

Key to the South African Leporidae (Mammalia: Lagomorpha)

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An identification scheme for the South African Leporidae based on results from detailed morphometric analyses, comparative karyology, interspecific variation in cross-sections through the principal upper incisors, sperm morphology, electrophoretic analyses of blood proteins and qualitative pelage characteristics is presented. The key provides for the identification of three species of *Pronolagus*; *P. rupestris*, *P. crassicaudatus* and *P. randensis* and two species of *Lepus*; *L. capensis* and *L. saxatilis*. *Bunolagus* is retained as a monotypic genus.

S. Afr. Zool. 1982, 17: 220 – 222

'n Identifikasiesleutel vir die Suid-Afrikaanse Leporidae gebaseer op resultate van deurtastende morfometriese ontledings, vergelykende kariologie, interspesievariasie in die morfologie van die boonste snytande, sperm morfologie, elektroforese van bloedproteïene en kwalitatiewe pelseienskappe word gegee. Die sleutel maak voorsiening vir die identifikasie van drie spesies in die genus *Pronolagus*; *P. rupestris*, *P. crassicaudatus* en *P. randensis* asook twee spesies in die genus *Lepus*; *L. capensis* en *L. saxatilis*. *Bunolagus* word as monotipiese genus behou.

S.-Afr. Tydskr. Dierk. 1982, 17: 220 – 222

The taxonomy of the South African Leporidae* has been characterized by considerable disagreement with regard both to the status of the monotypic *Bunolagus* and the specific classification of representatives of the genera *Lepus* and *Pronolagus*. The history of this is lengthy and has been presented in detail elsewhere (Robinson 1981; Robinson & Dippenaar in press a; Robinson & Dippenaar in press b).

Briefly, the controversial *Bunolagus monticularis*, originally described as *Lepus monticularis* Thomas (1903), was separated generically by Thomas (1929). Although this usage was retained by Allen (1939) and Roberts (1951), several subsequent authors regarded *Bunolagus* as a synonym of *Lepus* and reverted to the use of the original name combination (for example Ellerman & Morrison-Scott 1951). More recently Petter (1972), following Angermann (1966), recognized the taxon as a monotypic genus, although with reservations: 'the presence of a suture separating this bone (interparietal) from the parietals and supra occipital in adults has been considered a generic character, but the variability of this character in *L. habessinicus* shows clearly that it is not adequate for generic separation'.

Similar taxonomic uncertainty is evident in both *Pronolagus* and *Lepus*, where problems centre on the validity of the various species comprising each taxon. *Pronolagus* has been subjected to a wide variety of taxonomic interpretations, with Roberts (1951) and Peddie (1975) representing the two extremes. Roberts (1951) recognizes six distinct species as occurring in South Africa, while Peddie (1975), using material from localities in South Africa and Zimbabwe, concluded that 'no reason could be found to suggest the existence of more than one species in southern Africa . . .'. Likewise, the South African *Lepus*, regarded by Allen (1939), Roberts (1951) and Smithers (1971) as being represented by only two species, *L. capensis* and *L. saxatilis* is, according to Petter (1972), thought also to include *L. crawshayi*, whose distribution is reported to extend into parts of South Africa, notably northern Natal and the Transvaal.

The diagnostic data presented below are derived from

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Received 1 April 1982; accepted 14 June 1982

*In addition to the three genera represented in the present investigation, a fourth, *Oryctolagus*, the Old World rabbit, also occurs in South Africa. However, it is an introduced species which, although feral on several South African offshore islands (Skead 1980), is otherwise primarily represented by laboratory stocks and is consequently excluded from this key.

an extensive systematic investigation of the South African Leporidae (Robinson 1981). The results of this study support the recognition of *Bunolagus* as a valid genus and the retention of *crassicaudatus*, *randensis* and *rupestris* as discrete species within *Pronolagus*. Evidence was found of only two *Lepus* species in South Africa, the well delimited *L. capensis* and *L. saxatilis*. In this study (Robinson 1981), conclusions on taxonomic status were based on univariate and multivariate morphometric analyses, comparative karyology, interspecific variation in cross sections through the principal upper incisors, sperm morphology, electrophoretic analyses of serum proteins and red blood cell enzymes and qualitative pelage characteristics. Aspects of the above parameters have been published separately (Robinson 1980; Robinson 1981; Robinson & Dippenaar in press a; Robinson & Dippenaar in press b; Robinson & Osterhoff in press), but as yet no attempt has been made to present the diagnostic results of all parameters in the form of a workable identification scheme.

