Macaca mulatta **System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Mammalia	Primates	Cercopithecidae

Common name rhesus monkey (English, Puerto Rico), macaque (English), rhesusmakak (Swedish), macaco (Spanish), mono rhesus (Spanish), rhesusapa (Swedish), rhesus macaque (English), macaque rhésus (French)

Synonym

Similar species *Erythrocebus patas*

Summary Macaca mulatta (rhesus macaques) are very popular as laboratory animals and are used for biomedical and behavioural research in the internatonal trade. In Puerto Rico, the introduction and trade with any species of primates is lllegal. Wild populations of rhesus macaques represent a potential threat to humans, due to their strength and agressiveness, and that they carry diseases that can be transmitted to humans. Rhesus macaques invade fruit farms and eat the produce. Being omnivorous and intelligent, they will catch and eat natives birds (and their eggs), lizards, snakes and other species.

view this species on IUCN Red List

Species Description
Adult male rhesus macaques can measure more than 76cm tall and weigh 15kg; adult females are smaller; averaging 47cm in length, and weighing around 5kg. They have a tail that measures between 20 and 23cm long. They have pink-coloured hairless faces, but the rest of their bodies are covered with a brownish-grey coloured fur. Their hands and feet are prehensible with hairless palms with oppossed thumbs. Their upper canine teeth are long and straight, while the lower canines curve inward. They have callous, hairless buttocks. They can live up to 25 years. (Álvarez-Romero & Medellín, 2005)

Notes
Macaca mulatta individuals have a high frequency for carrying and transmitting the Herpes B virus. Wild population carrying numbers are estimated in the upper 70% while captive populations vary broadly but can be estimated at near 100% (Lutwick & Deaner, 2006). In Australia, *M. mulatta* has been declared a pest animal and must remain in a licensed zoo, wildlife park, or research facility (Lardner, 2007).

Lifecycle Stages
They prefer to stay in a single place, but if perturbed, they can migrate until they find a better or safer place. When a population reaches a size that strain available food sources, small groups, and even individuals, can secede from the original population.

Uses
Rhesus macacques are used as laboratory animals primarily for biomedical and behavioural research.*M. mulatta* are the most studied nonhuman primate both in the field and the laboratory. Medical developments using the rhesus macaque include the development of the rabies, smallpox, and poilo vaccines (Cawthon, 2005).

Habitat Description
Rhesus macaques are adapted to a variety of habitats from tropical coastal lowlands to snowy mountain valleys 2,500m above sea level, from dense tropical forest, to temperate pine grooves, to semi-desert conditions. They are opportunistic omnivores, although they prefer fruit. They are excellent swimmers and enjoy living next to water bodies. They prefer living on trees, but descend to floor level to forage in search of food. They are intelligent, social and gregarious and adapt easily to life among humans and domestic animals, if tolerated. However, they are territorial and aggressive and attack in groups whenever they feel threatened. (Álvarez-Romero & Medellín, 2005)

Reproduction
Their reproduction is sexual. Males reach sexual maturity between 2 to 3 years old, while females need to be between 2 to 4 years old. Males are promiscuous and can fertilize many females in a short period of time. Females need to be in their estrous cycle to be fertile and receptive to males, but they can be on estrous multiple times in a year.The estrous cycle lasts from 26 to 28 days. After a gestation period of seven months, females give birth to a single pup, usually every two years. Females reach menopause at about 25 years of age. (Álvarez-Romero & Medellín, 2005)

Nutrition
Although rhesus macaques prefer fruit, they are opportunistic omnivores and will eat what they can grab, including seeds, leaves, branches, tree bark, small animals (vertebrate and invertebrate), eggs, etc. (Álvarez-Romero & Medellín, 2005)

General Impacts
In Puerto Rico, wild rhesus macaques are considered pests on various levels: they frequently invade fruit farms and eat or damage crops; they can carry diseases that can be passed to humans, and their size, strength, teeth and agressiveness poses a potential for attacks on humans and domestic animals. They are also voracious omnivores and may have an impact on populations of native plants and small animals.

