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ZOOLOGICAL SURVEY OF THE UNION OF SOUTH AFRICA. TICK SURVEY: PART XI.–THE DISTRIBUTION OF *OTOBIUS MEGNINI*, THE SPINOSE EAR TICK.

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Introduction.

Otobius megnini, the spinose ear tick, is an introduction into South Africa from America, and has become established in many parts of the country. The earliest record of the tick in South Africa was made, according to Bedford, by Mr. Manley of Graaff-Reinet who saw it in the Cape Colony in 1898. Sir Arnold Theiler found *O. megnini* at Vryburg in 1912, at a time when it was still rare. During the next ten years it spread rapidly and by 1920 was widely distributed in the Cape Province and Orange Free State. It is possible that *O. megnini* has not yet been introduced into all areas of the Union; this may explain its absence from areas where one would expect to find it, such as the north-western Transvaal bushveld.

General Distribution.

O. megnini is present in the Cape Peninsula and some of the adjoining winter rainfall districts, also in Van Rhynsdorp and Namaqualand. It is present throughout the Karoo and probably also throughout the Free State and Basutoland. It is plentiful in the northern districts of the Eastern Province and Griqualand East, though absent from the coastal belt in these areas. More scattered records occur in the inland districts of Pondoland, but here again it is absent from the more humid coastal belt. *O. megnini* is consistently absent from Natal except for isolated records in Bergville and Impendhle. It is present right across the southern Transvaal from Lichtenburg to Ermelo and Carolina, but absent from the northern Transvaal, the eastern Transvaal lowveld, from Swaziland, and from Moçambique with the exception of one isolated record. There are several records from South West Africa.

Distribution in the Vegetational Types.

The vegetation map shows *O. megnini* to be present:—

(1) *In evergreen sclerophyllous bush.*—It is present in the western part of this area, though absent from the eastern parts of the Western Province vegetation from Caledon to Humansdorp.

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(2) *In thorn country.*—Though absent from the north-west Transvaal, it is present in the western Transvaal, northern Cape and South West Africa, *in evergreen and deciduous tree and bush.* Bankenveld records at Onderstepoort indicate that *O. megnini* is beginning to enter this vegetational type.

(3) In all three types of *grassland.*

(4) In all three types of *desert shrub.*

The vegetation map shows *O. megnini* to be absent:—

(1) From two out of three types of *forest.* It is absent from *evergreen and deciduous bush and sub-tropical forest* fringing the east coast and from *temperate evergreen forest.*

(2) From one out of three types of *parkland.* It is absent from the *subtropical evergreen and deciduous tree and thorn forest* extending from Zululand into Moçambique and north-eastern Transvaal.

The Influence of Temperature and Altitude.

Neither temperature nor altitude appears to play a limiting role in the distribution of *O. megnini.* It has been recorded from Sutherland and Belfast, districts with the longest periods of frost in the Union. It has also been recorded from areas of extreme heat and a wide variety of altitudes.

The Influence of Rainfall.

Rainfall influences the distribution of *O. megnini* in that it is absent from areas with high rainfall. It has been recorded from only 17 farms with rainfall between 30 and 40 in., and is absent from areas with over 40 in. a year. It is most abundant in the Karoo where the rainfall is low.

The Influence of Dipping.

There is evidence that *O. megnini* can be controlled by weekly dipping, as it has disappeared from some districts in Pondoland where weekly dipping is enforced, but persists on farms with fortnightly dipping. In most areas where the tick is prevalent, little or no dipping is practised.

Seasonal Activity.

The records show that *O. megnini* may be present during all months of the year and that there is no seasonal periodicity.

Remarks on the Separate State Veterinary Control Areas.

O. megnini is recorded as consistently *absent* from the following State Veterinarians' areas:—

Potgietersrust, Pietersburg, Zoutpansberg, Rustenburg in the Transvaal; Vryheid, Dundee, Estcourt, Greytown, Ixopo, Port Shepstone, Eshowe, Nongoma, Durban, Flagstaff in Natal; East London, Swellendam in the Cape Province, and Swaziland.

