University of Cape Town

ETHNOBOTANY OF NAMAQUALAND
THE RICHTERSVELD

by

Fiona M. Archer

In partial fulfilment of the requirements for the degree of Master of Arts
in the Department of Archaeology at the University of Cape Town

September 1994

The University of Cape Town has been given the right to reproduce this thesis in whole or in part. Copyright is held by the author.

The copyright of this thesis vests in the author. No quotation from it or information derived from it is to be published without full acknowledgement of the source. The thesis is to be used for private study or non-commercial research purposes only.

Published by the University of Cape Town (UCT) in terms of the non-exclusive license granted to UCT by the author.

University of Cape Town

17 MAY 1995
94/20430

The support of the
Human Needs and the Environment Programme
of the **Human Sciences Research Council**
is gratefully acknowledged.

ABSTRACT

The primary aim of this ethnobotanical dissertation was to provide a biobehavioural focus for indigenous plant use in the semi-arid areas of one of the six so-called Coloured Rural Reserves (Komaggas, Concordia, Richtersveld, Steinkopf, Leliefontein and Pella) in the north-western Cape (Namaqualand). Although much of the indigenous plant lore has been lost through westernization, the descendants of the Nama-speaking Khoi pastoralists, who are traditionally associated with Namaqualand, still partially rely on indigenous plants for subsistence. Firewood is used daily, medicinal plants are collected regularly and edible plants as well as plants used for household and other activities (such as dyeing of leather) are often used. This project can be seen as a rescue operation to obtain information on the use of indigenous plants before this fast-disappearing knowledge is lost. Richtersveld (and Leliefontein, for comparative and enrichment purposes only) were selected because literary sources confirm the observation that these are the areas where customary practises persist. A biobehavioural approach in terms of human-plant interactions has been applied. The main focus of the dissertation is on the diversity of useful plants and the range of activities associated with the use of the plants. The characteristics of the plants have been examined from an emic as well as etic perspective. The emic perspective was found to be particularly significant in assessing plant foods as well as medicinal plants. Etic perspectives were obtained through nutrient analyses of edible plants and discussions and literary research on medicinal compounds in plants used in health care. It seems that the emic and etic perspectives about plants are not as distinct as was initially thought. Peoples' perceptions about the plants guide them in their choice of plants but it is clear that some biological characteristics of the plants give rise to many of these choices. It may be possible to develop a system of criteria for different categories of plants which will enable archaeologists to make inferences about human-plant interactions. The dissertation ends by commenting on the archaeological significance of the way in which plants are used. The conclusion is that the archaeological record is a poor reflection of the range of activities associated with plant use; and a poor reflection of the diversity of plants which are used in subsistence strategies of the pastoralists of Namaqualand.

ACKNOWLEDGEMENTS

First and foremost I would like to thank the people from the Richtersveld and Leliefontein who were so generous with their information and time as well as their friendship. More than 300 people contributed in one way or another to the information contained in the text and appendices. The following people and institutes contributed either with information and/or and/or editing and/or typing and/or artwork : Norbert Jurgens, Ernst van Jaarsveld, Lita Webley, Ian Bruce, David Nefdt, Karien Griessel, Michele Botha, Mercia Kuhn, Heather Trichardt, Melanie Gosling, Pinky Wehmeyer, National Botanical Institute - Trevor Arnold, National Parks Board - Hugo Bezuidenhout, Kirstenbosch Botanical Gardens, Pinky Wehmeyer and Marie Jackson.

Funds for the research were provided by the Human Needs, Resources and the Environment Programme of The Human Sciences Research Council (major funder), Kirstenbosch Botanical Gardens and Participatory Research CC. Diablo Information Systems and Cyborg Software subsidised much of the computer time and expertise.

Professor Hilary Deacon from the Archaeology Department at the University of Stellenbosch initiated and encouraged the ethnobotanical research in Namaqualand. I am indebted to him for having created this field of research for me. Professor John Parkington from the Archaeology Department at the University of Cape Town supervised this dissertation over many years and strongly supported the notion that I be given the opportunity to finish the dissertation. I thank him for his inputs and support.

A special word of thanks to David Nefdt, Boris Ingram and Melanie Gosling without whose support and assistance the compilation of this dissertation would have been impossible.

CONTENTS

Abstract ii

Acknowledgements iii

Table of Figures vii

Table of Tables x

Table of Lists xi

CHAPTER 1 Introduction 1

Background to Ethnobotany 1

Present status of Ethnobotany in the north-western part of Southern Africa (Namibia and South Africa). 2

Ethnobotanical research in Namaqualand 3

Plant use in the Richtersveld 5

CHAPTER 2 Objectives and tasks 9

Aims of the research 9

Methodology and process of the research 12

Information gathering in the field 13

Analysis in the laboratory 15

Collation of secondary information. 16

CHAPTER 3 The Richtersveld placing ethnobotanical uses in a Socio-political context 17

Pre-history and History. 17

The present 23

Chapter 4 The Richtersveld - placing ethnobotanical uses in a biological context 25

Topography 25

Climate 27

Vegetation 30

Fauna 32

Chapter 5 A Feast in the Veld 35

Knowledge of the edible Plants 36

The Edible Plants 36

Underground Resources 38

Annual Seasonality 39

How underground plant foods are Recognised. 42

How underground plant foods are Harvested 44

Preparation of the underground resources 45

Above ground resources 46

Annual seasonality 47
Harvesting above-ground resources 48
Preparation of the above-ground resources 49
Evaluating plant food resources. 49
An Emic perspective 49
The nutritional value of the plant 50
Availability 50
Other 52
The Etic Perspective 54
Diversity 57
Quality of diet 58
Hunting wild animals 58
Managing insects to provide food 58
CHAPTER 6 A Pharmacy in the Veld 63
Knowledge of Medicinal Plants 64
The Plants 65
How medicinal plants are selected. 66
Harvesting the Medicinal Plants 68
Preparation of Medicinal Plants 69
Plants for Cosmetic Use 71
Storage of Medicines 75
Evaluating the medicinal plants 75
CHAPTER 7 Plants used for utilitarian purposes (excluding energy) 77
Making a home with plants. 77
The "Matjieshuis" 80
Selection and preparation of the poles 82
Selection and preparation of the reeds 84
Use of house 88
Maintenance of the house 90
Transporting the house 90
The Kitchen - Cooking House 91
Use and Maintenance of the Cooking House 92
The Cooking Shelter 93
Leatherwork And Plants 95
Plants in Hygiene 97
Plants And Utensils / Tools 97
CHAPTER 8 Domestic energy - Firewood 99

Knowledge of firewood 102
Plants used for firewood 102
How firewood is selected 105
Wood Gathering behaviour 107
Cooking and management of fires 111
Ash discard 113
CHAPTER 9 Plant use and the Archaeological record 115
Plant Debris and Waste. 116
Waste from edible plants 116
Waste from medicinal plants. 128
Waste from utilitarian Plants 130
Land surface modifications associated with plant use 131
CHAPTER 10 Putting Meaning to the Archaeological record .. 137
Putting meaning to the archaeological record 137
Bibliography 145
Appendix I
Appendix II
Appendix III
Appendix IIIa
Appendix IV

TABLE OF FIGURES

Figure 1.1 Location of the study area in Namaqualand. 7
Figure 1.2 Economic activities in the Richtersveld at present. 8
Figure 3.1 Area available to the Nama-speaking pastoralists prior to 1847. 22
Figure 3.2. After 1847 the Nama-speaking people lost access to most of their land. 24
Figure 4.1 Diagrammatic transect of the Richtersveld 26
Figure 4.2 Rainfall of Namaqualand 28
Figure 4.3 Rainfall in the Richtersveld 29
Figure 4.4 Precipitation in the Richtersveld 29
Figure 4.5 Average annual temperature 30
Figure 4.6. Diagrammatic representation of the vegetation of the Richterveld. 31
Figure 4.7. Type of vegetation from the Richterveld. 32
Figure 4.8 *Pachypodium namaquanum* 34
Figure 5.1 Seasonality of the edible plants 38
Figure 5.2 *Hydnora africana* (cm scale) 40
Figure 5.3 *Cyanella hyacinthoides* (cm scale) 41
Figure 5.4 *Moraea fugax* (cm scale) 41
Figure 5.5 *Cyphia* unidentified species (cm scale) 45
Figure 5.6 Woman grinding gum of *Acacia karroo* 47
Figure. 5. 7 Woman removing gum from *Acacia karroo* 49
Figure 5. 8. Movements of one herd of goats over a period of forty years (1940-1980) 61
Figure 5.9 Major patterns of seasonal movements of herds in the Richtersveld National Park and surrounds. 62
Figure 6.1 Patterns of Decoration 73
Figure 7.1 A typical 'werf 'in the Richtersveld. 79
Figure 7.2 An illustration of the most important aspects of the werf. 79
Figure 7.3 A 'werf' showing an unfenced as well as a fenced kraal at the back of the settlement 80
Figure 7.4 Different stages of building a "Matjieshuis". 81

Figure 7.5 Bending the poles for the framework 83

Figure 7.6 The poles are planted and fastened together. 83

Figure 7.7 The sedge stems are sewn together with string 85

Figure 7.8 The mats are placed over the framework 85

Figure 7.9 Placement of mats. From Haacke (1982) 86

Figure 7.10 The floor was often smeared with a mixture of dung and bolied gum 88

Figure 7. 11 "Matjieshuis" 90

Figure 7.12 Traditional way of transporting a house. 91

Figure 7.13 A more recent way of transporting belongings. This way is still used in Namaqualand today. 91

Figure 7.14 The most recent way of moving the house. 91

Figure 7.15 Cooking shelter. 93

Figure 7.16 Cooking shelter with natural growing bush used as a n/a pole. 94

Figure 7.17 Some of the implements used for leatherwork. 96

Figure 7.18 Sleeping skin decorated with the bark of Acacia karroo. 96

Figure 7.19 Different uses of Acacia karroo. 98

Figure 8.1 Women carrying wood. 101

Figure 8.2-5 Histograms showing selectivity of firewood at Spoegrivier, Klein Nourivier, Kuboes and Bloeddrif. .. 104

Figure 8.6 Firewood gathering of woman at Nourivier 108

Figure 8.7 Hearth with broom 111

Figure 9.1 *Pelargonium rapaceum* - cross section 118

Figure 9.2 *Cyanella hyacinthoides* (raap) 119

Fig 9.3 *Cyanella hyacinthoides* with previous years corm indicated. .. 120

Figure 9.4 *Babiana species* (draaiuintjie) 121

Figure 9.5 *Moraea fugax (sanduintjie)* 122

Figure 9.6 *Babiana species (poepuintjie)* 123

Figure 9.7 *Oxalis sp*(kraaiuintjie) 124

Figure 9.8 *Pelargonium incrassatum (nytjie)* 125

Figure 9.9 Proportions of edible and waste material for 6 different plants .. 127

Figure 9.10 Proportions of edible and waste material for 3 samples of *Cyanella hyacinthoides* 128

Figure 9.11 *Sceletium namaquense.* Illustration of plant material after preparation 129

Figure 9.12 *Scirpus dioecus*, outer casing of the reed removed and discarded 130

Figure 9. 13 Crushing plants with stone (see worn out surface of granite stone) 132

Figure 9. 14 Crushing plants with stone (see worn out surface of granite stone) 132

Figure 9.15 Illustration showing some features after a site has been abandoned. 133

Figures 9.16, 9.17 & 9.18 Cross -sections of three hearths which were excavated 135

TABLE OF TABLES

Table 5.1 Edible plants of the Richtersveld	37
Table 5.2 Underground edible plants of the Richtersveld.	39
Table 5.3 Above ground edible plants of the Richtersveld	46
Table 5.4 Animals still hunted at present	58
Table 6.1 Medicinal plants	66
Table 6.2 Plant sap used by the Khoi	72
Table 6.3 Gum used by the Khoi (Rudner, 1982)	75
Table 7.1 List of plants used for utilitarian purposes	78
Table 8.1: The diameter and length of pieces in a wood load collected at Nourivier.	102
Table 8.2 Time spent gathering firewood	108
Table 8.3 Differences in weights of wood bundles collected formally and wood bundles collected casually.	110
Table 8.4 The distances between the house and skerm at 20 settlements in Leliefontein.	112
Table 9.1 Proportion of waste to edible mass of *Cyanella hyacinthiodes*	119
Table 9.2 Proportion of waste to edible mass of a *Babiana species* (draaiuintjie)	121
Table 9.3 Proportion of waste to edible mass of a *Moraea fugax*	122
Table 9.4 Proportion of waste to edible mass of a *Babiana species* (poepuintjie)	123
Table 9.5 Proportion of waste to edible mass of an *Oxalis species*Figure 9.8 *Pelargonium incrassatum* (nytjie)	124
Table 9.6 Proportion of waste to edible mass of *Pelargonium incrassatum*	125
Table 9.7 Data used to produce Figure 9.9	127

TABLE OF LISTS

List 8.1 List of questions asked during interviews	100
List 8.2 Major Species used for Firewood	103
List 8.3 Woody vegetation on the banks of the Orange River.	105
List 9.1 Plants from archaeological sites in northern Namaqualand, including the Richtersveld.	115
List 9.2 Plants used for snacking in the Richterveld.	118

CHAPTER 1

INTRODUCTION

BACKGROUND TO ETHNOBOTANY

The roots of ethnobotanical research lie in the exploration of the New World - when Columbus and other explorers returned from distant lands with spices, maize, tobacco and medicine and, thus, kindled an interest in the use of plants by peoples from different cultures (Ford 1978). The practical and economic values of some plants were recognised and many hitherto very local uses for plants were expanded. Traders made it their business to transport the exotic materials all over the world so that many plants form an integral part of peoples cultures today in areas where they never occurred naturally. Medicines, foods and other plant products were imported and exported by nations and became fully integrated in the cultural and socio-economic systems of widespread groups.

