheco, 2002).

As a response to this problem, the Peruvian-based NGO Yunkawasi, together with the support of Neotropical Primate Conservation, the Peruvian National Institute of Natural Resources (INRENA) and the Ministry of Education of Peru, has started the program "Environmental Education for the Conservation of Peruvian Primates," using the Critically Endangered yellow-tailed woolly monkey (*Oreonax flavicauda*) as the flagship species. *O. flavicauda* is endemic to the northeastern Peruvian tropical Andes (Mittermeier *et al.*, 1975; Macedo *et al.*, 1979; Groves, 2001) and is recognized as one of the World's 25 Most Endangered Primates (Mittermeier *et al.*, 2007). This program aims to increase people's awareness of conservation issues, to promote knowledge and understanding of the primates of Peru, with emphasis on the endemic primate species and the threats they face. It has already been launched in Lima, Peru's capital, and in the next months it will be implemented in cities within the ranges of many Peruvian primates. Since education campaigns are fundamental in any conservation effort (Defler *et al.*, 2003), this environmental education program is also complementary to the ongoing project "La Esperanza—Community Conservation and Research for the Yellow-Tailed Woolly Monkey *Oreonax flavicauda*," carried out by Neotropical Primate Conservation and the Museo de Historia Natural of the Universidad Nacional Mayor de San Marcos. This program aims at establishing a community-run reserve connecting two existing protected areas to create a biological corridor for both *O. flavicauda* and another endemic, the night monkey *Aotus miconax*. Even though both of these conservation efforts are necessary and timely for helping to change the situation faced by many Peruvian primates, they are not enough and many

NEWS

CONSERVATION EFFORTS FOR PERUVIAN PRIMATES

Fanny M. Cornejo
Fanny Fernandez
Noga Shanee
Sam Shanee

Peru is amongst the countries with the highest biodiversity of primates in the world (Cowlshaw and Dumber, 2001). While the exact number of species is still uncertain, at least 36 species are recognized now, with at least three endemic