The presence of *O. megnini* is recorded from the following State Veterinarian areas:—

Area 1, *State Veterinarian, Johannesburg.*

Present in *highveld* and *middleveld* districts of Witwatersrand, Springs, Heidelberg and Vereeniging, only one record from the *middleveld* Krugersdorp district.

Area 2, *State Veterinarian, Potchefstroom.*

Present throughout this *middleveld* and *thornveld* area with the exception of the Klerksdorp district.

Area 3, *State Veterinarian, Mafeking.*

Present in the *middleveld* portion of Lichtenburg and the extreme south of Marico, with a single record from east Mafeking. Absent from the *thornveld* of Mafeking, Marico and southern Lichtenburg.

Area 7, *State Veterinarian, Barberton.*

Absent from this area with the exception of a single record from the White River plateau, which is probably an introduction.

Area 8, *State Veterinarian, Piet Retief.*

O. megnini is present in the *highveld* of western Wakkerstroom district but absent from the *middleveld* of eastern Wakkerstroom and Piet Retief.

Area 9, *State Veterinarian, Lydenburg*

There is a single *highveld* record from Belfast district. Absent from Middelburg and Lydenburg, where the vegetation is *bankenveld* and *bushveld*.

Area 10, *State Veterinarian, Ermelo.*

Present throughout the *highveld* areas of Standerton, Bethal, Ermelo and Carolina but absent from the *tall grasslands* of eastern Ermelo and Carolina.

Area 11, *State Veterinarian, Pretoria.*

There is a single *middleveld* record from the Witbank district, and records from Pretoria North and Onderstepoort in *bankenveld;* otherwise *O. megnini* is absent from this area. Collections poor.

Area 16, *State Veterinarian, Bergville.*

O. megnini is absent from this area, with the exception of a single *highveld* record in the Bergville district.

Area 18, *State Veterinarian, Pietermaritzburg.*

O. megnini is absent from this area except for one farm in the Impendhle district on which it was collected on five separate occasions.

Areas 26, 27 *and* 28, *State Veterinarian, Umtata.*

Absent from the coastal districts where the vegetation is *tall grassland* fringed with *sub-tropical forest.* Present, though not abundant, in the higher-lying inland districts of the area. More frequently found on farms where 14 day dipping is the practice, only four records from farms with 7-day dipping.

Area 30, *State Veterinarian, Kokstad.*

O. megnini is present on about half the farms sampled in this *tall grassland area.* It is absent from Umzimkulu district, in spite of the fact that 14-day dipping was practised in this district.

Area 31, *State Veterinarian, Aliwal North.*

Solidly present throughout the area, where the vegetation ranges from *short grassveld* and *mixed grass and bush* to *Karoo.*

Area 32, *State Veterinarian, Queenstown.*

Present throughout with the exceptions of southern Cathcart and eastern Maclear districts, both of which are in the *tall grass belt.*

Area 35, *State Veterinarian, Worcester.*

O. megnini is present in Worcester, Robertson and Montagu where the vegetation is mainly *semi-Karoo,* but is absent from the coastal district of Caledon.

Area 37, *State Veterinarian, Oudtshoorn.*

Present in the *Karoo* areas of Oudtshoorn and Uniondale, also on the Zwartberg in Oudtshoorn. Absent from the coastal districts of Mossel Bay, George and Knysna where the vegetation is of *Western Province* type.

Area 38, *State Veterinarian, De Aar.*

Consistently present throughout the *Karoo* districts of De Aar, Phillipstown, Hopetown and Britstown. Present on nearly all farms sampled in Prieska.

Area 39, *State Veterinarian, Port Elizabeth.*

O. megnini is absent from the coastal districts of Humansdorp, Uitenhage and Port Elizabeth, but there are single records from *Karoo* farms in Steytlerville and Jansenville.

Area 40, *State Veterinarian, Grahamstown.*

Consistently absent from this area with the exception of one farm in the Albany district with *Karoo* and *scrubveld* vegetation.