Management Info
In Puerto Rico, whenever wild macaquess are reported to the authorities, they are captured, taken to a government holding facility, and either exported or eliminated. A project to find an efficient way to eradicate wild populations began in September, 2007.

Pathway
Rhesus macaques are very popular as laboratory animals and are used for biomedical and behavioural research in the internatonal trade.

Principal source: Álvarez-Romero, J., & R. A. Medellín. 2005. *Macaca mulatta*, Vertebrados superiores exóticos en México: Diversidad, distribución y efectos potenciales. UNAM. SNIB-CONABIO Proyecto UO20. México, DF

Compiler: National Biological Information Infrastructure (NBII), Felix A. Grana Raffucci, Technical Advisor, Puerto Rico Department of Natural & Environmental Resources & IUCN SSC Invasive Species Specialist Group (ISSG)

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ALIEN RANGE

[1] BRAZIL

[1] COOK ISLANDS

[1] CUBA
[1] MEXICO
[3] UNITED STATES

[1] GERMANY
[9] PUERTO RICO

Red List assessed species 3: LC = 3;

Macaca fuscata **LC**
Sula leucogaster **LC**
Sula sula **LC**

BIBLIOGRAPHY

22 references found for **Macaca mulatta**

Managment information

Alvarez-Romero, J., and R. A. Medell&#65533;n. 2005. *Macaca mulatta*. Vertebrados superiores exoticos en Mexico: Diversidad, distribucion y efectos potenciales. Instituto de Ecologia. UNAM. Base de datos SNIB-CONABIO. Proyecto U020. Mexico, DF
Summary: Good biological and distribution information.

Environmental Law Institute (ELI), 2008. Cooperative Prevention of Invasive Wildlife Introduction in Florida. Technical Report. Copyright &#65533; 2008 Environmental Law Institute&#65533;, Washington, D.C. Cover art courtesy of Jessica Western. All rights reserved. ELI Project No. 070501.
Summary: ELI report, Cooperative Prevention of Invasive Wildlife Introduction in Florida, examines the complex issues faced in addressing the issue of wildlife invasions in Florida. The report analyzes state and federal laws and regulations that affect invasive wildlife species prevention efforts and makes recommendations intended to harmonize state and federal agency efforts in Florida under existing legal authorities. It also recommends changes to the existing laws and regulations that would enable agencies to proactively address the harms posed by nonnative wildlife.
Available from: http://www.elistore.org/reports_detail.asp?ID=11282 [Accessed 7 May 2008]

Evans M.A., 1989. Ecology and removal of introduced rhesus monkeys: Desecheo Island National Wildlife Refuge, Puerto Rico. 1: Puerto Rican Health Science Journal. 1989 Apr;8 (1):139-56.

Long, L. John., 2003. Introduced Mammals of the World: Their History, Distribution and Influence. CSIRO Publication. A Sample
Summary: Available from: http://www.publish.csiro.au/samples/IntroducedMammalsSample.pdf [Accessed 2008 March 24].

Massam, Marion and Win Kirkpatrick, Peter Mawson, Norm Press, Tony Bennell and Neil Hamilton., Revised 2007. Importing and keeping introduced mammals, birds, reptiles and amphibians in Western Australia. Bulletin 4604 ISSN 1448-0352 February 2004. Department of Agriculture. Government of Western Australia.
Summary: Available from: http://www.agric.wa.gov.au/content/AAP/OL/BULLETIN4604.PDF [Accessed 1 September 2008]

National Biological Information Infrastructure (NBII)., 2002. Non-native mammals in the U.S. and Canada. NBII Invasive Species Information Node.
Summary: Available from: http://invasivespecies.nbii.gov/speciesinfo/mammal_list.html [Accessed 2008 March 24].

Vertebrate Pests Committee (VPC)., 2006. List of Exotic Vertebrate Animals in Australia
Summary: Available from: http://www.feral.org.au/feral_documents/VPCListJan06.pdf [Accessed 2008 March 24].

