

CHAPTER 10

GEORYCHUS CAPENSIS (PALLAS) 1778

The so called 'blesmol' was first referred to as Mus capensis by Pallas in 1778, the type locality being given as the Cape of Good Hope. According to Sclater (1901, II, 75), Masson (1776, 305) made the first allusion to the species as the "blesmol", while Buffon (1776, 193, 1782, 251) supplied the earliest description of this animal. Furthermore, Sparrman (1785, 211) supplied notes on the habits and occurrence of the animal, followed by Thunberg in 1795 (p. 262), describing and naming the animal as Marmota capensis.

In 1811, Illiger proposed the erection of a new genus for this species, viz. Georychus (p. 87). He used Mus capensis Pallas as the genotype for the suggested separate generic rank. Cuvier again referred to the identical animal as Mus buffoni in 1834 while Lichtenstein, editing Forster's *Descriptiones Animalium* (1844, 364) referred to this species as Fossor leucops. It was also referred to as Bathyergus capensis by a number of early authors (e.g. Smuts (1832, 49), Waterhouse (1842, 81)), while A. Smith (1826, 29) apparently first referred to this animal as Georychus capensis. Although the generic rank of these animals was already proposed in 1811, this misnaming of the specimens can only be ascribed to the possible non-availability of Illiger's proposal. Subsequent to Smith's 1826 description of the animal however, it has been constantly referred to as Georychus capensis by various authors (e.g. Grill (1858, /...)

(1858, 19), Layard (1862, 55) and Moseley (1892, 125)), to mention only a few examples from the 19th century.

For the purposes of the present work, the species is regarded as monotypic, occurring mainly in sandy or loose soils in the Western Province, extending eastwards to the eastern Cape Province and Natal (e.g. at Nottingham Road), while it has also been collected at Belfast and Ermelo in the Transvaal highveld.

Roberts (1951, 382) divided the species into three subspecies, based mainly on colour variations encountered in specimens from Knysna and Belfast. Ellerman et.al. (1953, 229) however, only accept the one species i.e. Georychus capensis and list Roberts' proposed subspecies Georychus capensis capensis, G.c. canescens and G.c. yatesi as possible races. The interpretation adhered to by the present author corresponds to a great degree to that offered by Ellerman et.al. The possibility of the species being polytypic, as proposed by Roberts, is rejected.

Georychus capensis (Pallas)

Mus capensis Pallas, Nov. Spec. Quad. Glir. Ord., 76, 172, 1778. Type locality: Cape of Good Hope.

Mus buffoni Cuvier, Ann. Sci. Nat. Zool. (2) 1: 196, 1834. Type locality: Cape of Good Hope.

Fossor leucops Lichtenstein, in Forster's Descript. Anim. (edited by Lichtenstein), 364, 1844. Type locality: Cape of Good Hope.

Georychus capensis canescens Thomas & Schwann, Proc. zool. Soc. 165, 1906. Type locality: Knysna, Cape Province.

Georychus capensis yatesi Roberts, Ann. Transv. Mus.,

4: 92, 1913. Type locality: Belfast,  
Transvaal.

Type specimen:

Not in existence, according to Shortridge  
(1934, 328).

Type locality:

Vaguely described as the Cape of Good Hope  
by Pallas, while Shortridge (1934, 328) states that  
the type specimen was obtained from the Cape Flats  
near Cape Town.

Distribution: (Fig. 10.1).

Confined to the Republic of South Africa.  
In the Cape Province it occurs mainly near the coast.  
It is frequently encountered in the Cape Peninsula,  
and according to Roberts (1951, 382), extends into  
the mountains in the vicinity of Tulbagh and Worcester.  
Ellerman et.al. (1953, 229) state that specimens are  
known from Citrusdal and Nieuwhoudtville, the latter  
locality possibly being its most northern point of  
distribution in the western Cape area. From the  
Western Province, its range of distribution extends  
eastwards along the coast to the vicinity of Port  
Elizabeth, while Shortridge (1934, 328) also quotes  
specimens from the Bathurst district to the east of  
Port Elizabeth. Shortridge also states that specimens  
have been taken at Nottingham Road in Natal (approx-  
imately 65 miles inland from the Natal coast), while  
this species has also been collected at Belfast and  
Ermelo in the Transvaal highveld. It is of interest to  
note that no specimens have hitherto been collected be-  
tween Belfast and Nottingham Road, nor between the  
latter locality and the Bathurst district apart from  
an isolated study skin taken in "Pondoland".

This/...

This species thus occurs sympatrically with the larger Bathyergus suillus and the smaller Cryptomys hottentotus in the Western Province and southern coastal belt to the Eastern Province.

