

SWAZILAND

MINISTRY OF AGRICULTURE

Bulletin No. 18
VELD TYPES
OF SWAZILAND

BY
J. H. IONS

1967

SWAZILAND

MINISTRY OF AGRICULTURE

BULLETIN NO. 18

VELD TYPES OF SWAZILAND

by

J.H. I'ONS

1967

C O N T E N T S

	PAGE
INTRODUCTION	1
HIGHVELD TYPES	1
(1) Mountain Sourveld	2
(2) Highland Sourveld	2
MIDDLEVELD TYPES	2
(3) Moist Tall Grassveld	3
(4) Tall Grassveld	3
(5) Dry Tall Grassveld	3
(6) Upper Broad-leaved Tree Savanna and Hillside Bush	4
(7) Upland Tall Grassveld	4
LOWVELD TYPES	4
(8) Lower Broad-leaved Tree Savanna	5
(9) Acacia Savanna	5
(10) Dry Acacia Savanna	5
LUBOMBO TYPES	6
(11) Mixed Bush and Savanna	6
REFERENCES	6
ACKNOWLEDGEMENTS	7

INTRODUCTION

This bulletin is intended as a guide to the ecology of Swaziland's main vegetation types, with particular reference to their importance and characteristics as sources of grazing for livestock. The system of classification used is based on Acocks (1953), who defines a Veld Type as "a unit of vegetation whose range of variation is small enough to permit the whole of it to have the same farming potentialities". In Swaziland this definition is applicable only in a broad sense as local variations in soils and topography frequently have a considerable bearing on agricultural potential.

The terms sweetveld and sourveld denote in effect the length of season of good grazing. Sweetveld remains palatable and retains a fair amount of nutritional value throughout the year, while sourveld becomes unpalatable and low in feed value when the grasses mature in autumn. Very sour veld is useful for about 5 months of the year; moderately sour veld provides 6 to 8 months of good grazing.

Swaziland comprises four main geographic regions, namely Highveld, Middleveld, Lowveld and Lubombo. The country's Veld Types roughly fit these regions as shown below.

In conducting the survey and preparing this report considerable use has been made of Compton's "Check List of the Flora of Swaziland" (1966).

Soils named in the text are according to Murdoch and Baillie (1966).

HIGHVELD TYPES

The Highveld, which is the westernmost geographic region in Swaziland, comprises hilly to mountainous terrain ranging in altitude from 3,000 to over 6,000 feet. It is the wettest and coolest part of the country.

Apart from extensive plantations of exotic trees, the predominant vegetation type is a fairly dense, short, sour to very sour grassland. Subsidiary associations, linked with local topographical features, are described by Compton (1966); he points out that there is no good evidence to suggest that the entire region was once covered by montane forest.

Agricultural potential is limited by the topography and the occurrence of boulders and rock outcrops. The pastoral industry therefore plays an important part in the Highveld.

The veld is fairly resistant to misuse, but overgrazing and indiscriminate burning have caused damage in places, especially on very steep slopes. Better veld management and the provision of feed for the lean winter months are essential for the foundation of a stable, productive livestock economy in the region.

The north-eastern escarpment and mountain ranges of the Highveld are wetter, more misty and subject to less frost than the plateaux extending to the south and west. On this basis two Veld Types can be distinguished.

(1) Mountain Sourveld

General description: Mainly a dense, short, very sour grassland. Patches of montane forest occur in sheltered ravines and tree and shrub associations are found amongst boulders. The grass sward is not easily destroyed by overgrazing.

Location: Higher and wetter escarpment edges and mountain ranges, mainly north of the Usutu River.

Altitude: 3,000 to 6,000 ft.

Topography: Mountainous.

Climate: Warm, humid summers and cool, dry winters with light to moderate frosts. About 50 to 90 in mean annual rainfall.

Soils: There are extensive rocky hillsides, but deep red, orange and yellow soils of medium texture (A and N sets) occur on more gentle slopes. The soils are highly acidic.

Common grasses: *Themeda triandra*, *Rendlia altera*, *Loudetia simplex*, *Monocymbium cerasiiforme*, *Paspalum commersonii*. *Axonopus compressus* is invading in some areas. *Eragrostis* and *Sporobolus* spp. are common in overgrazed areas.

