Erythrocebus patas **System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Mammalia	Primates	Cercopithecidae

Common name

eastern patas monkey (English), husarapa (Swedish), huzaar aap (Dutch), patasapa (Swedish), patas monkey (French), mono patas (Spanish), red monkey (English), patas monkey (English)

Synonym

Simia rubra , Gmelin, 1788
Simia rufa , Wagner, 1839
Erythrocebus albigenus , Elliot, 1909
Simia ruber albo-fasciatus , Kerr, 1792
Erythrocebus formosus , Elliot, 1906
Cercopithecus kerstingi , Matschie, 1906
Erythrocebus langheldi , Matschie, 1905
Simia ruber nigro-fasciatus , Kerr, 1792
Cercopithecus poliophaeus , Heuglin, 1877
Erythrocebus zechi , Matschie, 1905
Erythrocebus patas villiersi , Dekeyser, 1950
Cercopithecus patas sannio , Thomas, 1906
Erythrocebus whitei , Hollister, 1910
Cercopithecus patas albosignatus , Matschie, 1912
Cercopithecus circumcinctus , Reichenbach, 1863
Cercopithecus patas poliomystax , Matschie, 1912

Similar species

Summary

Erythrocebus patas is a medium sized terrestrial monkey, native to sub-saharan Africa. Wild populations only rarely come into contact with humans. Their shy behaviour, low densities, cryptic pelage, and large home ranges make it hard to observe them in many parts of their natural range. In some parts of their native range, mainly in west Africa, E. patas frequently invade farms, consume produce and are considered pests. The patas monkey is internationally a popular laboratory animal, used for biomedical and behavioural research. Patas monkeys were intentionally released to the Islands of Cueva and Guayacan in Puerto Rico between 1971 and 1981 by the La Parguera Primate Facility. Between 1974-1981 individuals have gradually migrated from the Islands to mainland Puerto Rico and formed free ranging population groups. They are reported to forage in gardens, destroy crops and disturb traffic. The Puerto Rican Department of Natural Resources traps and kills, or translocates individuals in an attempt to control their population.

view this species on IUCN Red List

Species Description
Erythrocebus patas is a medium sized, distinctive, terrestrial primate, native to sub-saharan Africa. Sexual dimorphism is conspicuous with adult males measuring up to 87cm tall and weighing between 10 and 12.5kg on average; adult females are much smaller, averaging 49cm tall, and around 5-6 to 6.5kg in weight (Nakagawa, 2003; Fedigan, 1992). Adult males also have much larger canines than females and are sometimes described as being brighter in colour (Fedigan, 1992). The fur of the dorsum, cap, neck and tail are reddish-brown. The ventrum and limbs are grey-white in females and bright white in males. Face black, with white, grey or black nose. Cheeks white or grey. Males exhibit a bright blue scrotum. Hands and feet are prehensile with opposed thumbs. *E. patas* is adapted for life in open country, having slender bodies and long limbs suited for ground speed rather than arboreal movement. They are the fastest primate on land and may reach speeds of 55 km/h (Hall, 1965). Although quadrupedal, they assume a bipedal stance when alarmed.\r\n
E. patas occur in single-male, multi-female groups for most part of the year. Group size varies widely between 5 – 74 (Chism & Rowell, 1988). Extragroup males live solitary or in all-male groups (Harding & Olson, 1986). Multi-male influxes into heterosexual groups occur during the mating season (Hall, 1965; Harding & Olson, 1986; Struhsaker & Gartlan, 1970). Shy behaviour, low densities, cryptic pelage, and large home ranges makes it hard to observe them in many parts of their natural range (De Jong *et al*., 2008). In the past, patas monkeys rarely came into conflict with humans, but the growing human population (in Kenya for example) has forced farmers to exploit dryer areas, converting patas habitat into agricultural land (Isbell & Chism, 2007; De Jong *et al*., 2008). *E. patas* frequently invades farms, consume produce and are considered pests in some parts of their geographical range, mainly in west Africa. Once this primate looses its fear for humans it can act aggresively towards them when treatened. This can be potentially dangeruous due to disease transmission between primates and humans.