Key to the genera (minimum and maximum values are $\bar{X} \pm 2SD$)

1. Tail white below, black above; groove on anterior surface of principal upper incisor invariably filled with cement; chromosomal complement $2n = 48$; spermatozoa characterized by cap-like acrosome, not pronounced anteriorly.

--- *Lepus*

Tail not as above being uniformly reddish brown, brown or dark brown; groove on anterior surface of principal upper incisor never filled with cement; chromosomal complement never $2n = 48$; spermatozoa characterized by relatively large acrosome, pronounced anteriorly.

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2. Ears short (63–106 mm); no evidence of black stripe running along lower margins of jaw towards base of ear; mesopterygoid space always narrower than minimal length of hard palate (38,6–87,7% of length of hard palate); no interparietal bone present in adults; chromosomal complement $2n = 42$; relatively widely distributed throughout South Africa where suitable habitat occurs, occupying rocky outcrops or koppies.

--- *Pronolagus*

Ears long (109–124 mm); dark brown stripe running along lower margins of jaw towards base of ear; mesopterygoid space always wider than minimal length of hard palate (124,9–180,5% of hard palate); well defined interparietal bone in adults; chromosomal complement $2n = 44$; limited distribution occupying riverine scrub in central and southern Karoo, Cape Province.

--- *Bunolagus*

Genus *Lepus* Linnaeus

Lepus Linnaeus, *Syst. Nat.* 10th ed. 1:57, 1758. Genotype *L. timidus*.

L. capensis Linnaeus, *Syst. Nat.* 10th ed. 1: 58, 1758.

Type locality: Cape of Good Hope (Cape Province).

Geographic range: Relatively widely distributed throughout South Africa showing preference for short open grassland and sometimes open, lightly wooded areas; sympatric with

L. saxatilis throughout much of range; occurs widely in Cape Province and much of Orange Free State, probably absent from eastern Cape Province, Ciskei, Transkei and north-eastern Orange Free State; extends narrowly into western Lesotho but probably absent elsewhere; present in western Transvaal and in far northern Transvaal, absent from south and central Transvaal, whole of Natal and Swaziland.

L. saxatilis F. Cuvier, *Dict. des Sci Nat.* 26: 309, 1823. Type locality: Cape of Good Hope (Cape Province).

Geographic range: Widely distributed throughout South Africa and probably Lesotho and Swaziland; absent in heavily forested areas and in the extreme north-western Cape Province; less abundant than *L. capensis* in arid regions but nevertheless generally present; catholic in habitat requirements.

Key to the species of *Lepus* (minimum and maximum values are $\bar{X} \pm 2SD$)

1. Smaller species, length of adult skull 81,5–91,1 mm; upper principal incisor narrow across face (2,3–2,8 mm), squarish in cross-section with simple enamel groove filled with cement; chest and abdomen either totally pinkish buff or white medially with diffuse ochraceous buff bands laterally demarcating the ventral and dorsal surfaces; silver-stained spermatozoa with two or more argentophylic granules visible in equatorial segment; no detectable anodal erythrocytic carbonic anhydrase system using starch gel electrophoresis.

--- *capensis*

2. Larger species, length of adult skull 85,6–106,0 mm*; upper principal incisor broad across face, robust in appearance 2,7–3,5 mm, elongated in cross-section with enamel fold variable and filled with cement; underparts white without ochraceous buffy band separating this region from greyish colour of upper parts; silver-stained spermatozoa without argentophylic granules visible in equatorial segment; a single, monomorphic, anodal erythrocytic carbonic anhydrase system visible using starch gel electrophoresis.

--- *saxatilis*

Genus *Pronolagus* Lyon

Pronolagus Lyon, *Smithsonian Misc. Coll.* 45: 416, 1904. Genotype *Lepus crassicaudatus*.