Common trees and shrubs amongst boulders: *Cephalanthus natalensis*, *Burchellia bubalina*, *Rapanea melanophloeos*, *Bequaertiodendron magalismsontanum*, *Aloe arborescens*, *Greyia sutherlandii*, *Podocarpus falcatus*.

(2) Highland Sourveld

General description: A fairly short, sour grassland which is slightly less dense than the Mountain Sourveld. Trees and shrubs occur amongst boulders.

Location: Highveld plateaux and their rims, mainly south of the Usushwane River.

Altitude: 3,000 to 5,000 ft.

Topography: Hilly to mountainous.

Climate: About 40 to 60 in mean annual rainfall: on average about 20 inches per annum drier than (1). Moderate winter frosts.

Soils: As for (1).

Common grasses: *Themeda triandra*, *Monocymbium cerasiiforme*, *Rendlia altera*, *Loudetia simplex*, *Hyparrhenia hirta*, *Tristachya hispida*. *Eragrostis* and *Sporobolus* spp. invade overgrazed areas.

Common trees and shrubs: *Burchellia bubalina*, *Faurea speciosa*, *Ekebergia pterophylla*, *Cephalanthus natalensis*, *Cussonia spicata*.

MIDDLEVELD TYPES

The Middleveld is a region mainly of rolling topography with a mean altitude of about 2000 ft. The predominant natural vegetation is Tall Grassveld with varying numbers of associated trees and shrubs, but much of this has been disturbed or destroyed by cultivation and overgrazing. Mismanagement has caused considerable damage, the grass cover being sparser and more easily denuded than that of the Highveld.

Moderate rainfall, good soils and suitable slopes favour intensive farming in large areas.

The region's Veld Types are generally ill-defined, although marked variations occur in the vegetation.

(3) Moist Tall Grassveld

General description: Mainly a fairly open, moderately sour, tall grassveld. There is a tendency towards shrubbiness and the development of scrub forest in places.

Location: Upper and wetter parts of the Middleveld and sections of the Middleveld/Highveld escarpment: nearly all north of the Usutu River.

Altitude: 2,500 to 3,000 ft.

Topography: Rolling to undulating valleys and fairly steep hill and escarpment slopes.

Climate: Warm to fairly hot summers and mild winters with occasional light frosts. 37 to 45 in mean annual rainfall.

Soils: Extensive areas of highly acidic deep friable red loams and clay loams (M set).

Common grasses: *Hyparrhenia filipendula*, *Rendlia altera*, *Loudetia simplex*, *Paspalum commersonii*, *Alloteropsis semialata*, *Eragrostis racemosa*. *Eragrostis* spp., *Sporobolus* spp. and *Cynodon dactylon* are common in overgrazed areas.

Common trees and shrubs: *Acacia karroo*, *Syzygium cordatum*, *A. ataxacantha*, *Maesa lanceolata*, *Vernonia ampla*. *Pterocarpus angolensis* is frequently found in warm river valleys.

(4) Tall Grassveld

General description: A variable, moderately sour grassveld with tree and shrub savanna in places.

Location: Forms a roughly central belt in the country from the Komati River southward. A large area in the south requires more detailed study.

Altitude: 2,000 to 2,500 ft.

Topography: Rolling to hilly.

Climate: Slightly warmer and drier than (3). About 35 in mean annual rainfall.

Soils: Varied, including both M set as in (3) above and O set as in (5): rocky land is common.

Common grasses: *Hyparrhenia filipendula*, *Eragrostis racemosa*, *H. dissoluta*, *Sporobolus capensis*, *Heteropogon contortus*, *Cymbopogon excavatus*, *Brachiaria brizantha*.

Common trees and shrubs: *Euclia crispa*, *Dichrostachys cinerea*.

(5) Dry Tall Grassveld

General description: Mainly a fairly open grassland dotted with large trees. Tall grasses are dominant in leniently grazed areas but shorter species invade with overgrazing. In some areas there is a shrubby savanna with dense bush in places. The grasses are fairly sour.

Location: Mainly lower Middleveld slopes in central Swaziland.

Altitude: 1,300 to 2,000 ft.

Topography: Rolling to hilly.

Climate: Fairly hot summers and mild, almost frost-free winters. Mean annual rainfall about 30 in.

Soils: Often greyish, sandy and shallow (O set).

