

THE HYRACOIDEA

A Review of the Systematic Position and Biology of the Hyrax

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Probably the earliest reference to the Hyrax is that found in the Bible¹ where it is referred to several times by the name 'coney'. Today the Rock Hyrax is still found in parts of the Middle East and three genera occur in Africa. Two of these, *Procavia* and *Heterohyrax*, are the well known 'rock rabbits', which live in the shelter of rocky outcrops in many parts of East Africa. The third genus is *Dendrohyrax*, which is the arboreal form living in forests and famous for its loud call at night.

One interesting feature of the Hyrax is its relationship to other groups of animals. Earlier ideas emphasised affinities with the Perissodactyls (horse, rhinoceros) based on the lack of canines and the nature of the molars. This view is well expressed in Cuvier's *Animal Kingdom*²: "they are little less than rhinoceroses in miniature." The modern tendency is to relate the Hyrax to the elephant. The grouping together of these two widely differing animals is based on the fact that the fossil Hyrax of the Eocene period have a number of characteristics in common with the ancestors of the modern elephant. Arising from the same group, very early in the Palaeocene, are the Sirenia, or sea cows, of which the Dugong is an example found on East African coasts. Together with their fossil ancestors, the Hyrax, elephants and sea cows are included by most modern taxonomists in the Paenungulata³ or 'near-ungulates'. Primitive ungulate features shown by the group include several digits with poorly developed hoofs; incisors and canines reduced to single pairs of large tusks and molars specialised for grinding with the development of cross-ridges. The failure of the testes to descend into a scrotum in all living Paenungulates is a curious feature which seems to lack an adequate functional explanation. We may summarise the classification of living Paenungulates as follows:—

CLASS: MAMMALIA

Superorder: Paenungulata

Order 1. Hyracoidea	Family: Procaviidae
	Genus 1. <i>Procavia</i>
	2. <i>Heterohyrax</i>
	3. <i>Dendrohyrax</i>
Order 2. Proboscidea	Family: Elephantidae
	Genus 1. <i>Loxodonta</i> —
	African Elephant
	2. <i>Elephas</i> —
	Indian Elephant
Order 3. Sirenia	Family: 1. Trichechidae
	Genus: <i>Trichechus</i> —
	manatee of Atlantic Ocean
	Family: 2. Dugongidae
	Genus: <i>Dugong</i>
	Family 3. Rhytinidae
	Genus: <i>Rhytina</i>

¹ Lev. 11.5; Ps. 104.18; Prov. 30.26.

² The Animal Kingdom. Cuvier 1884, pp. 120.

³ Simpson, G. G. 1945. The Principles of Classification and a Classification of the Mammals. *Bull. Amer. Mus. Nat. Hist.* 85.

The first two genera of the Hyracoidea, *Procavia* and *Heterohyrax*, have much in common. Not only are their habits almost identical, but they show very few anatomical differences on which to base a division into separate genera. The main distinguishing features may be listed thus:

Feature	<i>Procavia</i>	<i>Heterohyrax</i>
(a) Hairs surrounding dorsal glandular spot	black	white or chestnut
(b) Molar teeth	broad	tend to be narrower than <i>Procavia</i>
(c) Upper incisors	very strong: close together	weaker than <i>Procavia</i> : wider apart

In addition, there are slight differences in the measurements of some features of the skull. Apart from the colour of the hairs of the dorsal glandular spot, it is very difficult to state to which genus a given specimen belongs unless one has an identified specimen for comparison. The question as to whether two separate genera are justified seems to arise. Some idea of the confusion is gained when one notes that Allen (1939)⁴ places *Heterohyrax welwitschii* as a subspecies of *Procavia capensis*. Some authorities regard *Heterohyrax* as a sub-genus of *Procavia*⁵. There are some other cases of confusion in the naming of subspecies and a thorough revision of these two genera appears to be necessary.

The Tree Hyrax (*Dendrohyrax*) is readily distinguishable from the Rock Hyraxes both by its arboreal and nocturnal habits and on anatomical grounds. The long soft hair is quite different from the shorter hair of the other two genera. The muzzle is longer and the teeth show considerable differences. For instance, the outer pair of lower incisors retain the tricuspid condition in the adult, whilst this is lost in the adults of *Procavia* and *Heterohyrax*.

The habits of the Rock Hyraxes are better known than are those of their nocturnal relative, the Tree Hyrax. The rocky shelters where these animals live in colonies of fifty or more are often located in dry arid areas. A colony in the Sahara was noted by an explorer in an area which was completely waterless⁶. The urine is often viscous and the kidney must remove a large amount of the water from it, thus conserving water in the body. The habit of urinating and defaecating in the same spot is characteristic of the Rock Hyrax. A study of the occurrence of this habit in the animal kingdom does not seem to provide a ready explanation of its usefulness. The white rhinoceros is another noted example of an animal which has a communal dung heap. Feeding generally takes place during the daytime, the early morning and late afternoon being times of maximum activity outside the rocky holes in which the night and much of the middle of the day are spent.