Diagnostic characters:

The colouration of this species seems to be its most characteristic feature. The face is prettily coloured in black and white with the general overall colouration more or less buffy to buff-orange. The hindmost molars show infolding of the enamel pattern, even when well worn, and are cut late in life. The jugal bone fits into the zygoma in a dove-tail fashion. It is usually much larger than Cryptomys and far smaller compared to Bathyergus. The pelage is thick and woolly. Size smaller than B. suillus: H.B. M = 189 mm., C.B. M = 48.3 mm. (♂♂).

Colour:

The most characteristic feature of this species is the fact that the face is prettily marked (Roberts, 1951, 382), while the general colouration is more or less buff to buffy-orange "... with a variable tipping of brown to the hairs." The following parts of the face are usually white: muzzle, the areas round eyes and ears and a frontal patch. These white areas are usually projected against a background of black about the face. The facial markings vary in the amount of white and black present.

Dorsally, the colour of the pelage varies considerably ".... even in the same colonies from a dark greyish to an orange cinnamon...." (Roberts, 1951, 382) while the back has also been described as a uniform isabella-brown ("obsolete rufescens", Pallas). The hands, feet and tail are also white.

Complete/...



The size is geographically variable:

specimens from the vicinity of Worcester tend to be larger than those of the Cape Peninsula. When nine ♂♂ from de Wet near Worcester are compared with five ♀♀ from Port Elizabeth, in respect of the zygomatic width, it was found that the former ( $M = 35.0 \pm 2.526$  mm.) are significantly larger than the latter ( $M = 30.3 \pm 4.738$  mm.) at the 1.0% level ( $t = 3.04$ , 12 degrees of freedom,  $P = 0.01$ ).

Skull and dentition:

The skull is usually larger than in Cryptomys, while the jugal bone fits in a dove-tail fashion into the zygoma. Furthermore, as was indicated earlier on in the present work (see Chapter 4 describing the bathyergid skull), the nasals do not project very far beyond the ascending processes of the premaxillaries on meeting the frontals as is the case in Cryptomys. The infraorbital foramen is small and rounded, the palate being narrow, not wider than the molar teeth (Sclater, 1901, 69). Generally speaking, the skull is robustly built, while sagittal crests are often present in old individuals. The mandibles are not ankylosed (as in the other genera of this family), permitting movement of the tips of the incisors for (possibly) the better gripping of bulbs for conveyance to storage chambers. The muzzle does not protrude in the living animal as in Bathyergus (Roberts, 1951, 382).

The upper cheek teeth have one narrow inner and outer fold each; these infoldings of enamel tend to remain present until the molars are well worn, whereas these infoldings are to be seen only in the young specimens of Bathyergus and Cryptomys. Georychus

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is thus the only member of the family without simplified rounded (ovate) cheek teeth in the adult. The lower cheek teeth have one outer fold persistent, and one inner fold, tending to become weak or obsolete (Ellerman, 1940, 86).

The posterior cheek teeth are cut late in life.

The upper incisors are not grooved (cf. Bathyergus), while their roots are situated in the pterygoidal region behind the molars, thereby possibly checking the development of the posterior molars in this genus as well as in Cryptomys. As was pointed out above, the lower ungrooved incisors have a limited degree of movement, due to the non-ankylozation of the two hemijaws at the symphysis.

Roberts (1951, 382) states that the normal number of teeth (i.e. molars) consists of two premolars and two molars above and below while in some abnormal cases a third molar is present above and/or below. This condition has however not been encountered in the study material available to the present author.

#### Discussion:

In the present work, Georychus capensis is regarded as a monotypic species (in contrast to the polytypic species interpretation adhered to by Roberts) and therefore this view requires some degree of explanation. Before discussing these aspects however, additional information should be given pertaining to aspects of size in this species.

Roberts (1951, 382) states that the ♂♂ are normally smaller than the ♀♀ in this genus whereas the reverse is usually the case in the other genera. As far/...

far as Bathyergus and Cryptomys are concerned, Roberts' observation seems to be correct, but in the present work I have come to the tentative conclusion that in Georychus the ♂♂ are also slightly larger than the ♀♀. In fact, the mean H.B. size for ♂♂ and ♀♀ was found to be 189 mm. and 182 mm. respectively, while the C.B. lengths were found to be 48.3 mm. and 45.1 mm. respectively. The greatest discrepancy in size was found in the width of the zygomatic arches, where the ♂♂ were far larger than the ♀♀.