Notes
There are four proposed subspecies of *Erythrocebus patas* according to Hill (1966) and Kingdon (1997) (*E. p. patas*, *E. p. pyrrhonotus*, *E. p. baumstarki*, and *E. p. villiersi*), opposed to Isbell (in press), who recognises three subspecies (*E. p. patas*, *E. p. pyrrhonotus*, *E. p. baumstarki*), Dorst and Dandelot (1969), who recognised two subspecies (*E. p. patas*, *E. p. pyrrhonotus*) or none by Groves (2001, 2005) and Grubb *et al*. (2003).\r\n
E. p. patas occurs from Senegal to Chad, *E. p. pyrrhonotus* occurs from western Ethiopia to northern Uganda and west, northwest, central and south of Kenya (De Jong *et al*., 2008), *E. p. baumstarki* is restricted to central north Tanzania (De Jong *et al*., 2008; De Jong *et al*., 2009) and *E.p. villiersi* is restricted to the Aïr Massif in Niger (Dekeyser, 1950).

Lifecycle Stages
Erythrocebus patas have a birth interval of ca. 1 year. At birth, infants are black and a reddish coat emerges after about three months. For the first four to five months infants receive much attention and grooming. Infants are fully capable of feeding and transporting themselves by 12 months of age (Chism *et al*., 1984). Complete weaning only occurs when a new infant is born, usually at age one. Allomaternal caretaking by females promotes infant survival (Chism *et al*., 1984).

Uses
Patas monkeys are used as laboratory animals primarily for biomedical and behavioral research (González-Martínez, 1998).

Habitat Description
Erythrocebus patas inhabits savannah, woodland savannah and grass steppe with thicket clumps. They generally avoid dense vegetation like riverine vegetation and forests. *E. patas* travel long distances using the ground. When disturbed they will either flee using the ground or move into tall trees for safety. For their sleeping sites they require an area with tall trees. *E. patas* needs to drink daily (Struhsaker & Gartlan, 1970; Chism & Rowell, 1988; De Jong *et al*., 2008). In dry areas, or during the dry season, *E. patas* does not move far from permanent water sources (which can be man-made water sources; Enstam & Isbell, 2004; Isbell & Chism, 2007; De Jong *et al*., 2008). In their natural habitats, groups have large home ranges varying typically between 23-52 km², depending on their group size, food and water availability (Chism & Rowell, 1988; Enstam & Isbell, 2004; Hall, 1965).\r\n\r\n
The introduced population of *E. patas* in Puerto Rico occupies substantially smaller home ranges, varying from 3.72 km² to 15.39 km² (González-Martínez, 1998). González-Martínez (1998) suggests that 'the resource availability of Puerto Rico is adequate to sustain high densities in a small home range while maintaining a group size structure similar to that found in the natural habitats.' The Puerto Rican population exhibit territorial behavior, with groups having well established boundaries. Populations occurring in their natural habitats have typically large, highly overlapping home ranges (González-Martínez, 1998).

Reproduction
Sexual, polygenous groups, typically including a variable number of females and one male (Chism & Rowell, 1988; Hall, 1965). Females reach sexual maturity at 2.5-3 years and males reach sexual maturity at 4-4.5 years (Chism *et al*., 1984). Males leave their natal group around puberty (ca. 3 years; Hall, 1965, Chism *et al*., 1984, Nakagawa *et al*., 2003). All-male groups occur. Multi-male influxes into heterosexual groups occur during the mating season (Hall, 1965; Harding & Olson, 1986; Struhsaker & Gartlan, 1970). 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. Their defined reproductive season takes place during the wet summer. Strong correlative findings indicate breeding is largely based on rainfall. After a gestation period that lasts ca. 170 days, females give birth to a single baby, usually every year (González-Martínez, 2004; Gron, 2006).