The term ethnobotany was coined in 1895 by a Dr. John Harshberger, a Pennsylvanian botanist, after he had completed studies of the primitive and aboriginal people's use of plants (Ford 1978). The focus on ecological interactions of human populations and the plant world which characterises modern ethnobotany may be traced to the influence of Jones and the Ethnobotanical Laboratory of the University of Michigan, Museum of Anthropology. Jones is also recognised as one of the first to call for an interdisciplinary approach to the field (Pearsall 1989).

> *"Ethnobotany studies can be most successfully made when ethnobotanical problems are paramount in the investigation and when the worker or workers are familiar with the techniques, methods and approach of both anthropology and the plant sciences."*

(Jones 1941:241)

Since the earlier times of studying 'primitive' people's use of plants, the importance of ethnobotany has increased. Today, ethnobotany is seen as a part of ecological studies about the direct inter-relations between people and plants (Ford 1978). As such, ethnobotanists not only identify significant plants used by a group of people, and comment on how and why the people classify, identify and relate to plants. They also examine how people's perceptions about plants guide their actions, and how their actions influence various aspects of the environment - this includes the biological, social and economic environment. More recently ethnobotanical studies have been applied in a variety of spheres - such as in planning development and conservation and in addressing primary health care issues. Ethnobotanists find themselves at the interface of not only anthropology and botany, but of many different fields, particularly the so-called soft and hard sciences.

PRESENT STATUS OF ETHNOBOTANY IN THE NORTH-WESTERN PART OF SOUTHERN AFRICA (NAMIBIA AND SOUTH AFRICA).

Until recently the importance of ethnobotanical studies was ignored by South African researchers, with the result that much ethnobotanical knowledge has been lost. The remaining available data has to be recovered from the few groups of people who live in the marginal areas and who, mostly for practical reasons, have not completely lost their plantlore. Other information sources are primarily anthropological literature.

The anthropological studies are limited in that they mostly cover aspects of the lives of the San in the northern parts of Southern Africa and the agro-pastoralists in the eastern part of the country. Relatively little attention has been given to the pastoralists (especially to their plant use) in the semi-arid and arid regions in the north-western part of the region. The only ethnobotanical reports are from Engelbrecht (1936), Dentlinger (1977), Archer (1982) and Haacke (1982), and from Van den Eynden et al (1992). The studies are limited. Only Archer and Van den Eynden collected herbarium specimens - a prerequisite for applying information. All of the reports, except for that of Engelbrecht, concentrated on very limited fields, for instance Dentlinger on the use of the tsama melon and Archer on the edible plants of the Kamiesberg. Van den Eynden's study was completed in a short period and can thus be seen as a preliminary study. Nevertheless, this study is the most comprehensive that has been produced thus far. So, while ethnobotanical information does exist, most of it is difficult to access as it forms part of travellers' records and anthropological, archaeological and botanical reports, most of which only refer to plant use in passing.

After a lull of approximately fifty years, the 1980s saw the emergence of a sense of urgency in the field of ethnobotany in South Africa. Both plant species and traditional knowledge were disappearing, at the same time that people realised that traditional knowledge was the key to new crops for rural communities where the existing resource base was being eroded. With this as a new incentive, and with the current emphasis on the conservation of natural and cultural resources, ethnobotany has become an important research objective. A newly elected (August 1992) committee which has to determine a national policy for ethnobotanical research in South Africa, corroborates the importance of ethnobotanical research in South Africa during the 1990s.

A difficulty encountered by many ethnobotanists is the effect that conservation legislation, which prohibits the collection of indigenous plants for use in South Africa (Archer 1991g), has had on the willingness of indigenous people to co-operate with researchers. Knowledgeable people in this field are reluctant to reveal their knowledge of plants for fear of having attention drawn to them which could ultimately result in their prosecution for collecting plants. The legislation surrounding medicinal healthcare, which makes the administration of remedies by unlicensed people illegal, further compounds the issue. Most of the healers in the country are not licensed as the standards for legalising involve tertiary education to which they have no real access. They, therefore, are reluctant to get involved with ethnobotanists who, inadvertently, may draw attention to this "illegal" practise. In some cases where indigenous people have divulged their knowledge to researchers, it has led to the exploitation of resources to the extent that the resource became scarce. Van den Eynden (personal communication) reports that the Topnaar people in Namibia, who showed their Nara fields to some researchers, found this most important food resource depleted a week later. Medicinal plants, such as *Harpagophytum procumbens*, became extinct in areas where they were collected for export to European markets after their medicinal value was realised. There are many more examples which show how the indigenous people and their resources have been over-exploited. All of the above mentioned create circumstances which complicate the rescue of ethnobotanical information in Southern Africa.

ETHNOBOTANICAL RESEARCH IN NAMAQUALAND

It is in the atmosphere of the growing awareness of the importance of ethnobotany that research to rescue the plantlore of Namaqualand started. The project on the ethnobotany of the Richtersveld is an extension of ethnobotanical research in Namaqualand (see figure 1.1) which was started during the early 1980s when the author realised that the ethnobotanical knowledge of Namaqualand would be lost unless recorded. A project to investigate the edible plants of the Kamiesberg region was initiated (Archer 1982) with the aim of providing archaeologists with information on the range of edible plants in the arid region in order to reconstruct possible early diets, both qualitatively and quantitatively. It was during this early research that the much wider importance, including the cultural heritage and development value of ethnobotanical information, was realised (Archer 19901a, 1991b, 1991c, 1991d & 1991e).

During the negotiations before the proclamation of the Richtersveld National Park (Archer 1991h), the value of the cultural importance of customary practises was mentioned. This created an atmosphere in which the importance of traditional and customary uses was emphasised and created an ideal incentive for expanding the initial research.

With the increase in the incidence of rural poverty, the degradation of natural resources and rural people's diminishing access to health services because of spiralling costs, it is possible that the value of useful plants for medicines, nutrition or other subsistence activities, will increase. This has happened in other areas - especially in Namibia where the gathering of many medicinal plants is threatening the survival of the species. People in Namaqualand are also commenting on the possible dietary value of veld plants in a diet which lacks sufficient fresh products.

Recently people have become more open about the cultural and economic significance of plants. With the influx of researchers who show an interest and admiration for local peoples' knowledge, it is clear that people with these skills may be favoured for jobs associated with eco-tourism and tourism in general. This aspect together with the incentive to exercise this research programme in such a way that it builds capacity, has stimulated local interest and local involvement in the project. While local interest and involvement is not satisfactory, it is gratifying that some young people and some women are increasingly showing interest. These two groups have been socio-politically marginalized since the introduction of mining and as a result of administrative procedures for the region over the past century. I have no doubt that, in a community which has been subjected to a top-down approach in decision-making for decades, it will take some time for people to develop the necessary decision-making skills to become fully participative in the development of the Richtersveld National Park as well as in the Richtersveld National Park Interdisciplinary Research Programme. This project has been instrumental in building confidence in some people who now feel at ease to attend meetings and to discuss management strategies around the Park.

PLANT USE IN THE RICHTERSVELD

The dependence of the Richtersveld inhabitants on a variety of plant resources for their subsistence has dwindled considerably over the last century. Once crucial to the survival of all the inhabitants of the Richtersveld, the knowledge about plant resources is now lost to many of the inhabitants. By the 1980s it had virtually none of its former significance. The shift in importance was not sudden - Hoernle writes about the loss of culture in this region during the early part of the century. We can accept, however, that the loss during the latter part of the century escalated as a result of increased availability of alternative natural and other resources, and as the infrastructure developed and agriculture expanded (see figure 1.2). Those who still used plants during the 1970s and 1980s were mostly the rural poor who could not afford to buy to satisfy their basic needs. The use of plants thus came to signify poverty and backwardness - especially amongst the younger generation who had, through the urbanisation brought about by schools and clinics, where traditional uses were criticised and devalued, lost their close ties with the environment, and, as a result, their intimate knowledge and appreciation of plant lore.

The appreciation and intimate knowledge of plants remained only with a few of the older inhabitants who still valued their 'roots', and with the poor, to whom the plants were essential for housing, domestic energy, curative health care, and, to a lesser degree, for snacking and broadening the dietary base.

During the well publicised (Archer et al 1989, Hill et al 1990, Krohne & Steyn 1991) land struggles during the latter part of the 1980s, in which the historic rights of the Nama speaking Khoi and their descendants focused on tradition in order to regain access to resources (especially land), a general appreciation of traditional and cultural heritage was revived amongst a large group of the inhabitants of the area. The youth are not so eager, any more, to discard traditional uses as embarrassing and there is an urge to recover and restore whatever can be useful in establishing the rights of people whose ancestors have lived in the area for a long time.

The value of the intimate knowledge about the useful plants is increasingly recognised, albeit for socio-political (establishing an identity which confirms a close connection with the area/environment) rather than utilitarian reasons. With this awareness, however, some individuals were exposed to the practical value of plants and, during 1992, began to recognise the potential of indigenous useful plants as a resource which should be developed. This awareness is likely to escalate - especially as the health authorities are preparing formally to recognise traditional healers as an integral aspect of the curative health care system in South Africa. Obviously all the important aspects mentioned cannot be fully addressed in this report as they were not the focus of this project.

In a later section the customary plant use as recovered from this research will be explained. This will be done according to categories edible plants - a feast in the veld, medicinal plants - a pharmacy in the veld, plants used for utilitarian purposes and firewood. The categories were created for practical reasons of report writing and do not reflect the categorisation developed by the local people.

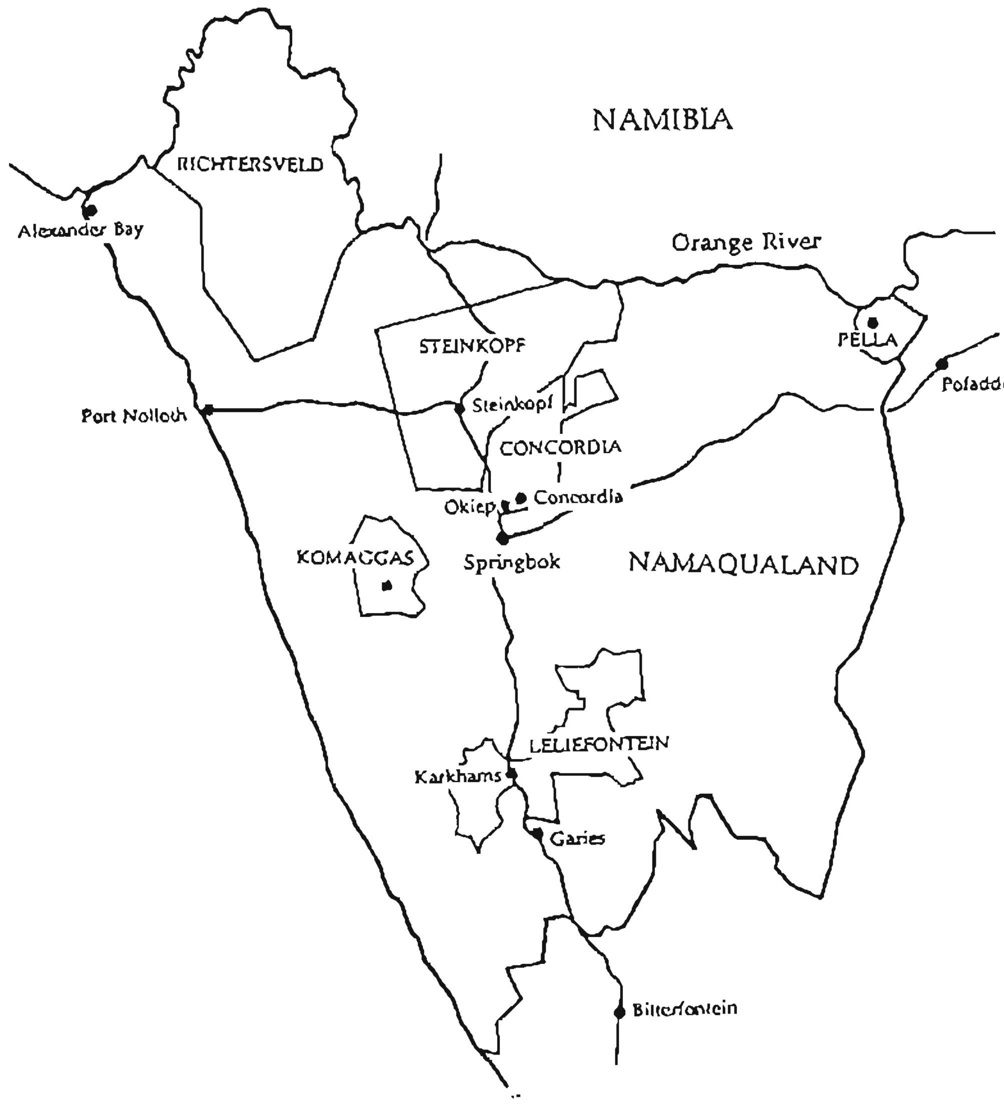


Figure 1.1 Location of the study area in Namaqualand.

