

# Why is the elephant a 'cousin' of the hyrax? A short introduction to the Afrotheria of the Eastern Arc and Coastal Forests.

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## What are Afrotheria?

Afrotheria is a grouping of mammal species that includes elephants, hyraxes, sea cows (dugongs and manatees), the aardvark, sengis or elephant-shrews, tenrecs and golden moles. This diverse group of animals are thought to share a common ancestor that diverged from other mammal species early in the evolutionary history of mammals. The Afrotheria are of Afro-Arabian origin although some species have subsequently dispersed beyond Africa (e.g. Asian elephants, sea cows etc).

Around 35 million years ago, there were many more species of Afrotheria than there are today. For example there were 10 or more species of hyrax in Africa which varied in size from pig to rabbit-sized animals. Today all hyraxes are similar in size to a rabbit, the larger forms now being extinct.

Some Afrotheria share some unusual common physiological traits including primitive reproductive systems, low core body temperatures (including some of the lowest yet recorded amongst any mammal) and poor thermoregulatory abilities.

The principle evidence for the common origin of these animals has come from recent molecular work. The Afrotherian grouping is not accepted by all biologists in part because of the reliance on molecular evidence. Some biologists focus on morphological traits, fossil records and biogeography to investigate evolution. This results in a different interpretation of the evolutionary history of the Afrotherian species.

Today many of the Afrotheria are threatened and there are 38 on the IUCN Red Lists. In response to the threatened conservation status of some Afrotheria, the Species Survival Commission (SSC) of the World Conservation Union (IUCN) has established the Afrotheria Specialist Group to further facilitate their conservation (see Box 1).

## Afrotheria in the Eastern Arc and Coastal Forests (EACF) of Tanzania and Kenya.

The forests found in the Eastern Arc Mountains and along the coast of Tanzania and Kenya are considered conservation hot spots because numerous species occur in these forests that are found no where else in the world. Some of these endemic species belong to the Afrotheria.



Rock hyrax

**Hyracoidea, the hyraxes, Swahili: pimbili, perere**  
The hyrax is a rabbit-sized animal with no tail

and hooved feet without claws and makes loud calls, which are highly distinctive. There are three genera of hyrax in Africa and Arabia: rock hyrax (*Provocavia*, 5 species), bush hyrax (*Heterohyrax*, 3 species), and tree hyrax (*Dendrohyrax*, 3 species).

The hyrax is often said to be the closest relative of the elephant. This is because of similarities in their reproductive system, teeth structure and a common ancestor in the early fossil record.

Within the Eastern Arc and Coastal Forest there are at least three species of hyrax from the three genera; a bush hyrax, a tree hyrax and a rock hyrax.

The tree hyrax found in the Eastern Arc and Coastal forests (EACF) is the Eastern tree hyrax, *Dendrohyrax validus*. It is nocturnal, solitary and mainly arboreal (tree living). Recent work on the vocalisations of *Dendrohyrax validus* indicates differences between populations in the various Eastern Arc mountain blocks. Further analysis is required to determine the degree of difference between these populations.

However, it is harder to confirm if the more gregarious (group living) rock hyrax *Provocavia* spp. and bush hyraxes *Heterohyrax* spp. occur in the EACF, even if they are active during the day, because they are easily confused and there is a lack of field data to confirm their presence. Hyraxes are heavily hunted in certain areas both for meat and sometimes for their soft fur and populations are being reduced due to loss of their habitats.

## Tubulidentata, the aardvark, Kiswahili: Muhanga, Kikukifaku

Extraordinarily secretive, the aardvark *Orycteropus afer*, is one of a kind and has been give its own genus and order. In the EACF the aardvark occurs in all areas at low densities where there are suitable amounts of termites and ants, which are its staple diet. These are also hunted for meat and also because they sometimes dig big holes in farmland that are not popular with the farmers. But aardvarks are very important ecologically since they eat huge amounts of termites and other insects. Also their burrows are utilised by many different species such as warthogs, snakes, mongooses and cat species that are incapable of digging safe, deep burrows in the soil for themselves.

## Macroscelidea, sengis or elephant-shrews; Swahili: Njule.

Sengis, with their long legs, long and flexible elephant-like noses, and large eyes are not

true shrews at all. Indeed, being members of the Afrotheria they are not even closely related to shrews. These animals are a common sight in the EACF as they forage in the forest leaf litter for invertebrates. When disturbed, they



Black and rufous elephant shrew

swiftly run away along regularly maintained paths. The three species of giant sengis are in the genus *Rhynchocyon* and all occur in the EACF. These three species can be told apart by their distinctive colouration, which is the reason for their common names: golden-rumped (*R. chrysopygus*), black and rufous (*R. petersi*), and chequered elephant-shrew (*R. cirnei*). The golden-rumped and the black and rufous elephant shrews are endemic to the EACF. A smaller species, the four-toed elephant shrew (*Petrodromus tetradactylus*) occurs throughout and outside the EACF and is more often seen at night. The distribution and conservation status of the *Rhynchocyon* species are not fully understood and require further research, although it is known that they are threatened by hunting and habitat loss in certain areas.

## Future directions

The Afrotheria is a strange collection of mammals that have survived millions of years of evolution until the present day. The EACF provides important habitats for at least ten afrotheres, of which three are on the IUCN Red List. These species require further conservation attention than they have been receiving in the past. This both in terms of awareness to reduce the hunting of hyrax and giant elephant shrews and scientific research to better understand their biology and population status.

## The Afrotheria Specialist Group

This IUCN-SSC specialist group was established in 2002 to promote conservation, public awareness and research into the Afrotheria. The specialist group has a newsletter "Afrotheria Conservation" which can be downloaded from the group's web site:

[www.calacademy.org/research/bmammals/afrotheria/ASG.html](http://www.calacademy.org/research/bmammals/afrotheria/ASG.html).

Printed copies are as yet unavailable, but funding is being sought to facilitate this.