Nutrition
Erythrocebus patas are omnivorous primates. Their diet varies with changes in food availability due to the seasonality of its environment. *E. patas* primarily feeds on plant material (flowers, fruits, gum, seeds and leaves), insects, and animal material (vertebrates, birds' eggs and nestlings; Isbell, 1998). They catch and eat lizards and fish. In Kenya and Tanzania *E. patas* are strongly associated with *Acacia* woodland (Chism & Rowell, 1988; Isbell, 1998; De Jong *et al*., 2008; De Jong *et al*., 2009; Isbell in press). The diet of a population studied on the Laikipia Plateau in Kenya was found to be highly dependent on *Acacia drepanolobium* (feeding on the gum and ants that occupy the swollen thorns of this tree; Isbell, 1998). \r\n\r\n
In Puerto Rico *E. patas* movement is correlated to the occurrence of their most important food sources: *Tamarindus indica*, *Melicoccus bijugatus*, *Mangifera indica*, *Prosopis juliflora*, *Leucaena leucocephala*, and *Bourrerria succulent*. *E. patas* feeds most often on fruits, seeds or the seed pods of these trees or shubs. Other items in their diet in Puerto Rico are arthropods and human crops taken from agricultural plots (González-Martínez, 2004; Felix Grana., pers.comm., November 2007).

General Impacts
Erythrocebus patas (individuals originated from Nigeria) were intentionally released to the Islands of Cueva and Guayacan, in Puerto Rico between 1971 and 1981, by the La Parguera Primate Facility. Between 1974-1981 individuals have gradually migrated from the Islands to mainland Puerto Rico and formed free ranging population groups (González-Martínez, 1998). In 1993 the population size on the mainland of Puerto Rico was estimated to be 120 individuals (González-Martínez, 1998). In 2006 the estimated population size was between 514 to 621 individuals (Massanet & Chism, 2008). The rapid expansion of the *E. patas* population in Puerto Rico is due to factors such as lack of non-human predators and abundant resources according to Massanet and Chism (2008).
In Puerto Rico, *E. patas* is considered a pest on various levels. They frequently invade fruit farms and raid crops. Their size, strength, and lack of fear for humans renders them a potential threat to humans and domestic animals. They may carry diseases that can be passed on to humans. Additionally, they are voracious omnivores and may have an impact on populations of native plants and small animals (Felix Grana., pers.comm., November 2007). There is not enough information about their role as predators on the local avifauna but it is likely that bird species in the Sierra, including the 'Critically Endangered (CR)' Puerto Rican nightjar (see *Caprimulgus noctitherus* in IUCN Red List of Threatened Species) and the 'Endangered (EN)' yellow-shouldered blackbird (see *Agelaius xanthomus* in IUCN Red List of Threatened Species), could suffer from nest predation by exotic species such as *E. patas* (Aukema *et al*., 2006).

Management Info
Preventative measures: Restrictions on the importation of *Erythrocebus patas*, as well as suitable enclosures, can prevent their establishment in new locations. Trade and sale of all primates is restricted in Puerto Rico (Felix Grana., pers.comm., November 2007).\r\n
Physical: An effort to find an efficient way of eradicating wild populations of patas monkeys in Puerto Rico is underway (Felix Grana., pers.comm., November 2007).

Pathway
E. patas is an internationally popular laboratory species, used for biomedical and behavioural research.

Principal source:
Isbell, L.A. and Chism, J. 2007. Distribution of patas monkeys (*Erythrocebus patas*) in Laikipia, Kenya, 1979-2004. Am. J. Primatol. 2007. Vol. 69, No. 11: 1223-1235.
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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] AUSTRALIA

[7] PUERTO RICO

Red List assessed species 2: EN = 2;

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