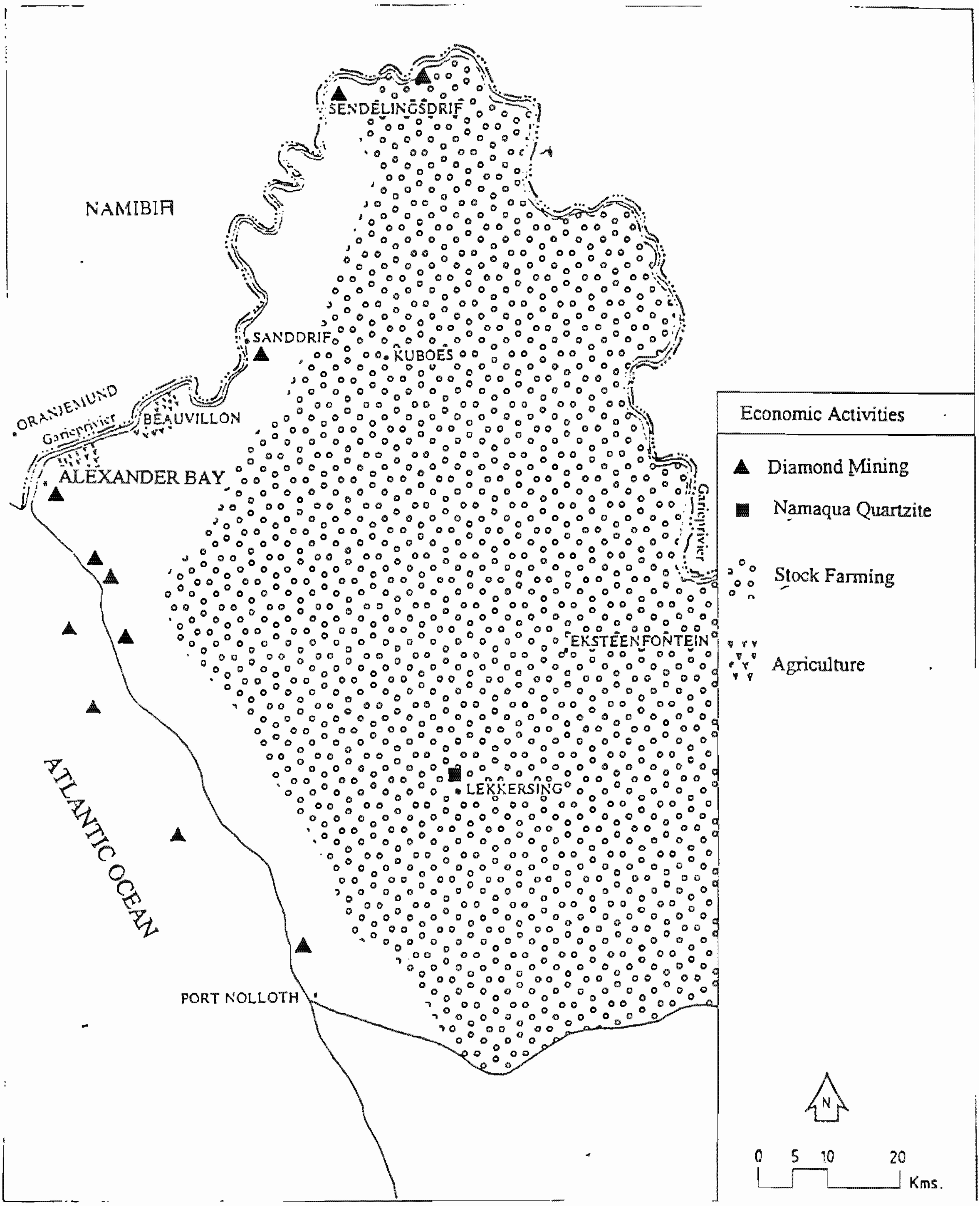


Figure 1.2 **Economic activities in the Richtersveld at present. The mining area is a security area which cannot be used by people for grazing or for exploitation of natural resources.**

CHAPTER 2

OBJECTIVES AND TASKS

AIMS OF THE RESEARCH

The aims of the research associated with this dissertation are multi-dimensional (Archer 1991a 1991b, 1991c, 1991d, 1991e). The aims of this dissertation have been narrowed down to that information and those analyses which enrich our understanding of the interaction between people and the environment in the past; our understanding of the cultural heritage of the Richtersveld region and our archaeological reference framework in the Namaqualand area, primarily, but also archaeological work in general.

The initial aim of this research project was to provide a list of the indigenous plant resources associated with customary plant use in the Richtersveld. Since cognitive systems are not preserved in the archaeological record, it is important to examine contemporary plant use patterns for models of the way in which people conceptualise, categorise and interact with plants. An investigation of the behaviour of the descendants of the Nama-speaking Khoi in association with plant use can therefore expand a reference framework for understanding the behaviour of earlier pastoralists in the south-western Cape areas, and even further afield. A list of the utilised indigenous plants can provide a useful reference for archaeologists especially those who work in the south-western and southern Cape areas, who can offer only limited explanations of the significance of plant remains in many archaeological sites. This is because, sadly, most of the traditional plantlore of the Western Cape has been lost. Although the vegetation of Namaqualand (karroid) is very different to the fynbos vegetation of the Western Cape, the vegetation regimes have many elements in common. A number of the plants which occur in the Richtersveld also occur elsewhere in the country. The Richtersveld is interesting in that it is where the Succulent and Nama Karoo biomes meet. This accounts for the high diversity of plants found in the region. When one examines the maps provided by Jurgens (1994 in print. - see Appendix 1), it is clear that the research in the Richtersveld has relevance for other areas. It is known, furthermore, that the Kamiesberg region has certain fynbos communities within it. It is possible, therefore, that plants which occur in the fynbos, the

Nama and the Succulent Karoo vegetation regimes, were used similarly. As such, the Nama-speaking pastoralists of the North-Western Cape can be seen as representatives, albeit limited, of a formerly widespread Khoi population of the Cape (Smith 1983).

The bulk of the information presented in this dissertation was collected from the inhabitants of the Richtersveld. Although daily utilisation of plant resources is not as widely practised as before and much information has probably been lost through changes in lifestyle (Hoernle 1913, Hahn 1878), the inhabitants of two areas, Richtersveld and Leliefontein, still possess a vast knowledge of the indigenous plant resources. This is because people still rely partially on indigenous plants for subsistence: firewood is used daily, medicinal plants are collected regularly and edible as well as plants used for household purposes (such as house building and dyeing of leather) are often utilised. The information from the interviews was augmented by literary sources such as early travellers and historians' records.

A further aim of the dissertation is to examine the characteristics of the plants themselves from an emic as well as etic perspective. Etkin (1987) describes the emic perspective as an "internal" point of view that is consistent with the culture under scrutiny and which examines phenomena with reference to indigenous knowledge, meaning and intent with which, in this case, plants are used. Basically, therefore, the emic perspective represents the user's point of view on the plants. This perspective was found to be especially significant in peoples' assessment of plant foods, as well as their choice of medicinal plants. The etic perspective uses external concepts as a framework on which to project and interpret ethnological perspectives. Etic perspectives for this project were obtained through nutrient analyses of edible plants as well as discussions and literary research on medicinal compounds in medicinal plants.

A third aim of the dissertation is to examine, very broadly (and not quantitatively), human behaviour, in the past and present, in association with the use of indigenous plant resources. This is examined on different levels - from macro-level, which looks at peoples' movements across the environment, to micro-level which deals with the preparations of specific plants for use. The human behaviour associated with plant use reflects social values and subsistence strategies. This is relevant in assessing the importance of plants in the past, present and future economy of people.

Archaeological sites in Namaqualand contain few plant remains. This may be the result of a number of factors, such as:

(a) poor preservation

(b) limited excavation techniques as far as plants are concerned

(c) limited use of plants

(d) the way in which plants were used.

The dissertation comments on aspects around (a), (c) and (d). It must be emphasised that this dissertation will deal only with the associated human behaviour which can be applied to archaeology. It does not explore present day plant use strategies with the view to analysing these or their environmental impact, nor are the developmental implications explored.

The main focus of the dissertation is the range of plants which is or has been utilised in the Richtersveld. It has been mentioned that the descendants of the traditional inhabitants of the Richtersveld, the Nama-speaking Khoi, retained many of their traditions, including the use of plants, and that they value their cultural background. The physical isolation and economic and developmental marginalisation of the area has, no doubt, contributed much to the persistence of some of the customary uses. The establishment of the Richtersveld National Park in 1990, which emphasised the preservation of both biotic diversity and cultural practises, created a context conducive to furthering research started in the early 1980s to rescue cultural information before it disappeared in the face of modernisation, development and change increased. Appendix 1 which initially was the sole focus of this dissertation contains the list of useful plants of the Richtersveld. This document has been compiled as a stand-alone document which can be used as a reference work (with its own bibliography). Further research will no doubt lead to information on other plants. It should be noted that recently, with changing and democratising political context of South Africa, people have come to trust that the information which they supply to researchers will not jeopardise their social position, nor implicate them for using plant resources illegally.

A second focus is on the way in which plants are used, which has important implications for the archaeological record. This, together with the associated technology, may lead to a change in what to look for in the deposits, and also to explain behavioural aspects associated with the plant remains found. Appendix 1 contains the details of how plants are used. This information is expanded upon in the following chapters.

A third focus of the dissertation is to investigate other bio-behavioural aspects of plant use so that a contribution can be made into the debate on the extent to which the use of plants is socially/culturally and environmentally determined. In order to comment on this aspect the edible plants were analysed for nutrient contents. Further, use of the same plants in other areas were investigated. The underlying assumption is that if plants are used in the same way in other areas then the chances are that the biological determinants are important. If, however, plants are used in different ways in different areas it is likely that the most important determinant is socio-cultural. An analysis of this aspect was not done. Appendix 1 gives information on the uses of plants in the Richtersveld as well as the uses of these plants in other areas. Appendix 1, further, provides information on the multi-functional use of plants. The text provides multi-functional use at different localities in southern Africa, while the table format with the abbreviated classifications gives information of the uses for the plants in the Richtersveld, only.

An attempt has been made to provide qualitative data about plant use in the Richtersveld. Where information from the Richtersveld was too limited, data collected from the southern area of Leliefontein over a period of approximately ten years was used. Data concerning the selection and rating of edible plants, especially, was complemented with information from interviews in the Leliefontein area. Comments are, therefore, made on the useful plants from the Leliefontein area but these plants are not included in Appendices, which deal only with plants which were found in the Richtersveld during this investigation.

METHODOLOGY AND PROCESS OF THE RESEARCH

The research has a participative nature. In practice this means that a number of methods of research are used, not only to obtain data, but also to involve interested parties. Methods included: the use of key respondents; participant observation (particularly when investigating the use of medicinal plant brews, the preparation and consumption of edible plants, the construction of reed huts and the selection and use of firewood); structured and unstructured interviews. Unstructured interviews usually took place in the evenings during and after dinner as well as during collecting trips; group discussions, mainly with women, and some where both men and women were present.

People who were knowledgeable about plant use were identified by various community members, while others volunteered information and help, because they wanted to be involved with the research. The extent of participation in the project was, however, mostly limited to middle-aged and elderly people of both sexes. One young woman played a major role in the research, until she became involved in party politics. An integral aspect of the research method adopted was not to gather data only but also to make it available and useful to specific groups within the community, and to the community at large. Throughout the research, therefore, the information gathered was made available to the broader community for their own purposes, which included being used in the court cases concerning land tenure in Namaqualand (Archer 1990a). Other initiatives included designing, with the help of several local women and teachers, methods by which the information was made accessible to schoolchildren in Namaqualand (Archer 1993). This project was launched as part of the National Biomass Initiative of the Department of Mineral and Energy Affairs. This contribution, amongst others, helped people to understand that the researcher's objective was not exclusively academic, but included practical contributions to the education and general development of the local population. As has been pointed out, this is not the focus of this dissertation.