Area 41, *State Veterinarian, Middelburg.*

Present on the majority of farms sampled in the areas of Colesberg, Middelburg, Maraisburg, Steynsburg, Hanover and Richmond. The vegetation throughout this area is *Karoo* or *mixed Karoo and grass,* becoming mountainous in parts. It is possible that more thorough collecting would show *O. megnini* to be present throughout.

Area 42, *State Veterinarian, Calvinia.*

Consistently present in the *Karoo* districts of Williston and southern Calvinia. Absent from northern Calvinia where *desert succulents and desert grass* begin to encroach on the *Karoo.* Consistently present in Ceres, both in the *Karoo* and the *Western Province* vegetation to the west of the district. Present in northern Sutherland but absent from the south, though the whole district is *Karoo.*

Area 43, *State Veterinarian, Beaufort West.*

Consistently present in the *Karoo* districts of Beaufort West, Carnarvon, Fraserburg and Victoria West; also present in southern Prince Albert on the slopes of the Zwartberg; absent from the *arid Karoo* of northern Prince Albert.

Area 44, *State Veterinarian, Gordonia-Kenhardt.*

The vegetation of this area consists of *thorn-veld* in Gordonia, *desert succulents and desert grass* in western Kenhardt and *desert shrub* in southern Gordonia and east Kenhardt. *O. megnini* is consistently present throughout with the exception of a few farms in the *desert shrub* of Gordonia.

Area 45, *State Veterinarian, Cape Town.*

Present, though not abundant in Bellville, Cape Town and Simonstown districts, with *Western Province* type of vegetation.

Area 46, *State Veterinarian, Malmesbury.*

Recorded from only two farms in this highly cultivated area, in northern Piquetberg and east Malmesbury; the vegetation is *Western Province scrub.*

Area 47, *State Veterinarian, Bedford.*

O. megnini is absent from the *tall grassveld* and *temperate evergreen forest* of the eastern districts of this area, which comprises Victoria East, Stockenstroom, Fort Beaufort and Adelaide. There is a single rather isolated record from *grass and bush veld* in Bedford. The tick is present, though rare, in the Zuurberg mountain veld of western Somerset East and Pearston, where the vegetation changes to *Karoo type;* there is a single record from western Cradock.

Area 49, *State Veterinarian, Bethlehem.*

In this *highveld* area *O. megnini* is present throughout with the exceptions of Ficksburg and south-east Vrede.

Area 50, *State Veterinarian, Kroonstad.*

More complete collections would perhaps show *O. megnini* to be present throughout this area. The records show that it is present in Vredefort, Kroonstad, Lindley and Senekal and absent from Bothaville, Ventersburg and Winburg. The area is mainly *middleveld* merging into *highveld* in the east.

Area 51, *State Veterinarian, Kimberley.*

Present in the *Karoo* districts of Philippolis, Fauresmith, Jacobsdal and Hay. One record only in Herbert. Present on over half the farms sampled in the *bush- and thornveld* districts of Kimberley and Barkly West.

Area 52, *State Veterinarian, Bloemfontein.*

Here again more complete collections probably would show *O. megnini* to be present throughout the area. The vegetation consists of *short grass* and *middleveld* with *Karoo* encroaching from the south.

Area 53, *State Veterinarian, Hoopstad.*

The vegetation consists of *middleveld* merging into *bushveld* in the west. The few collections made in this area show *O. megnini* to be present in parts of each of the districts of Hoopstad, Boshof and Brandfort, but absent in western Brandfort.

Area 54, *State Veterinarian, Vryburg.*

Present in the eastern *thorn country* and *thorn country and desert shrub* of Kuruman and Vryburg. Absent from the *Kalahari thorn country* of the west.

Area 55, *State Veterinarian, Namaqualand.*

Consistently present in this area of *desert succulents* and *scrub.*

Area 57, *State Veterinarian, Graaff-Reinet.*

There are scattered records in Graaff-Reinet, Aberdeen and Willowmore—*semi-Karoo* and *Sourveld* districts.

Area 58, *State Veterinarian, Van Rhynsdorp.*

Present in the *Karoo* areas but absent from the *taaibos and vygebosveld* of the south.