General information

Cawthon Lang KA. 2005 July 20. Primate Factsheets: Rhesus macaque (*Macaca mulatta*) Taxonomy, Morphology, & Ecology.
Summary: Available from: http://pin.primate.wisc.edu/factsheets/entry/rhesus_macaque [Accessed 2008 March 24].

Fouquet, Antoine.; Measey, G. John., 2006. Plotting the course of an African clawed frog invasion in Western France. Animal Biology, Vol. 56, No. 1, pp. 95-102 (2006)

Gron K.J. 2006 December 18. Primate Factsheets: Patas monkey (*Erythrocebus patas*) Taxonomy, Morphology, & Ecology.
Summary: Available from: http://pin.primate.wisc.edu/factsheets/entry/patas_monkey [Accessed 2008 March 24].

ITIS (Integrated Taxonomic Information System), 2007. Online Database *Macaca mulatta* (Zimmermann, 1780)
Summary: An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals.
Available from: http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=180099 [Accessed 18 November 2007]

Jensen K, Alvarado-Ramy F, Gonz&#65533;lez-Mart&#65533;nez J, Kraiselburd E, Rull&#65533;n J. 2004. B virus and free-ranging macaques, Puerto Rico. Emerg Infect Dis [serial online] 2004 Mar
Summary: Available from: http://www.cdc.gov/ncidod/EID/vol10no3/03-0257.htm [Accessed 2008 March 24].

Jensen Kristen., 2002. Free Ranging Rhesus Monkeys (*Macaca mulatta*) and Herpesvirus B: Public health risks in Puerto Rico September 18, 2002 Senior Seminar

Kepler, Cameron B. 1978. The Breeding Ecology of Sea Birds on Monito Island, Puerto Rico. The Condor, Vol. 80, No. 1. (Spring, 1978), pp. 72-87.

Lardner, S., Larner, K. 2007. A Guide to the Control Over the Possession, Trade and Movement of Declared Pest Animals. State of Victoria Department of Primary Industries.
Summary: A report that places certain animals in categories and breaks down the regulations for each category in terms of relocation, personal possession and country wide permissions.

Layne, J. 1997. Nonindigenous mammals. Pages 157-186 in Strangers in Paradise: Impact and management of nonindigenous species in Florida (Simberloff, D., D. Schmitz, and T. Brown, eds.) Island Press, Washington, DC
Summary: Good account of the species in southern Florida

Lehmann S. M. ; Taylor L. L. ; Easley S. P., 1994. Climate and reproductive seasonality in two free-ranging island populations of Rhesus macaques (*Macaca mulatta*) International journal of primatology (Int. j. primatol.) ISSN 0164-0291 CODEN IJPRDA , vol. 15, no1, pp. 115-128 (29 ref.)

Lutwick, Larry., Robert O Deaner., 2006. Herpes B. IN eMedicine (Eds) Thomas J Marrie, Francisco Talavera,Charles V Sanders, Eleftherios Mylonakis, Burke A Cunha.
Summary: Available from: http://www.emedicine.com/Med/topic3367.htm [Accessed 2008 March 24].
McCormack, Gerald., 2007. Cook Islands Biodiversity Database, Version 2007.2. Cook Islands Natural Heritage Trust, Rarotonga.
Summary: Available from: http://cookislands.bishopmuseum.org [Accessed 11 May, 2010].
Rawlins R G, Kessler M J, editors. 1986. The history of the Cayo Santiago colony. In: The Cayo Santiago macaques: history, behavior, and biology. Albany (NY): State Univ New York Pr. p 13-45
Taub D.M; Mehlman P., 1989. Development of the Morgan Island rhesus monkey colony.. P R Health Sci J. 1989 Apr;8(1):159-69.
UNEP-WCMC Species Database, undated. *Macaca mulatta* Zimmermann, 1780
Summary: Available from: http://sea.unep-wcmc.org/isdb/Taxonomy/tax-species-result.cfm?displaylanguage=eng&source=animals&Genus=Macaca&Species=mulatta&Country=&tabname=names [Accessed 18 November 2007]