The tasks set out in the following section can be subdivided into four different categories:

1. Information gathering in the field.
2. Identifications in the herbarium, mostly.
3. Analysis in the laboratory.
4. Collation of secondary information.

INFORMATION GATHERING IN THE FIELD

The research involved two distinct periods of information gathering in the field. The bulk of the information was collected in the first period, during 1982 - 1983. Fieldwork was conducted as described for the Kamiesberg in Archer (1982, 1988). Briefly, inhabitants were interviewed at home to identify the most knowledgeable local plant users. These people were used as key respondents. After interviews there were various visits into the field with the local experts, individually as well as in groups, who pointed out the plants which had been discussed as well as other plants which they remembered when they came across them in the veld. Interviews with the local experts resulted in the compilation of lists of useful plants and recipes of preparation. Collections of herbarium specimens for taxonomical identification were made subsequently (most of them during the growing period; from August to October). A translator was used in the field as some information gathering was done at stockposts and people were not sure of the common Afrikaans names for plants. Tape recordings were made of the Nama names and these were transcribed by one of the older inhabitants who could write Nama. (Although most people speak Nama fluently, there are only a few individuals who can write the language).

Practical problems, such as a drought and a very early plant growth season, limited the amount of data it was possible to gather during the second period of fieldwork. Herbarium specimens of many plants could not be collected. (Plants did grow during the drought period of 1991, but only in places so inaccessible that the researchers could not reach them in the time available).

During 1992 a different approach to gathering information was developed as a result of the lack of progress with regard to the collecting of data on medicinal plants. It had become clear that inhabitants were reluctant to share their knowledge of medicinal plants. This reluctance was probably a result of the South African political context which has used race, culture and tradition to suppress and disadvantage the majority of the population; the medical healthcare context which legislated against the traditional medical practises; and environmental legislation which makes picking of indigenous plants illegal. In the Richtersveld, with a low population and high level of policing (probably a result of the area being a high security area due to diamond mining activities) individuals are concerned with being perceived as law-abiding, and not attracting attention to illegal practises. A meeting with several women was organised to discuss this problem of obtaining information. The result was that a young local woman was employed to gather information on a continuing basis. At the time of writing, this approach seems to have been successful. The young woman has been able to acquire information which, previously, was not accessible. (This includes information on the use of plants for drugs). The success of her work was probably due to the fact that people knew her, and to her having time to spend discussing the plants and their uses in a leisurely way. Her success emphasises the importance of the participative approach, as well as the amount of time needed for the research. Researchers do not always have the time it takes to build up a relationship of trust.

In Leliefontein - where I gathered ethnobotanical data over a period of eight years, the inhabitants and I were able to establish such a relationship. As a result, I was able to explain the importance of the work in such a way that the members of the community recognised it as being in their own interest to assist in data collection. It took about six months to gain this trust, while the data gathering process took about three years to become established. Experience in Namaqualand shows the importance of the participative, interactive and pro-active processes, which characterise the research programme of which this dissertation has formed part.

The data which has been gathered, covers the available information from approximately 40 people in the Northern Richtersveld. Much of the data was duplicated and verified by a number of informants. While people were initially extremely reticent about being interviewed about the use of plants (especially medicinal plants), more people are now voluntarily coming forward with information. People have begun to understand and value the data as their cultural heritage. The establishment of the Richtersveld National Park has also helped to create an atmosphere which is conducive to the process of recovering data on traditional practises - known now as "voortydse gebruike"- and previously seen as old-fashioned ("outyds") and as a negative social status indicator.

ANALYSIS IN THE LABORATORY

Samples of plants were collected, placed in brown paper bags and transported to the laboratory in Pretoria with as little delay as possible. The longest it took was two days as the material was flown to Pretoria. Total moisture and vitamin C contents of the plants were determined on arrival and reflects the moisture content at the time of arrival in Pretoria. As it traditionally took women several days before the plants they collected were used, it was assumed that the moisture content measured in the laboratory would not be significantly different from that of plants used traditionally. Corms and bulbs were collected over a two year period at different localities (as indicated in Appendix III) but during the same season (August-September). The remainder of the material after determining moisture and Vitamin C was freeze-dried and then ground using a pestle and mortar or in a laboratory mill. The moisture content of the freeze-dried material was also determined and the moisture factor calculated.

All determinations were done in duplicate except when too little material was available Where no values are given for a particular nutrient, it indicates either that the sample size was insufficient for all analyses to be done, or that unreliable values were obtained on that sample, and there was insufficient material available to repeat the determination. Sometimes the analyses were repeated on similar species which were collected at different places. Most analyses were conducted on raw material, but some of the more important species were analysed after they had been cooked. For this section I am indebted to Mr A.S. Wehmeyer.

The methods which were used are described in Appendix III a.

COLLATION OF SECONDARY INFORMATION.

Basically two kinds of resources were investigated: the early travellers records and anthropological/archaeological publications/theses. Some information was also collected from researchers such as Ernst van Jaarsveld, Norbert Jurgens and other scientists. Other information came from the writings of Fred Cornell, (a geologist who prospected in the area during the early 1900s) and academic theses.

The information from the secondary sources corroborated much of the information collected during field trips. The information also directed some of the field research in that specific plants which were mentioned in texts but which had not been mentioned by the local experts could be followed up. In this way the secondary sources were useful pointers. Information from the secondary sources is worked into the text as well as in Appendix 1.

This concludes the section on the objectives and tasks associated with this investigation. In the next two chapters the setting of the investigation is described and broadly analysed.

CHAPTER 3

THE RICHTERSVELD PLACING ETHNOBOTANICAL USES IN A SOCIO-POLITICAL CONTEXT

PRE-HISTORY AND HISTORY.

Prior to the period of European expansion in Southern Africa, the areas later known as Great Namaqualand (north of the Orange River to Swakopmund) and Small Namaqualand (the current magisterial district of Namaqualand) were inhabited by groups of hunter-gatherer San and pastoralist Khoi.

Archaeological research has confirmed that Khoi groups (associated with pottery, domestic sheep and cattle) lived along the southern and western Cape Coast and further north to the Kuiseb Valley as early as 2000 years ago (Deacon, H J et al 1978). A more recent unpublished date for this site close to the South African - Namibia border suggests that the area has been occupied by pastoralists for at least the last 1 500 years. This date confirms proposals which suggest that Great Namaqualand has been inhabited by Khoi pastoralists for the past 1500 years. An even earlier date from Spoegrivier indicates that pastoralists have inhabited the region for at least the last 2100 years (Webley 1993).

Excavations by Webley (1992) corroborate her earlier suggestions (1990) that the pastoralists probably moved from the present Namibia (Great Namaqualand) into South Africa (Small Namaqualand). Dates from sites excavated at Bethelsklip near Garies indicate occupation as early as 800 years ago. More recent dates from sites which were excavated in the Richtersveld show that Die Toon, in the present Richtersveld National Park, was occupied by hunter-gatherers approximately 3000 years ago. There is no pottery at this site and Webley et al (1993), therefore, accept that there were no pastoralists living there at that time. Excavations further to the south-west, near Kuboes, indicate that pastoralists lived at the site about 1900 years ago. The earliest date for occupation on the banks of the Orange river is at present, 690 AD.

More information is available from the historical records and one can go into a lot more detail about the life of the Nama-speaking Khoi when a survey of the early travellers' descriptions and illustrations is made. The first Nama-speaking Khoi were seen in 1661 when the Van Meerhof and Cruijthoff expedition came across a kraal of 73 huts close to the Olifants river. The 700 inhabitants owned 3 000 sheep and 7 000 cattle (Godee-Molsbergen 1921). They were the southern-most group of Nama-speaking people that were seen. Later, in 1662, Cruijthoff found kraals in the vicinity of the Kamiesberg (Godee-Molsbergen 1921). Other early travellers who came across the Nama-speaking Khoi were de la Guerre (1663); Godee-Molsbergen (1921); Olaf Bergh (Theal 1916); Simon van der Stel (1685); Gordon (1777); Paterson (1790); Alexander (1838), and others. From them we know where people stayed and how they lived.

Further and later information comes from early government reports, such as the reports of the surveyor-general Charles D. Bell and M. Nolloth (1855). Occasionally some of these historical records are really meaningful, as the following example illustrates :

> *That Little Namaqualand was also thus possessed and occupied, in prehistoric times, by the Bushmen and Namaqua Hottentots, I have every reason to conclude, from specific inquiries after traditions, fourteen years ago, among old men, the descendants of the latter; from the admissions of the chieftain Paul Lynx, during my conversation with him on my recent tour; from the notices of the Girigriquas of Ebenezer and the Little Namaquas of Lilyfontein, when they were first met by, or known to, the early colonists, nearly 200 years ago, (although I can trace no record bearing immediately on the neighbouring country now in question, or the state of its inhabitants); and from the indisputable fact that, notwithstanding the numerous receptions of people of other coloured and mixed races, and natural increase of population during peace, the country is even now very far from being occupied to the extent of its natural and unimproved capabilities*

and

> *When I saw T'Kamghaap, he was different and suspicious, and I was in great need of rest. I expected to see him again, and therefore did not take sufficient trouble to secure his confidence and learn his real opinions; but it was difficult even for a Bushman to know where to catch me in the mountains; T'Kamghaap, having twice failed, did not again try to do so. He claimed the country along the Orange River from T'Kodas to Nabass, and as far back as the Tel Ooliroop and Tkhoomms Range (see plan), including, if I mistake not, T'Kodas and T'nomees, as places used by his forefathers. He grounded his claim, as head man of his people, on the fact that he*

was the lineal descendant of the old chiefs of the Bushmen of that country from time immemorial, and that he was acknowledged as chief by the present Bushmen inhabitants. He denied that any one had ever acquired from him his rights, or had ever been authorised by him to apply to Government, on his behalf, in any question relating to these lands.

Paul Lynx and his councillors visited me unexpectedly at TcAnnis, and were introduced to me by an educated native tribe. I knew, form good authority, that Paul an his people entertained lofty ideas of their position and their rights, and that many awkward questions on international law and equity, involved in their annexation in 1847, had been long and well discussed in his council, and were in readiness for me. So, after shaking hands with Paul, as a chief, and Fredrik, as a teacher, I saluted the councillors and others in general, and sat in silence, in order that they might first break ground; but they were far too wary to do so.

The length of the pause compelled me to commence a conversation, of which I must give the principal points nearly verbatim, so far as I recollect them. I said, " I have heard of you, Paul, as the chief of this land." - I am.

"How far does your country extend?" - Along the Orange River, &c. (naming points which included the whole of T'Kamghaap's country).

"And your people occupy all that country?" - Yes.

"How did you become the chief of all that country?" - By descent from the former chiefs, & c.

"Did you ever hear that, in the old times, the Bushmen sometimes murdered the Namaquas and drove off their cattle?" - Yes.

"They Slaughtered men, women, and children, and drove off cattle even in the Spuig River, and the Namaquas killed the Bushmen when they could. Did not the same thing happen hereabouts?" - The Bushmen were fierce (sharp).

"Where did the Bushmen live?" - In the hills.

"And the Namaquas, I suppose, in the lower country?" - Yes.

"But now your people occupy the hills, and over to the other side, even as far as Nabas and thereabouts, wherever you please?" - Yes.

"How is that?" - (After consultation with councillors, in Hottentot language, which I could not understand): The Bushmen only search for honey and roots, and hunt game; they cannot make any other use of a country.

"And your people, with your leave or authority, move (trek) into it, and use it when they require it?" - Yes; they use it.

"When I reached Gonna Guleep, I met a man, named T'Kamghaap, who told me he was chief of that country?" - T'Kamghaap is only a so-called chief; I am chief.

"I don't understand this. It seems that in old times the Bushmen possessed the hills, and the Namaquas the plains, and that they have dared not intrude on each other. I now find an acknowledged chief, descended from the old chiefs of the people of the hills, on the hills, and on the plains I find an acknowledged chief, descended from the old chiefs of the people of the plains; but I find the chief of the Namaquas claiming and using the lands formerly held by the bushmen. I would gladly hear how this came to pass.

(Bell & Nolloth1855:3-5)

Historians and researchers such as Hoernle (1918, 1922, 1923, 1925), Schapera (1930) and others expanded on the existing information. It is clear that the Khoi were widely distributed over the whole of Namaqualand. They lived in groups under captains and owned herds of domesticated stock such as cattle and sheep, the pasturing of which caused continual movement within the dry areas. They lived from hunting wild animals such as springbok, hippopotamus, rock rabbits, tortoises etc.; from gathering the tubers, roots, fruits and gum of plants; and from collecting honey and insects. This diet was supplemented with meat and milk from domestic stock as well as fish and shellfish which were caught and/or collected from the rivers or the sea. During the hot and dry summer months they mostly stayed at and moved between permanent waterholes and/or the few perennial rivers. In winter they broke up into smaller groups and dispersed over the grass plains.