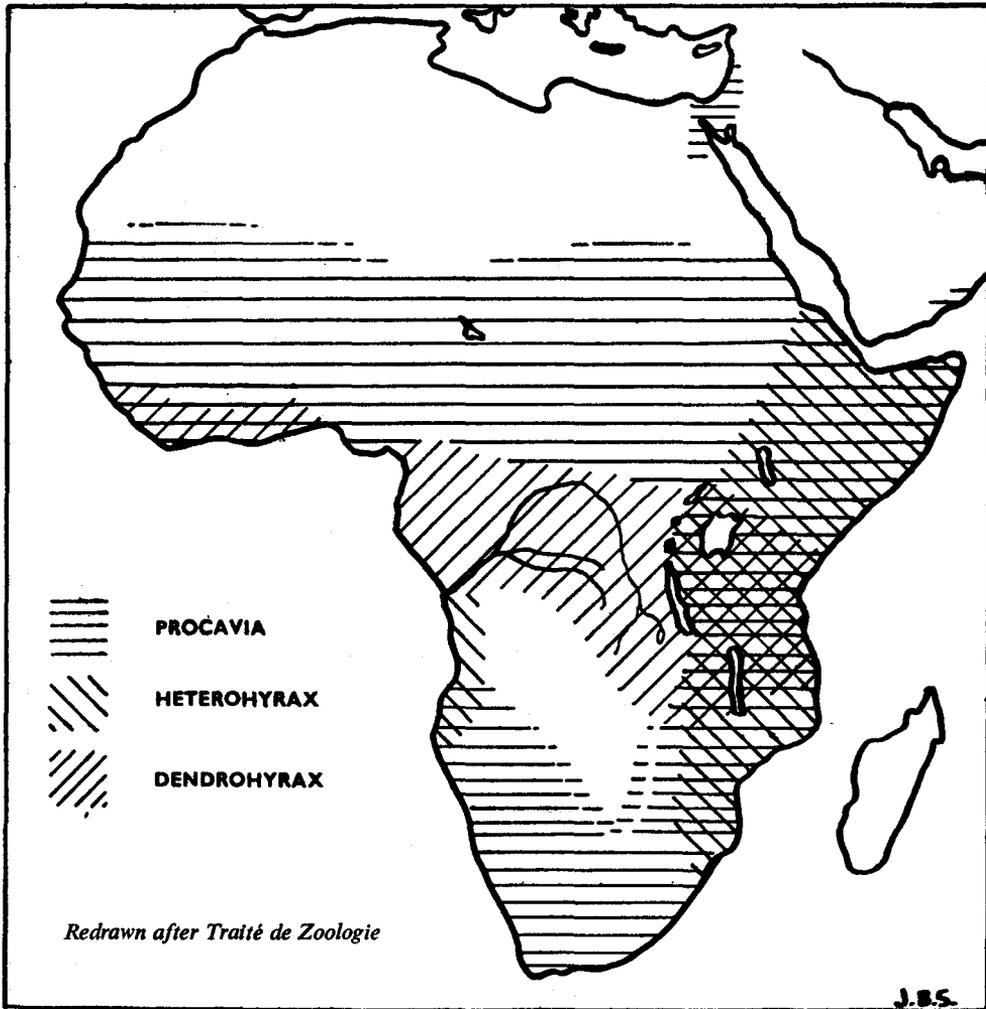
The Hyrax is, of course, a herbivore and the diet includes leaves, fruits and many varieties of grasses. Also lichens have been reported as food, particularly in areas where, due to lack of rainfall, other forms of vegetation are scarce. In fact it appears that at such times Hyrax will eat almost any vegetable material available, and extremely

⁴ Allen 1939. Checklist of African Mammals. *Bull. Mus. Comp. Zool.* LXXXIII.

⁵ See for instance Animaux Protégés au Congo Belge. 1953. Institut des Parcs Nationaux du Congo Belge, pp. 66.

⁶ *Traité de Zoologie*. Tome XVII, pp. 892.

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dry and unappetising stalks and grasses can be found among the stomach contents.

The sight of the Hyrax is keen in spite of the fact that it spends much of its time in complete darkness and vision of objects as much as a mile away has been reported. When lying out in the sun, as they often do during the middle of the day, they have the habit of gazing up directly at the sun. This has led to the belief among some African tribes that the Hyrax are blind. It is reported⁷ that the eye of the Hyrax differs in structure from that of other animals.

Hearing, like sight, is probably quite keen and a general alertness is supplemented by a distinctive warning cry on the approach of an enemy. At such time one can see members of the colony hurrying back to their holes, negotiating the steep faces of rocks with superb agility. The thick flat soles of the feet, which are clammy in life, are well adapted to this mode of life, although they do not possess any real suctional power. Some observers state that the Hyrax breeds once a year but whether there is a definite breeding season is not clear. Two or three young are born per litter and the gestation period is said to be seven and a half months.

Little has been recorded of social life within the Hyrax colony. Gregarious animals living in a colony of this kind always have a fairly intricate social structure. The older males are said to remain on guard outside the entrances as 'sentinels' and some claim that adult members train up the juveniles in the ways of the colony. No real evidence seems available to support this, however. Fighting, probably between males, is sometimes noticed but whether this has any definite social significance is not known.

The mode of life of the Tree Hyrax is very different from that of the Rock Hyraxes. They are solitary animals, hiding in hollows and in the branches of trees during the day and becoming very active at night when they descend to the ground in search of food. The cry is of much greater volume than that of the other hyraxes and is a nuisance to the would-be sleeper in some forest areas. Only one or two young are born at a time.

The Hyracoidea have received very little attention either from the naturalist or from the serious scientific research worker. The literature on this group of animals is probably more slender than that of any other mammalian order. There are many problems, such as the nature of the social structure of the Hyrax colony, remaining to be investigated. Indeed, all aspects of the biology of these animals should provide a rewarding field of research.

A Snake's Meal

During a recent field course we were brought a mature specimen of the common house snake (*Boaedon fuliginosus fuliginosus*. Boie.). On examining the specimen to ascertain the cause of death, we found that a rat that had recently been consumed by the snake, had eaten its way through the oesophagus and the lateral body wall. Both animals had been found dead as a result.

Malcolm J. Coe

⁷ Austin Roberts, *The Mammals of South Africa*, 1951, pp. 252.