P. rupestris A. Smith, *S. Afr. Quart. J.* 2: 174, 1834.

Type locality: 'South Africa, rocky situations'. Probably Van Rhynsdorp district (See Roberts, 1951).

Geographic range: Relatively widespread throughout South Africa and probably Lesotho; as with all *Pronolagus* species narrowly confined to rocky situations on hill slopes and summits with adequate scrub and grass cover; occurs in Cape Province except forested areas, also Ciskei, Transkei, southern and central Natal; present in south-eastern fringes of Transvaal, southern Orange Free State and extralimitally in southern South West Africa.

*Observed ranges based on individual specimens were 87,0–107,7 mm. These data are presented in view of the clinal variation exhibited by this character (See Robinson 1981).

P. crassicaudatus (I. Geoffroy)

L. crassicaudatus I. Geoffroy, *Guérin's Mag. de Zool*, 2 C1 1, plate 9 and text, 1832.

Type locality: Port Natal (Durban, Natal).

Geographic range: Restricted, limited largely to Natal, extending southwards into Transkei and fringes of north-eastern Cape Province; northwards distributed marginally into south-eastern Transvaal, southern Swaziland and southern Mozambique; probably present in eastern Lesotho.

P. randensis Jameson,

R. ruddi Jameson, *Ann. Mag. Nat. Hist.* (7)20: 404, 1907.

Type locality: Observatory, Johannesburg (Transvaal).

Geographic range: Limited distribution in South Africa; occurs in central, southern and northern Transvaal, marginally in western Transvaal but absent from extreme south-western Transvaal; extraliminally in Zimbabwe and central and northern South West Africa.

Key to the Species of Pronolagus (minimum and maximum values are X ± 2SD)

1. Small species (total length of adult skull = 77,4–87,5 mm); upper principal incisor narrow across face (2,2–2,8 mm); robust bullae both proportionately (bulla breadth x 100/total length of skull = 7,4–11,4%; bulla breadth x 100/mandibular height = 16,5–25,1%), and in absolute measurements (bulla breadth = 6,4–9,2 mm).

— — — *rupestris*

Larger species (total length of adult skull = 85,5–96,3 mm), with upper principal incisor broad across face (2,6–3,7 mm); narrow bullae, both proportionately (bulla breadth x 100/total length of skull = 5,6–8,0%; bulla breadth x 100/mandibular height = 11,6–16,7%) and in absolute measurements (bulla breadth = 5,1–7,2 mm).

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2. Chin white to grey, this colour extending in broad band running along lower jaw to approach inferior margin of nape patch; pelage coarse; cheeks dark grey not contrasting with sides and upper parts; ratio maxillary premolar length x 100/frontal length = 19,9–32,5%; ratio mesopterygoid space x 100/frontal length = 11,7–19,9%.

— — — *crassicaudatus*

Chin white to grey but localized, never extending in a broad band along lower jaw towards inferior margin of nape patch; pelage fine; cheeks strikingly light grey, contrasting with sides and upper parts; ratio maxillary premolar length x 100/frontal length = 16,9–22,9%; ratio mesopterygoid space x 100/frontal length = 9,4–14,7%.

— — — *randensis*

Genus *Bunolagus* Thomas

Bunolagus Thomas, *Proc. zool. Soc. Lond.*, p. 109, 1929.

Genotype *Lepus monticularis*.

B. monticularis (Thomas)

Lepus monticularis Thomas, *Ann. Mag. nat. Hist.* 11: 78, 1903.

Geographic range: Extremely limited distribution; based on existing records, this extends approximately between 31°S–33°S and 20°E–24°E in central and southern Karoo, Cape Province; known localities based on museum specimens are east of Calvinia (31°32'S/20°32'E and 31°27'S/19°50'E), Deelfontein (30°59'S/23°48'E), Middelpos (31°55'S/20°13'E), Nelspoort (32°07'S/23°00'E), north of Sutherland (32°12'S/20°42'E) and Victoria West (31°26'S/23°07'E); species appears habitat-specific being restricted to dense riverine scrub along seasonal rivers in these areas.

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