Roberts (1951, 382-384) proposed a polytypic interpretation for Georychus capensis whereas in the present work this species is interpreted as monotypic. One of the main reasons why I am not inclined to acknowledge the different subspecies, is the great degree of variation in shade of colour, as well as in the facial markings, encountered within the species. Roberts (1951, 383) also commented on the occurrence of this individual variation and indicated that only average differences could be taken as a criterion "... of the prevailing geographical types". It is of importance to note that in a series of 30 skins of all ages, collected at the same locality (de Wet near Worcester) not more than 100 yards square, no two specimens were exactly alike in colour. An element of doubt was raised by Roberts when he questioned the number of subspecies worthy of recognition in view of individual variation already noticed in respect of specimens collected at de Wet, Worcester and Tulbagh. Roberts (1951, 383) states that the typical form may be considered to extend over the western districts of the Cape Province, being replaced by the black-faced form, Georychus capensis canescens in the Knysna area.



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It must be pointed out however, that black-faced individuals are also encountered in specimens from the western Cape. The subspecies canescens was first described by Thomas and Schwann in 1906 on a male specimen, collected at Knysna in 1905, the type specimen being housed in the British Museum. It was described as a paler form, with a more "..... strongly contrasted black head" (p. 165). The general colouration of the body was described as being decidedly greyer than that found in the true capensis, the tone nearly matching "smoke-grey" on the fore-back, darkening to drab-grey on the hind-back. These authors also stated that the nose patch, eye patch and ear patch are each rather smaller than in capensis, while the background face colouration is really black instead of slaty blackish as in capensis. The crown patch seemed to be larger, more strongly contrasted, while the area below the ear patch is a greyish-white, continuous with the greyish white of the sides, throat and belly, thereby again differing from capensis in which the area below the ear is more or less tinged with buffy (referred to as the area parotica ferruginea by Pallas).

To my mind however, these differences are rather relative, especially if the fact is taken into consideration that similarly coloured specimens also occur in colonies from the typical capensis group. Therefore, based on colour alone, it is suggested that this subspecies is not recognized.

It is true, that when a number of Knysna specimens are seen simultaneously, the dorsal colouration has a "smoke-grey" merging into drab-grey colouring. We seem to have a parallel situation here/...

here with the genera Cryptomys and Bathyergus: in these genera, specimens from Knysna and vicinity are decidedly darker in colouration compared to the true C.hottentotus and B. suillus from the Western Province. This tendency towards a darker or drabber colour can possibly be correlated in all three genera with the greater degree of moisture and humidity present in the top soil, which could have a darkening phenotypic effect on the individuals. Similarly, Georychus specimens to the east of Knysna tend to be near "ochraceous-tawny" and of lighter colouration. This is also seen in Cryptomys hottentotus, where the lighter coloured specimens from Port Alfred are virtually identical to those from the western Cape, differing vividly from the Knysna specimens.

Furthermore, morphologically speaking, I could find no reasons for separating canescens as a separate subspecies from capensis. As an example, the zygomatic width may be quoted: when nine ♂♂ from de Wet, Worcester, are compared to five ♂♂ from Port Elizabeth in respect of the Z.W., a calculated C.D. = 0.64 was obtained, which is below 75% J.N.C. i.e. below the level of subspecific distinctness of separation. This result has also prompted me to synonymize canescens with capensis, based on the available study material (See fig. 10.2).

Finally, in 1913 Roberts described Georychus yatesi as a separate species from Belfast in the Transvaal Highveld (Roberts 1913, 92) and demoted the specimens from specific to subspecific rank in 1951. The overall description of yatesi compares favourably with the description of the typical capensis, but whereas the basal portions of the/...

the individual hairs are described as slaty grey in capensis, they are referred to as dark brown in the case of yatesi. The upper surface of the body was described as rich buff-orange merging with clear buff-orange flanks. It remains to be pointed out that a similar colouration can also be demonstrated in specimens from the western Cape (i.e. capensis) and that based on colouration, I feel that the highveld specimens do not deserve separate subspecific rank.

A number of differences in the skull was also described by Roberts (1913, 92). These included a larger braincase, and a more conspicuous outward projection of the frontals in the anterior angle of the orbital region. In the type specimen the coronoid process of the mandible is broad and rounded, not pointed as in specimens from the Cape (Roberts, 1951, 384). It is evident however, that these supposed differences can also be demonstrated to be present in the typical capensis species and that they do not seem to be of any diagnostic value.

As far as the dentition is concerned, the cheek teeth were described as being much larger in the first two molar elements in yatesi than in capensis, while the hindmost tooth in the upper jaw is smaller and of different pattern, not showing the lateral infoldings. As was the case in its colouration and skull, conditions supposedly indicative of the subspecific status of yatesi (referring to the molars) can also be seen in capensis specimens from the Western Province, as well as in specimens from Knysna.