Visitors (such as Simon van der Stel and Gordon) to the region during the 17th and 18th century were primarily interested in the minerals of the area, but explored the flora and fauna as well. Although bartering (especially with tobacco) was practised, there is no evidence that the meetings between European and indigenous groups immediately altered the Nama-speaking pastoralists' lifestyle in any significant way.

> *"He who goes to convert a wandering tribe must either collect them together, or himself become a wanderer. If he collects them he must show them some method of obtaining subsistence, that they may remain with him"*

From de la Harpe (1993:4)

As a result of agricultural activity more permanent settlements developed which consisted of central mission villages with surrounding occupation areas. The borders were not precisely defined, nor were these settlements used exclusively by the mission adherents (Sharp, 1984). The missionaries in the Richtersveld did not have a great influence on the inhabitants because they did not stay in the region permanently. The first missionary, Frederik Hein, began work in 1851, and left a year later to return only after twenty years. He was tolerant of the traditions of the people and was unable to popularise cultivation of crops in the area so that few people became settled at Kuboes, the mission station (Boonzaier 1980). The few people who practised cultivation around Kuboes later gave up this practise - probably as a result of the aridity of the area. (One can still see the impact of the clearing of the natural bush - a practise associated with cultivation - because the vegetation never recovered after the practise was discontinued during the 1950's).

European trekboers started settling in Namaqualand during the 18th century. This encroachment on their land did not immediately have a major effect on the movements and or access to resources of the Nama-speaking pastoralists. In fact, there seems to have been hardly any strong territorial behaviour on the part of the Namaquas or the European farmers, initially. The pastoralists continued with their traditional movements and practises, such as collecting plants for food, medicine and domestic shelter. Many of these habits were adopted by the encroaching Europeans.

> *"It is pleaded that the open mat tent is so "exceedingly healthy" (al te gezond); and I have heard even of a wealthy farmer, who has built a good house, for the honour of the thing, but lives in a mat hut outside of it, for comfort.'"*

(Bell & Nolloth1855:9)

It seems as if the Nama-speaking and European groups moved, side by side, from pasture to pasture. Later, land in the area became privatised as portions of the land were granted to European farmers. However, it is clear that European families still moved with their stock, presumably following routes adopted from their Khoi counterparts. Individual trekboers were increasingly granted portions of land and during the early 19th century encroachment became a recognised problem, in spite of the fact that a system of reciprocity between the Europeans and the Nama-speaking Khoi facilitated their movements on each other's land. Wildschuts, the captain of the Namaquas who moved in the Kamiesberg area, therefore, requested the missionary, Shaw, to protect his group and missionaries who serviced other groups made sure that they obtained Tickets of Occupation for mission lands (initially Komaggas, Steinkopf - Richtersveld was part of Steinkopf, at this stage).

By 1847 the colonial boundary extended to the Orange River. Sharp (1984) points out that the land granted was much smaller than the original zones of occupation. Whilst the loss of land did not preclude the Nama-speaking pastoralists from access to land, it led to increasing poverty, in spite of the fact that there was trafficking between "trekboer" - territory and mission-lands by both parties. In the northern Richtersveld only a few farms were privatised, the farm Grootderm (now Beauvillon) being one. However, in spite of the official loss of land, land was still accessible to the Namas, who were able to follow many, but not all, of their traditional routes. The privatisation of the farm Grootderm was probably completed to interfere with the traditional route to the mouth of the Orange River. These routes were followed until the erection of fences in the 1950s.

After privatisation European farmers initially allowed Nama-speaking families to stay on their farms in return for labour. However, during the 1940s pressure on available land had increased dramatically as the total amount of Crown land had substantially diminished. Farmers became reluctant to allow "bywoners" (especially those with large herds) to use their land, so that these people were forced to move into the already overpopulated and overstocked Reserves (Boonzaier 1984). In the 1950s, the Group Areas Act, forced even greater numbers of people to live in the Reserves. When pensions became payable even more people left the "white" farms where they had lived for all their lives under a kind of a feudal system. It is clear that the Reserves were increasingly populated as the political pressures increased.

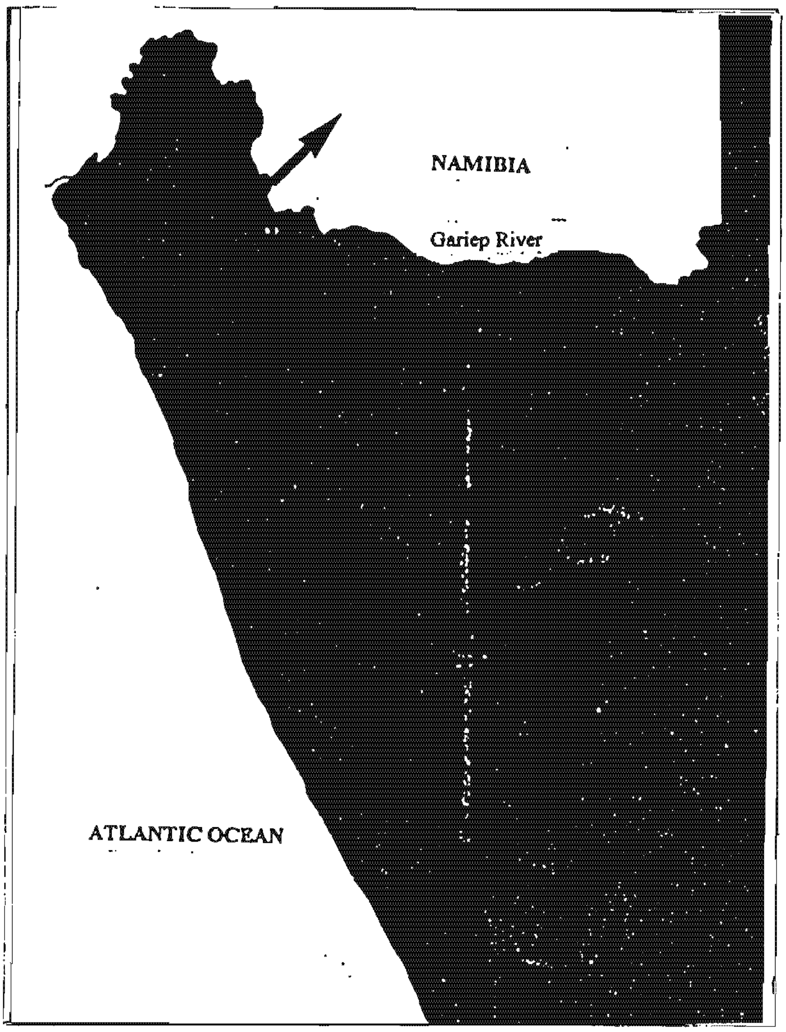


Figure 3.1 Area available to the Nama-speaking pastoralists prior to 1847.

Mining started during the 19th century and had an increasing impact on the Namaquas and their habits. The first significant mine was the Springbok Copper Mine which opened in 1852. At this stage it was ruled that neither mission stations nor their inhabitants had any rights to the mineral deposits in the territories they claimed.

> '...that I (Bell) was looked on as "the ear and eye of the Government', and that they were all anxious to know how it was to be about "the oppression". I asked, "what oppression?" and was answered, "Our lands, with this copper business" (werschaf)..."

Conversation between Bell and inhabitant of the Richtersveld (Bell & Nolloth1855:3).

As the mines created job opportunities many people settled around the mines and peoples' lifestyle began changing rapidly. Their introduction to the cash economy meant they now subsisted, in part, from buying rather than bartering, pastoralism and hunter-gathering. In the Richtersveld mining became important around the late 1920s, after the discovery of diamonds on the coast near Alexander Bay. At first, the Nama speaking inhabitants were allowed to remain on the land. Later, during the 1950s people were moved and fences were erected which prevented their having access to traditional grazing areas, including the plant resources which were used medicinally and in other ways.

The First World War in the Southern-African region impacted on access to land in the Richtersveld as some European farmers occupied the area which constitutes the Richtersveld Park today. These farmers could only be moved from the area (initially into other Richtersveld areas, further south) during the late 1960s. The Richtersveld Park area, therefore, was inaccessible. European farmer Avenant used firearms to keep local people from "trespassing" on "his" farm for nearly 40 years.

THE PRESENT

Today the descendants of the Nama-speaking Khoi are scattered throughout South-Africa. Many of them have remained in Namaqualand and they are concentrated in the so-called Namaqualand Rural Reserves (Archer 1993a). Except in the Richtersveld and Steinkopf Reserves, most of the inhabitants of these areas have lost their traditional language, Nama, and many of the traditional practises have been forgotten. The key to their survival lies in the mining industry and in pastoralism, neither of which is sustainable at this stage (EEU 1992).

The Richtersveld National Park is one of the few developments in the region which can be regarded as an example of probable sustainable development, as it aims to protect and enhance the environment in the long term, including the people and their cultural and spiritual needs (Archer 1991h). The customary practises which still exist will be treasured as a result of the emphasis and value placed on that which is indigenous to the area. Although people do not aspire to live in the way that they did before - on the contrary - people have begun to identify with their traditions and are developing pride in the heritage which has been devalued for so long. People are adamant that some of their land and its resources should be returned to them and that they should have a say in the planning and decision-making in the area. Many inhabitants are keen to see true development in the area, such as the provision of electricity and the supply of fresh water, but also in the re-establishment of their rights.

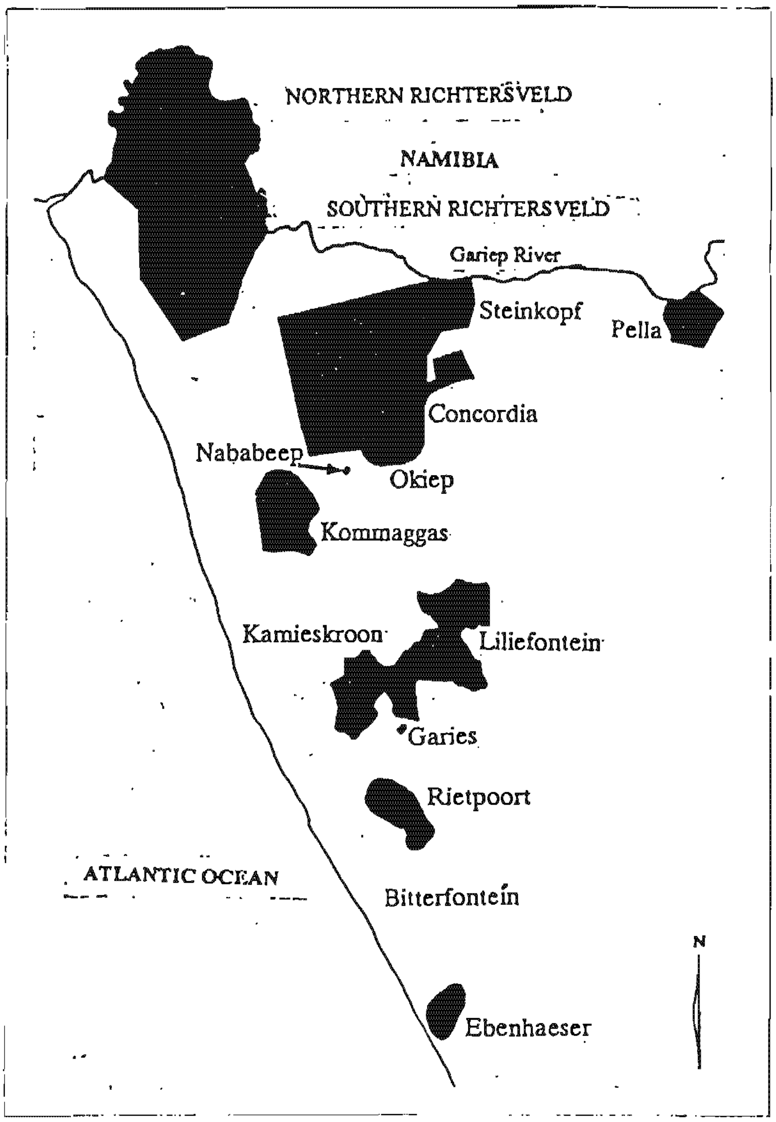


Figure 3.2. After 1847 the Nama-speaking people lost access to most of their land.

CHAPTER 4

THE RICHTERSVELD - PLACING ETHNOBOTANICAL USES IN A BIOLOGICAL CONTEXT

This section relies on the written as well as oral accounts of the importance of biological determinants in the behaviour of pastoralists.