Area 59, *State Veterinarian, Clanwilliam.*

Present in the *Western Province* vegetation of western Clanwilliam. Absent from the *Sourveld Karoo* of the east.

South West Africa.

There are records from the following districts: Windhoek, Rehoboth, Keetmanshoop, Gibeon and Omaruru.

Basutoland.

O. megnini is probably present throughout, though the records are somewhat inadequate.

Bechuanaland.

Although Bedford stated that *O. megnini* is present in Bechuanaland, no records are available.

Moçambique.

There is a single record of *O. megnini* from Quelemani. This is probably a recent introduction.

Other African Records.

O. megnini has been recorded twice from Biano near Katentania, N.W. of Jadotville, Belgian Congo and twice from Nyasaland.

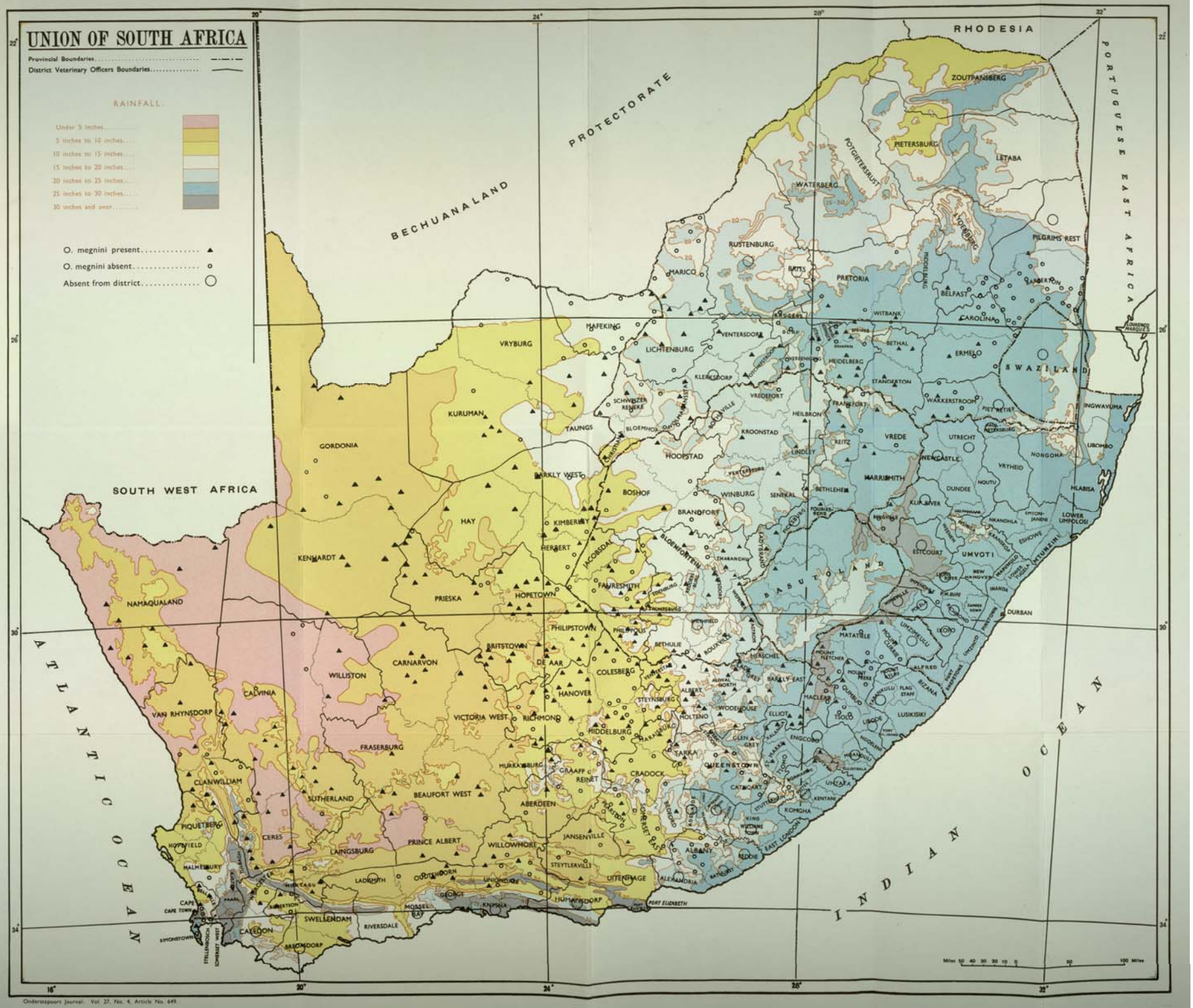
SUMMARY.