Common grasses: Hyparrhenia filipendula and H. dissoluta are normally dominant but are replaced by Aristida congesta ssp. barbicollis, Heteropogon contortus, Pogonarthria squarrosa, Cynodon dactylon and Perotis patens with heavy grazing and on fallow lands.

Common trees and shrubs: Dichrostachys cinerea, Acacia nilotica, Ficus spp., Sclerocarya birrea, Maytenus senegalensis, Euclea spp.

(6) Upper Broad-leaved Tree Savanna and Hillside Bush

General description: Varies from an open savanna of large trees surrounded by cultivated lands to dense hillside bush. The vegetation is particularly luxuriant in the well-watered Lonati valley in the north. The grasses are fairly sour.

Location: Occurs in hot lower Middleveld valleys and in broken country along the eastern margins of the Middleveld.

Altitude: 1,300 to 2,500 ft.

Topography: Includes rolling valleys and steep escarpment slopes.

Climate: Fairly hot summers and mild, almost frost-free winters. 28 to 45 in mean annual rainfall.

Soils: Slightly acid deep red loams (L set) occur in valleys. Shallow, stony soils are frequent on steep slopes.

Common grasses: Hyparrhenia dissoluta, H. filipendula, Pogonarthria squarrosa, Heteropogon contortus, Perotis patens, Aristida congesta ssp. barbicollis, Panicum maximum, Brachiaria brizantha.

Common trees and shrubs: Sclerocarya birrea, Dichrostachys cinerea, Combretum spp., Trichilia emetica, Acacia karroo, Pterocarpus angolensis, Ficus capensis, Terminalia sericea, Cussonia spicata.

(7) Upland Tall Grassveld

General description: A sour, open grassland apart from scattered Acacias and bush clumps on old termitaria: in some respects transitional to (2).

Location: Upper Ngwempisi valley and an area around Goedgegun in south-western Swaziland.

Altitude: 3,000 to 3,500 ft.

Topography: Rolling.

Climate: Cooler than the rest of the Middleveld. Light winter frosts. 30 to 40 in mean annual rainfall.

Soils: Fairly extensive areas of deep red medium to light-textured M set soils.

Common grasses: Tristachya hispida, Hyparrhenia filipendula, Trachypogon spicatus, Eragrostis racemosa, Setaria nigrirostris.

LOWVELD TYPES

Ranging in altitude from a few hundred to about 1500 ft, the Lowveld is the hottest and driest of Swaziland's regions. In the east a gently undulating plain extends to the foot of the Lubombo range, but in the west the topography becomes more broken as one approaches the Middleveld.

The natural vegetation is savanna, comprising Acacias, broad-leaved trees and tall grasses. The different components of the plant community compete for moisture, nutrients and light; consequently any

weakening/....

weakening or destruction of the grasses upsets the natural balance between them and the trees and thus causes bush encroachment.

Except in irrigated areas, lack of moisture limits farming to extensive ranching.

(8) Lower Broad-leaved Tree Savanna

General description: A savanna of mainly broad-leaved trees and tall grasses. The veld is slightly sour.

Location: Western Lowveld.

Altitude: 1,000 to 1,500 ft.

Topography: Generally moderate slopes, becoming gentler in the east.

Climate: Hot summers, mild winters. 25 to 30 in mean annual rainfall.

Soils: Very varied. Generally derived from acid parent material such as granite or Ecca beds (sandstone and shale). Include two-deck sand over clay soils (H set) and much shallower, stony soils on the steeper slopes.

Common grasses: *Panicum maximum*, *Themeda triandra*, *Aristida congesta* ssp. *barbicollis*, *Pogonarthria squarrosa*.

Common trees and shrubs: *Combretum guenzii*, *C. zeyheri*, *C. apiculatum*, *C. transvaalense*, *C. suluense*, *Sclerocarya birrea*, *Dichrostachys cinerea*, *Ficus sycomorus*, *Pterocarpus rotundifolius*, *P. angolensis*, *Terminalia sericea*.

(9) Acacia Savanna

General description: A tree and shrub savanna varying from open parkland to dense bush. The grasses are sweet, and this is consequently good cattle ranching country, but overgrazing rapidly damages the rather sparse sward and causes encroachment of bush.

Location: Eastern Lowveld and gorges through Lubombo Range.

Altitude: 800 to 1,200 ft.

Topography: Gently undulating.