TOPOGRAPHY

Topography plays an important role in the movements and the settlement of people and plants - and in their dynamic adaptation to the environment. A study of the topography of Namaqualand is, therefore, an important aspect of the background to the plants, people and their interactions within their surroundings.

The Richtersveld Rural Area is the northern-most so-called Coloured Area in Namaqualand. In the north and east it is bounded by the Orange River, in the west by the Atlantic Ocean; and to the south and the south-east by Port Nolloth and Steinkopf. The coastal plains, called Sandveld (sandy fields), on the west are flat and consist of red and white driftsand through which limestone mountains, such as the Boegoeberg and Kortdoomberg, protrude. The coastal plain stretches into central mountain ranges which run from just south of Eksteenfontein in the south to the Five Sisters in the north. The highest peak, Cornellsberg (1337 m) lies just north of Eksteenfontein. These mountains consist of quartz, gritstone and sandstone of the Stinkfontein formation. North of the Stinkfontein formation are the granite Ploegberg or Goariepberge. To the east of the Stinkfontein formation, between the Kuboesberge in the north and Cornellsberg in the south lies a distinctive mountain range called Rosyntjieberge. It consists of hard quartz and stretches from east to west. The limestone Neint-Nababeep plateau lies in the south eastern Richtersveld and stretches for 30 km to the south.

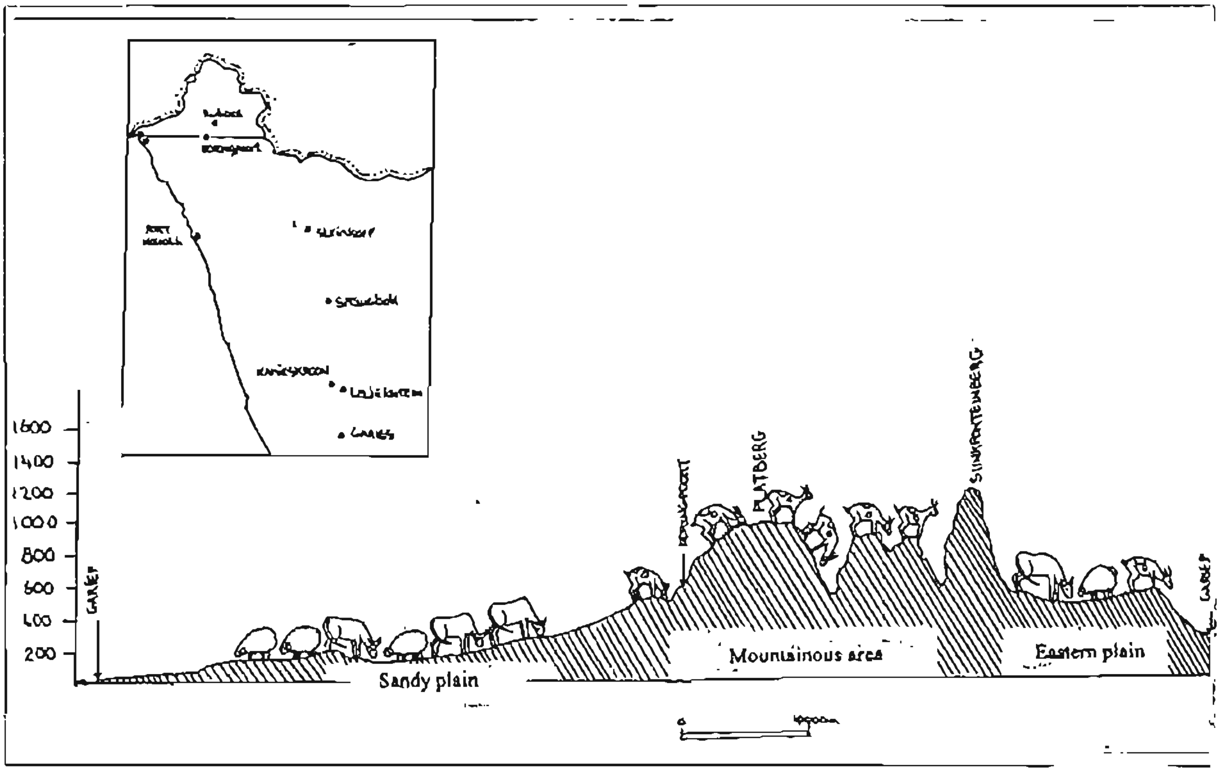


Figure 4.1 Diagrammatic transect of the Richtersveld

There are two perennial rivers in the Richtersveld: the Orange river and the upper reaches of the Gannakoriep (Van Jaarsveld 1981). The Northern and Eastern parts are drained by the Orange river, and these areas are defined by numerous dry water courses. On the south western side of the Stinkfontein formation the drainage courses disappear into the sandy western coastal plain. The Holgat river, which flows directly into the Atlantic ocean, is an exception (Van Jaarsveld 1981).

In the mountainous regions permanent natural springs, such as those at Stinkfontein and Leliefontein, often occur. The granite potholes of the Ploegberg are natural catchments and provide water for considerable periods after rain has fallen. Pastoralists are often found with their herds in the vicinity of these springs and potholes, but both humans and animals more generally depend on subterranean water sources. These sources are limited, however, and the lack of water, together with the mountainous and rocky terrain, make the area unsuitable for economic, or even subsistence, cultivation (Boonzaier 1980).

CLIMATE

An intimate understanding of local climatic factors, and their effects on plant and animal life, is inherent in Nama tradition and lifestyle. The nomadic movements of the Nama-speaking Khoi were, as seasons changed and conditions fluctuated, dictated largely by the need to be where the irregular and inconsistent rainfall was most plentiful, and plant life consequently most abundant. The single most important event in this arid climate, both botanically and socially, is rainfall.

Rainfall in the Richtersveld is unpredictable. It does not only vary from area to area, but also, within the same areas, from season to season, and from year to year. The figure given is based on averages collected over a number of years from various sources, and any interpretation of it must take the variability into account. The figure's function is limited therefore, when compared to others based on information taken from more homogeneous areas.

The largest portion of the region receives winter rainfall - usually from May to September - with a precipitation that varies from approximately 15mm to 300mm; most of which falls in the central mountainous regions. The mountains form a buffer that creates a rain shadow in the extreme east. This, together with the high temperatures ensuring rapid evaporation of any rain which does fall in the area, causes true desert conditions to prevail there for most of the year, and often for many years in succession. Sporadic thunderstorms do occur in this eastern region at intervals of not less than seven years. While these can result in a display of flowers that turns the area into a desert paradise, most of the water is rapidly drained away or evaporated, and as a consequence does not penetrate deep into the soil. Also, the flash floods these thunderstorms give rise to can do a great deal of damage.

In the Western coastal areas the fog from the icy Atlantic ocean is another form of precipitation that plays a significant role in the sustaining of vegetation. The fog also travels up the Orange river valley, where a rich variety of xerophytic plants testify to the presence of the extra moisture(Van Jaarsveld 1981). More detailed information about the rainfall in the region is given in Archer (1992).

In the coastal regions, due to the influence of the cold Benguela current, temperatures during winter and summer remain remarkably constant; with the mean annual average range between 12 and 17°C. The interior is generally much warmer, and has a greater temperature range.

The cool southerly winds that blow inland from the coast lower the winter temperatures considerably. The warm easterly winds, which usually occur around August, dry out the veld and can destroy the annual plants.

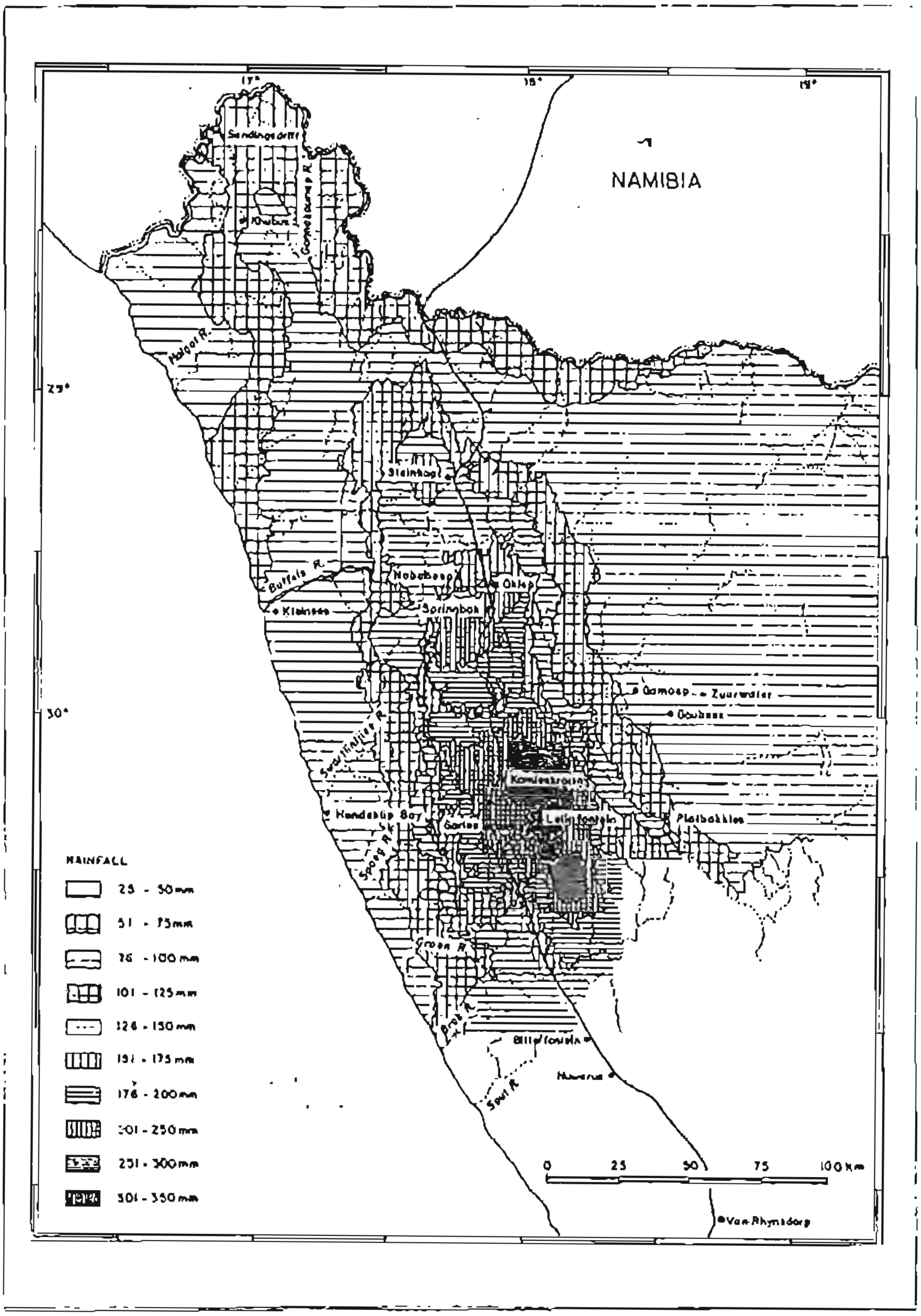


Figure 4.2 Rainfall of Namaqualand(Archer 1992a)

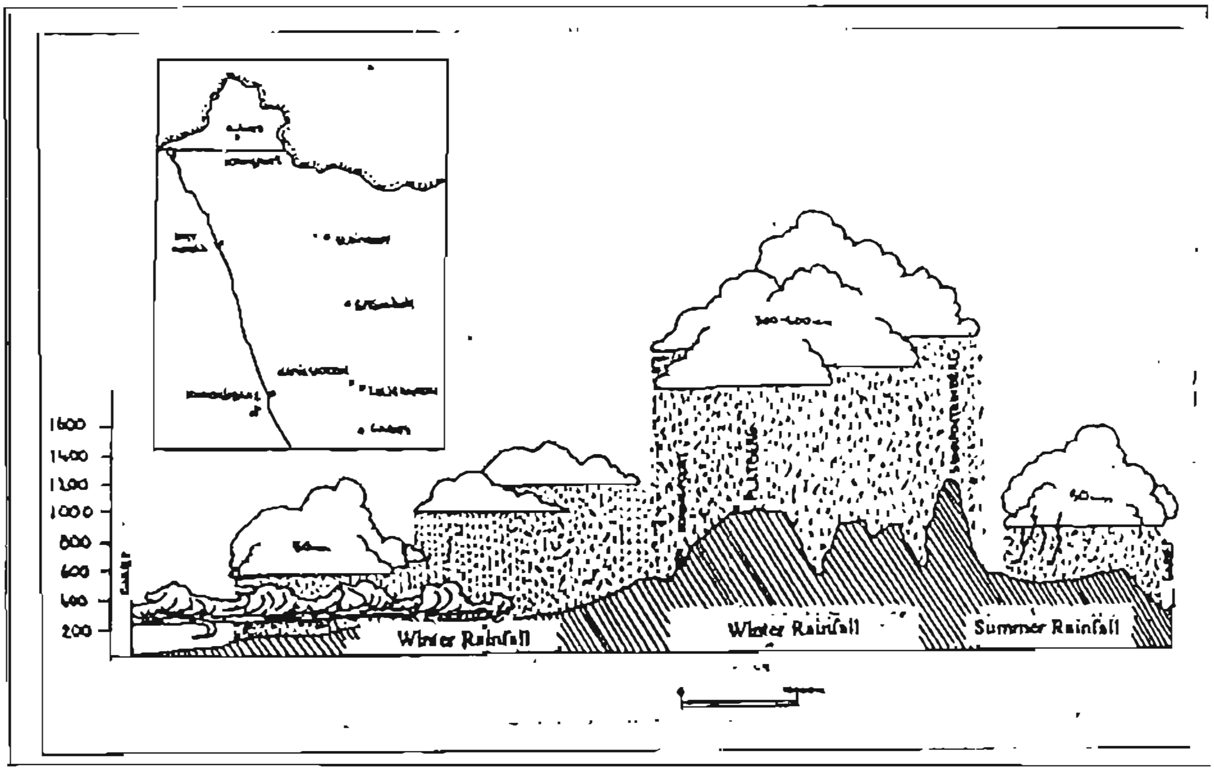


Figure 4.3 Rainfall in the Richtersveld(Archer 1992a)