1. The distribution of *O. megnini* is given in terms of political divisions, as well as in terms of vegetational coverage.

2. The factor limiting its distribution appears to be high rainfall. The tick has probably not yet been introduced into all areas of the Transvaal.

3. Seven day dipping has been shown to control the tick in some districts.

4. No seasonal periodicity was observed.


UNION OF SOUTH AFRICA
Provincial Boundaries
District Veterinary Officers Boundaries
RAINFALL
Under 5 inches
5 inches to 10 inches
10 inches to 15 inches
15 inches to 20 inches
20 inches to 25 inches
25 inches to 30 inches
30 inches and over
O. megnini present
O. megnini absent
Absent from district
RHODESIA
PROTECTORATE
BECHUANALAND
SOUTH WEST AFRICA
PORTUGUESE EAST AFRICA
SWAZILAND
BASUTOLAND
ATLANTIC OCEAN
INDIAN OCEAN
ZOUTPANSBERG
PIETERSBURG
LETABA
WATERBERG
POTGIETERSRUST
RUSTENBURG
MARICO
PRETORIA
BELFAST
PILGRIMS REST
WITBANK
CAROLINA
MAFEKING
VRYBURG
LICHTENBURG
VENTERSDORP
KLERKSDORP
VREDEFORT
HEIDELBERG
ERMELO
KURUMAN
TAUNGS
GORDONIA
SCHWEIZER RENEKE
BLOEMHOF
KROONSTAD
HEILBRON
FRANKFORT
WARKERSTROOM
INGWAVUMA
HOOPSTAD
VREDE
UTRECHT
NEWCASTLE
VRYHEID
NONGOMA
UBOMBO
BARKLY WEST
BOSHOF
WINBURG
SENEKAL
BETHLEHEM
HARRISMITH
DUNDEE
NOUTU
HLABISA
KLIP RIVER
BRANDFORT
HAY
KIMBERLEY
HERBERT
KENHARDT
JACOBSDAL
BLOEMFONTEIN
THABANCHU
LADYBRAND
FOURIESBURG
ESTCOURT
UMVOTI
LOWER UMPOLOSI
NAMAQUALAND
PRIESKA
HOPETOWN
FAURESMITH
DURBAN
PHILIPSTOWN
BRITSTOWN
DE AAR
COLESBERG
BETHULIE
ROUXVILLE
HERSCHEL
MATATIELE
CARNARVON
WILLISTON
CALVINIA
HANOVER
ALBERT
STEYNSBURG
WODEHOUSE
ELLIOT
MACLEAR
VAN RHYNSDORP
VICTORIA WEST
RICHMOND
MOLTENO
HIDDELBURG
TARKA
GLEN GREY
ENGCOBO
LUSIKISIKI
FRASERBURG
MURRAYSBURG
GRAAFF REINET
QUEENSTOWN
CRADOCK
CATHCART
UMTATA
CLANWILLIAM
SUTHERLAND
BEAUFORT WEST
ABERDEEN
KOMGHA
PIQUETBERG
CERES
PRINCE ALBERT
WILLOWMORE
JANSENVILLE
SOMERSET EAST
ALBANY
KING WILLIAMS TOWN
EAST LONDON
HOPEFIELD
MALMESBURY
LAINGSBURG
STEYTLERVILLE
LADISMITH
OUDTSHOORN
UNIONDALE
UITENHAGE
ALEXANDRIA
HUMANSDORP
PORT ELIZABETH
CAPE TOWN
SIMONSTOWN
GEORGE
KNYSNA
MOSSEL BAY
SWELLENDAM
RIVERSDALE
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