Climate: Hot summers and mild winters with occasional light frosts along drainage lines. Semi-arid. 20 to 27 in mean annual rainfall.

Soils: Often fertile and derived from basic rocks (basalt). Heavy-textured dark reddish (R set), dark brown (C set) and black (K set) soils are common. In west transition to soils of type (8), with Z set two-deck profiles common.

Common grasses: *Themeda triandra* var. *trachyspatha* and *Panicum maximum* are normally dominant. *Aristida bipartita*, *Urochloa mosambicensis* and *Eragrostis superba* are common in heavily grazed areas.

Common trees and shrubs: *Acacia nigrescens*, *Sclerocarya birrea*, *Dichrostachys cinerea*.

(10) Dry Acacia Savanna

General description: Similar to (9) but slightly warmer and drier. Dense *Acacia gillettiae* thickets occur along dry watercourses.

Location: South-eastern Lowveld.

Altitude: 300 to 800 ft.

Topography: Gently undulating.

Climate:/.....

Climate: Similar to (9). About 20 in mean annual rainfall.

Soils: From basalt, with black and dark brown clays (K and C sets) predominating over red (R set).

Common grasses and succulents: *Themeda triandra*, *Panicum maximum*, *Cenchrus ciliaris*, *Aloe parvibracteata*, *Sehima galpinii*.

Common trees: *Acacia nigrescens*, *A. tortilis*, *Sclerocarya birrea*, *Acacia gillettiae*.

LUBOMBO TYPES

The Lubombo range rises steeply from the Lowveld and is topped by rolling plateaux. A dipslope, deeply seamed by river valleys, descends coastwards to the east.

(11) Mixed Bush and Savanna

General description: Extremely variable. A number of different formations occur:

(a) Western region: Semi-open grassland interspersed with patches of dense bush. Pockets of high forest occur in deep ravines.

(b) Eastern region: Tree savanna.

Location: Upper slopes and plateaux of the Lubombo mountain range.

Altitude: 1,200 to 2,500 ft.

Topography: Rolling plateaux with steep slopes on the western margin.

Climate: Similar to much of the Middleveld. 30 to 38 in mean annual rainfall.

Soils: Fertile medium to heavy-textured reddish soils around Stegi and Nomahasha (L set) and extremely shallow soils overlying rhyolite rock elsewhere.

Common grasses: (a) Western region: *Digitaria swazilandensis*, *Themeda triandra*, *Hyparrhenia filipendula*.

(b) Eastern region: *Themeda triandra*, *Hyparrhenia* spp., *Bothriochloa insculpta*, *Cymbopogon excavatus*, *Tristachya hispida*, *Cynodon dactylon*.

Common trees and shrubs: (a) Western region: *Diospyros dichrophylla*, *D. lycioides*, *Scolopia mundii*, *Nuxia oppositifolia*, *Erythrina caffra*, *Cussonia spicata*, *Sclerocarya birrea*, *Acacia davyi*.

(b) Eastern region: *Combretum zeyheri*, *C. gueinzii*, *Maytenus cymosus*, *M. senegalensis*, *Acacia nilotica*, *A. karroo*, *Gardenia spatulifolia*.

REFERENCES

- ACOCKS, J.P.H. (1953). Veld Types of South Africa. Botanical Survey Memoir No. 28. Government Printer, Pretoria.
- COMPTON, R.H. (1966). An Annotated Check List of the Flora of Swaziland. Jl. S. Afr. Bot., Supplementary Vol. VI.