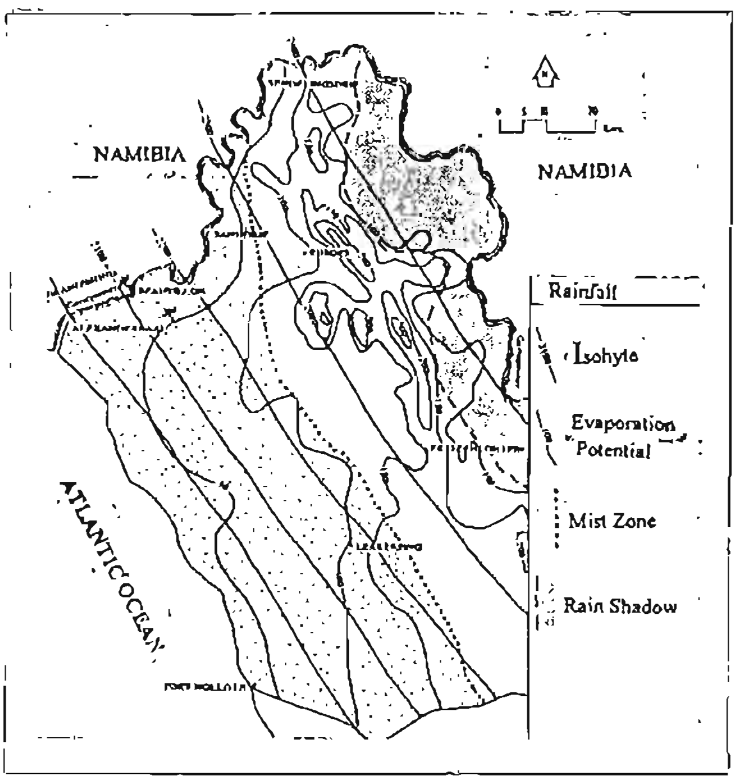


Figure 4.4 Precipitation in the Richtersveld(Archer 1992a)

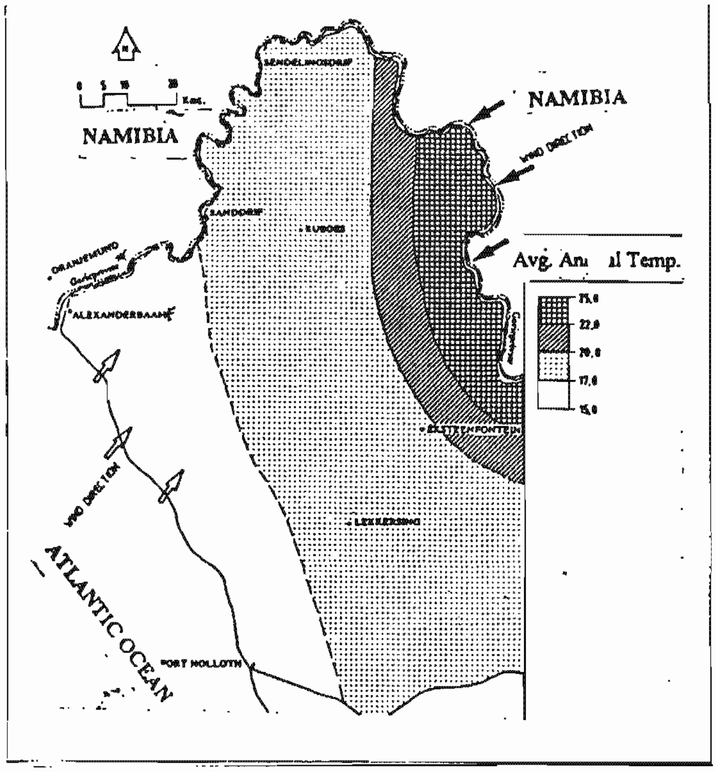


Figure 4.5 Average annual temperature(Archer 1992a)

VEGETATION

The types of vegetation can be divided into two groups (Van Jaarsveld, 1981).

a) The mesophytic vegetation along the Orange River.

The alluvium banks and islands of the Orange river are densely wooded with *Euclea pseudebenus* (the popular firewood in the area), *Tamarix usneuoides, Salix mucronata, Rhus viminalis* (edible fruit), *Ziziphus mucronata* (edible fruit), *Acacia karroo* (edible gum) and *Salix mucronata.* In the shallow water, and on the banks, the shrub *Gomphostigma virgatum* occurs, and in certain areas the reed *Phragmites communis* is abundant.

Shrubs such as *Kissenia capensis, Rogeria longiflora, Codon royenii* and *Rhus burchellii* are common on the flood plains.

Around the permanent natural springs such as those at Jammerfontein, Modderfontein, and Leliefontein, the vegetation is similar to that around the Orange River.

b) The xerophytic vegetation which Acocks (1954) divides into the following:

1. Strandveld in the coastal plain area. This area is dominated by Mesembryanthemaceae and *Osteospermum oppostifolium, Didelta carnosa, Wooleya farinosa* (swartvy)

and *Stoeberia* species. In the south *Othonna cylindrica* and *Cephalophyllum spongiosum* are found. *Pelargonium gibbosum* and *Pelargonium carnosum* are interesting succulent geranium types with edible leaves and stems (man and animal) and occur here. *Tetragonia fruticosa* is very abundant.

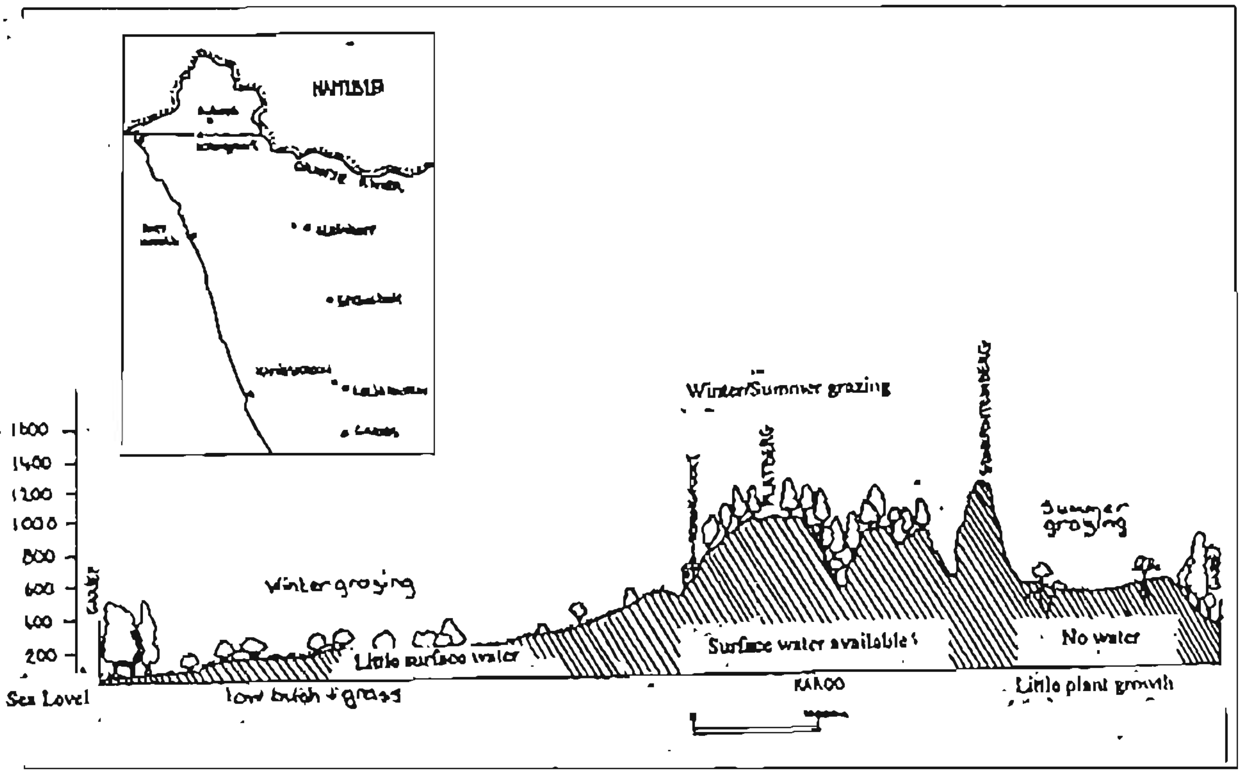


Figure 4.6. Diagrammatic representation of the vegetation of the Richterveld.

2. Succulent Karoo, east of the strandveld area. This area tends to be more hilly and stony in the east and more sandy in the west. The dominant plant in this area is *Euphorbia gummifera* (Van Jaarsveld, 1981). Near the Kuboes areas large sections are dominated by *Mesembryanthemum barklyii*. Inhabitants of the Richtersveld use this biennal plant to remove hair from skins. In the northern part, the succulent karoo area is dominated by dwarf succulents such as *Lithops herrei* and *Lithops helmutii*.

3. Namaqualand Broken Veld lies east of the central Stinkfontein mountain range and includes the northern and eastern parts of the Richtersveld. Van Jaarsveld (1981) calls this 'true Richtersveld' and subdivides the area into various types, including the *Euphorbia virosa, Commiphora* and *Tylecodon hallii* veld. The area is extremely barren and rarely visited by people. Part of it lies in a rainshadow. When it rains in the

Grasdrif area *Oxalis* species come up in abundance. In earlier times the corms of these species were collected (edible for man).

The Western Mountain Karoo is situated in the high altitudes of the mountainous parts of the southern and central Richtersveld (200 - 300 m). Vegetation is denser in this area. Thus it is, for many of the inhabitants, the best grazing area in dry summer months. They regard it, however, as an "emergency" grazing area and use it only at the driest times. The Mesembryanthemaceae are well represented and the largest vygie *Ruschia utilis* grows here. It is a very good firewood and is often collected by inhabitants.

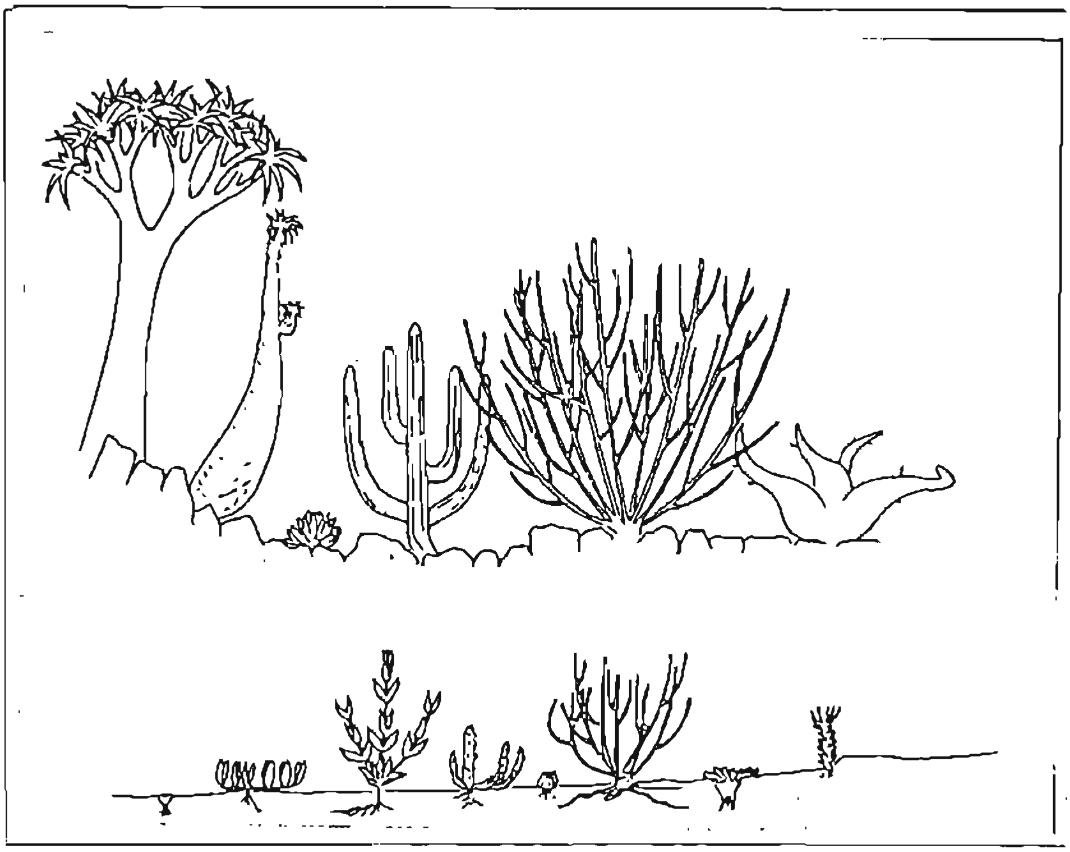


Figure 4.7. Type of vegetation from the Richterveld. From Jurgens (1993).