It may thus be interpreted that yatesi does not deserve subspecific status when colouration and morphological aspects are compared. Unfortunately,

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the number of specimens from the Transvaal highveld are few, in fact only three specimens are hitherto available in study collections. It was therefore not possible to attain any statistical parameters of the eastern Transvaal specimens. The H.B. length, T. length and H.F. length given for the type are 180 mm., 25 mm., and 32 mm. respectively. This compares favourably with specimens collected in the western Cape Province.

When the facts given above are considered, it seems advisable that the subspecific rank of yatesi is not acknowledged, until a larger sample of these specimens become available for a more detailed statistical analysis.

Biological:

Very little is known about biological aspects of these animals.

As is the case in the other genera, they feed on bulbs and roots found by burrowing tunnels under the ground. They are inclined to burrow rather superficially under the soil and the mounds are smaller than would be expected if the size of Georychus capensis is compared to Cryptomys hottentotus (Roberts, quoted in Shortridge, 1934, 329). The mounds are however far smaller compared to those thrown up by Bathyergus. Blind tunnels in the tunnel system are often prevalent, while the main burrow ends in a somewhat rounded chamber with smooth walls where food is stored. It is stated that to prevent sprouting, eyes or buds are removed from tubers or bulbs by the incisors (Shortridge, 1934, 328). Landry (1957, 71) quotes Tullberg who pointed out that Georychus does not chew its food much, for large pieces of roots (up to 10 mm. in length) are/...

are found in the stomachs.

The claws are less obviously adapted to digging compared to Bathyergus, in the sense that the forefinger claws are shorter. This may imply that the upper and lower incisors are used more frequently when tunneling through harder soil. As far as this aspect of behaviour is concerned, there is thus a greater correspondence with Cryptomys.

They occur in cultivated (where they do much damage to tuberous crops) and uncultivated sandy soils.

The mammae usually consist of two pairs of pectoral and one pair of inguinal. In some (possibly abnormal ?) cases, two pairs of inguinals may be present.

Parasites include the following:

Protozoa: Meistoma georychi. Plathyhelminthes: Echinococcus sp. Nematelminthes: Trichuris sp. Arthropoda: Ixodes alluaudi and Cryptoctenopsyllus ingens (de Graaff, 1964, 123).

Nothing is known about breeding biology or predators.

Finally Beddard (1902, 481) may be quoted giving some interesting measurements concerning the alimentary canal of Georychus capensis: small intestine, 25" long (625 mm., ), caecum, 4" long (101.6 mm.), large intestine, 15" in length (381.0 mm.).

#### Phylogenetic:

Not much can be said concerning this aspect of Georychus capensis. It could well be that this genus is perhaps the oldest in the family, for the back teeth retain, until well worn, the infoldings of/...

of enamel that are to be seen in the young of other genera. It may therefore be an illustration of the Principle of Recapitulation. Furthermore, the genus is more closely related to Cryptomys than to Bathyergus, especially if the overall shape of the skull is taken into consideration, as well as the structure and configuration of the dental elements.

List of localities:

Alexandria, 6 (TM, AM), Bathurst district (Shortridge, 1934, 328), Belfast, 2 (TM), Bellville, 1 (TM), Bredasdorp, 1 (SA), Camps Bay, 2 (TM), Cape Aghulas (Ellerman et.al., 1953, 229), Cape Flats, 1 (SA), Cape Town, 6 (SA), Cederberg (Ellerman et.al., 1953, 229), Charlesford, Knysna, 2 (ME), Citrusdal 1, (TM), Constantia, 1 (SA), De Doorns, 2 (SA), De Wet, Worcester, 25 (TM), Diep Rivier, 1 (SA), Drostdy, Tulbagh, 4 (ME), East London, 1 (EM), Ermelo, 1 (TM), George, 2 (AM), Goodwood, 2 (SA), Grey's Pass, 1 (TM), Hout Bay (Ellerman et.al., 1953, 229), Kenilworth, Cape Town, 1 (MM), Knysna, 3 (SA, AM), Kuils River, 1 (SA), Maitland, 4 (TM), Nottingham Road, 1 (NM), Newlands, 2 (AM), Nieuwhoudtville (Ellerman et.al., 1953, 229), Paarl, 7 (TM, AM), "Pondoland", 1 (AM), Port Alfred, 1 (AM), Port Elizabeth, 18 (TM, AM, PM), Rondebosch (Ellerman et.al., 1953, 229), Stellenbosch, 1 (TM), Simonstown (Moseley, 1892, 125), Three Anchor Bay, 1 (TM), Tokai (Ellerman et.al., 1953, 229), Tulbagh, 2 (TM, SA), Wolseley, 3 (TM), Worcester, 1 (SA), Wynberg, 3 (SA, TM), Zoetendalsvlei, 3 (TM).