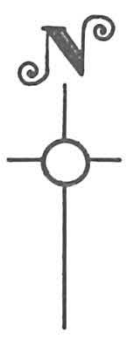
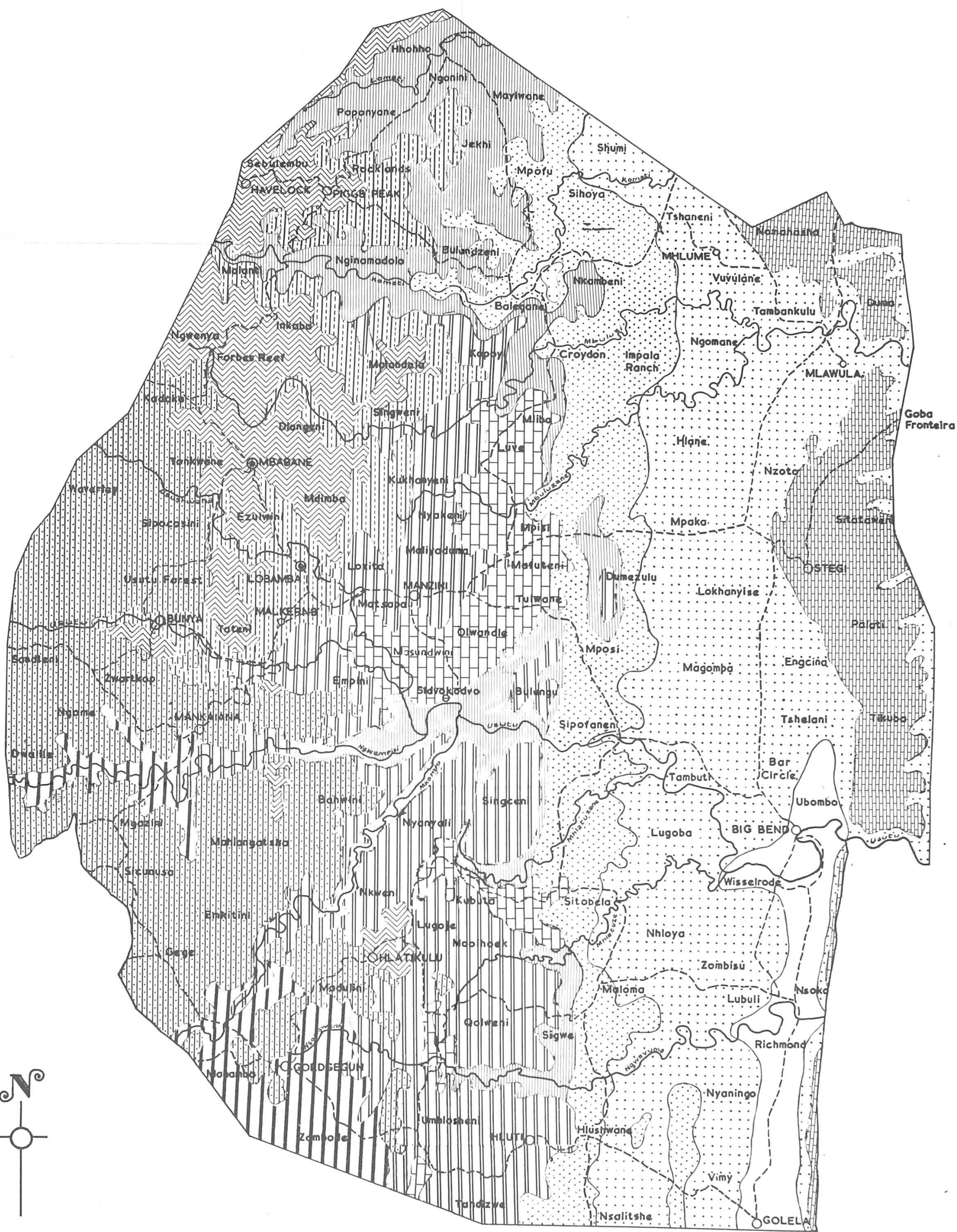
MURDOCH, G. and BAILLIE, I.C. (1966). Swaziland Soil Sets and Series in Alphabetical Order. Mimeographed paper.

ACKNOWLEDGEMENTS

Grateful acknowledgement is made to Professor R.H. Compton for identifying herbarium specimens, to G. Murdoch for assistance in preparing this bulletin and to E. Murdoch and P. Mavuso for drawing the map.

SWAZILAND VEGETATION




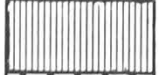

Map prepared from information supplied by J. H. l'Ons, Pasture Research Officer, Malkerns Research Station



HIGHVELD TYPES

-  Mountain Sourveld
-  Highland Sourveld

MIDDLEVELD TYPES





-  Moist Tall Grassveld
-  Tall Grassveld
-  Dry Tall Grassveld
-  Upper Broad Leaved Tree Savanna and Hillside Bush
-  Upland Tall Grassveld

LOWVELD TYPES

-  Lower Broad Leaved Tree Savanna
-  Acacia Savanna
-  Dry Acacia Savanna

LEBOMBO TYPES

-  Mixed Bush and Savanna

-  Capitals
-  Other Towns and Villages
-  Road
-  River