FAUNA

The Richtersveld had been noted for its rich variety of animal life. In the eighteenth century Paterson travelled along the Orange River, and recorded sightings of elephant, giraffe, hippo, rhino and lion. The big game has disappeared completely with the last rhino having been shot at Grootderm during 1925.

After sufficient rain, game still migrates from Namibia into the Richtersveld. Mountain zebra, vaal rhebuck, klipspringer, duiker and steenbuck are still plentiful. Predators such as leopard , brown hyena and bat-eared fox are relatively common. There are a few ostriches, and baboons and vervet monkeys along the Orange River frustrate many potential vegetable farmers.

Reptile life is plentiful and a survey completed during the mid 1970s recorded 25 species of snakes, 8 species of frogs and 60 species of lizards in the area.

This concludes the sections on the setting. The following four chapters explore the way in which plants are used as well as the user's view on the plants, why the plants are selected and some characteristics of the plants themselves. The bulk of the information on the different uses of plants is in Appendix 1.

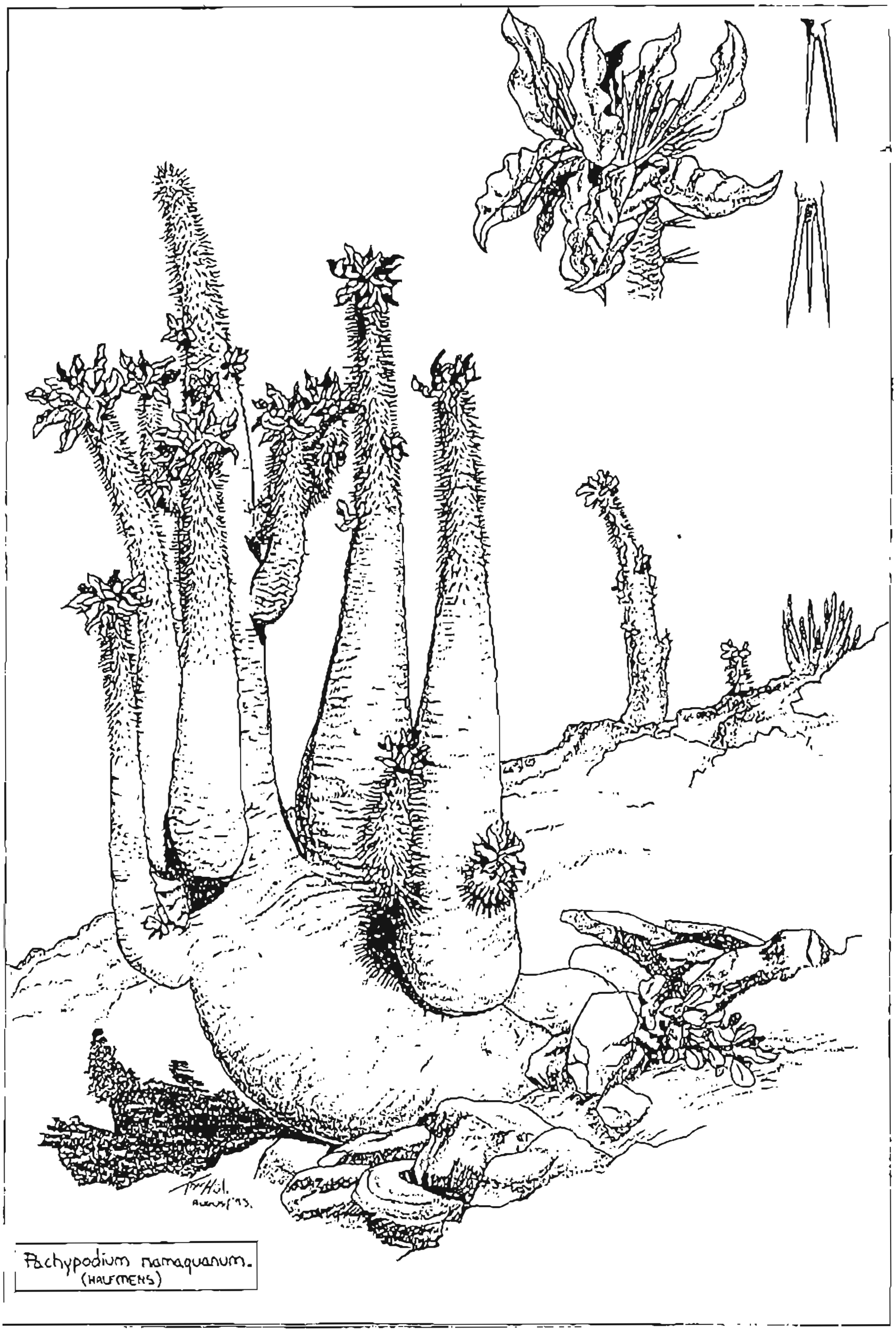


Figure 4.8 *Pachypodium namaquanum* - One of the reasons for the establishment of the Richersveld National Park was to protect this plant.

CHAPTER 5

A FEAST IN THE VELD

Oh, Heitsi-eibib,
Thou, our Grandfather,
Let me be lucky,
Give me game,
Let me find honey and roots,
That I may bless thee again,
Art thou not our Great-grandfather?
Thou Heitsi-eibib.

(Nama-song Hahn, 1880)

Interviews with people in Richtersveld indicate the importance of roots, bulbs, gum, honey, and milk in their early diet and it is clear that plant foods were one of the most important food resources in the past. Today, plants remain an important additive to the diet of children who snack on these resources (which they learn about from their mothers) whenever they can.

Early visitors to Namaqualand such as Van der Stel, Paterson, Gordon, Wikar, Alexander, Hoernle and many others, commented on the importance of plant foods in the diet of the indigenous inhabitants. Their observations are echoed by Cornell (1985) who claimed that the Nama Khoi existed upon a few edible roots and the gum of the thorn trees.

These resources are not abundantly available throughout the year and there is a period of scarcity during the dry summer months. Some food plants, however, are available during this latter period

KNOWLEDGE OF THE EDIBLE PLANTS

Detailed familiarity with plantfoods only exists with some of the middle-aged to elderly people in the Richtersveld. There is limited use of some plants as food among adults, while children extensively use some of the fruits and corms from certain plant species, including *Rhus viminalis*, *Cyphia* species and *Fockea* species, for snacking.

Although it was accepted by the local people that gathering of plant foods was a woman's chore in earlier days, it is interesting to note that today researchers are usually referred to some of the knowledgeable elderly men for information. Only when one gets to know people more closely do women come forward with information.

Today men collect snacks - such as the stems of *Caralluma mammilaris* - when they are out herding. This delicacy is shared by the family on his return. Women very rarely go collecting today. When they do, it is mostly the fruits of *Rhus viminalis* and/or the leaves and stems of *Oxalis* species. Both of these veldkosse are prepared as a porridge (see Appendix 1 for recipes). Children often go collecting and it is known that they have an intimate knowledge of the sweeter tasting plants, including *Cyphia sp.* and *Fockia sp.* (root stocks). The fruits of *Rhus viminalis* are also a great favourite. This delicacy is prepared in milk and eaten as a porridge.

THE EDIBLE PLANTS

More than 75 different edible plant species, which are available as food at different times of the year, have been identified in the Richtersveld. The plants are given in table 5.1 on the following page. Some abbreviations are used to indicate the use of the plants. For practical purposes the plant foods are divided into two categories: underground resources and above ground resources. 'E' is the abbreviation for edible; 'a' is the abbreviation which indicates that the edible part is above the ground (parts such as flowers, stems and fruits); 'u' indicates that the edible part of the plant occurs under the ground (parts such as roots and corms).

Table 5.1 Edible plants of the Richtersveld

Species	Code	Part Used	Species	Code	Part Used
Acacia erioloba	Ea	gum, pods	*Hydnora africana*	Eu	rootstock
Acacia karroo	Ea	gum	*Hypertelis salsoloides*	Ea	leaves
Albuca altissima	Ea	lower stems	*Manochlamys albicans*	Ea	leaves, seeds
Aloe dichotoma	Ea	nectar of flowers	*Mentha longifolia*	Ea	leaves, stems
Anacampseros papyraceae	Ea	dried stems & roots	*Microloma calycinum*	Ea	pods
Anacampseros sp.	Ea	stems	*Microloma sagittatum*	Ea	pods
Annesorrhiza altiscapa	Eu	roots	*Moraea fugax*	Eu	corm
Aptosimum sp.	Ea	leaf	*Olea europaea*	Ea	bark & fruit
Boscia albitrunca	Eu	roots	*Orbea namaquensis*	Ea	fleshy stems, flower buds
Bulbine praemorsa	Ea	leaves	*Oxalis copiosa*	Ea	whole plant
Carissa haematocarpa	Ea	fruits	*Oxalis obtusa*	Ea	whole plant
Cheilanthes capensis	Ea	leaves	*Oxalis obtusa*	Eu	corms
Codon royenii	Ea	flowers	*Oxalis pes-caprae*	Ea	whole plant
Commiphora capensis	Ea	fruits	*Oxalis pes-caprae*	Eu	roots
Crassula atropurpurea	Ea	leaves	*Oxalis spp.*	Eu	corms
Crassula columnaris	Ea	plant	*Ozoroa dispar*	Ea	fruit
Crassula elegans	Eu	roots	*Parkinsonia africana*	Ea	seeds
Cucumis myriocarpus	Ea	fruit	*Parkinsonia africana*	Eu	roots
Cyanella hyacinthoides	Eu	corm	*Pelargonium carnosum*	Ea	fleshy stems
Cyperus esculentus	Ea	lower stem	*Pelargonium gibbosum*	Ea	fleshy stems
Cyperus longus	Ea	stem under water	*Pelargonium tenuicaule*	Ea	leaves
Cyphia crenata	Eu	tuber	*Polemanniopsis marlothii*	Eu	corm
Cyphia digitata	Eu	tuber	*Quaqua (Caralluma)*	Ea	fleshy stems, flowers
Cyphia phyteum	Eu	tuber	*Rhus burchellii*	Ea	fruit
Cyphia sp.	Eu	tuber	*Rhus populifolia*	Ea	fruit
Cyphia volubilis	Eu	tuber	*Rhus viminalis*	Ea	fruits
Cyphostemma bainesii	Eu	under ground stem	*Salix mucronata*	Ea	leaves & wood splinters
Diospyros ramulosa	Ea	fruit	*Sarcostemma viminale*	Ea	young shoots
Euclea pseudebenus	Ea	fruit	*Solanum tomentosum*	Eu	root
Euphorbia sp.	Ea	resin	*Tapinanthus glaucocarpus*	Ea	fruits
Ficus cordata	Ea	fruits	*Tapinanthus oleifolius*	Ea	branches, leaves
Ficus ilicina	Ea	fruits	*Trachyandra falcata*	Ea	young inflorescence
Fockea gracilis	Eu	tuber	*Trachyandra sp.*	Ea	flowers
Gasteria pillansii	Ea	buds, flowers	*Tribulus terrestris*	Ea	leaves
Grielum grandiflorum	Eu	root	*Trichocaulon alstonii*	Ea	fleshy stems
Grielum humifusum	Eu	root	*Viscum rotundifolium*	Ea	berries
Hermannia macro	Ea	leaves	*Whiteheadia bifolia*	Eu	tuber
Hermbstaedtia glauca	Eu	root	*Ziziphus mucronata*	Ea	berries

Figure 5.1 shows the seasonal availability of the edible plants. The period of abundance is generally from June to October.

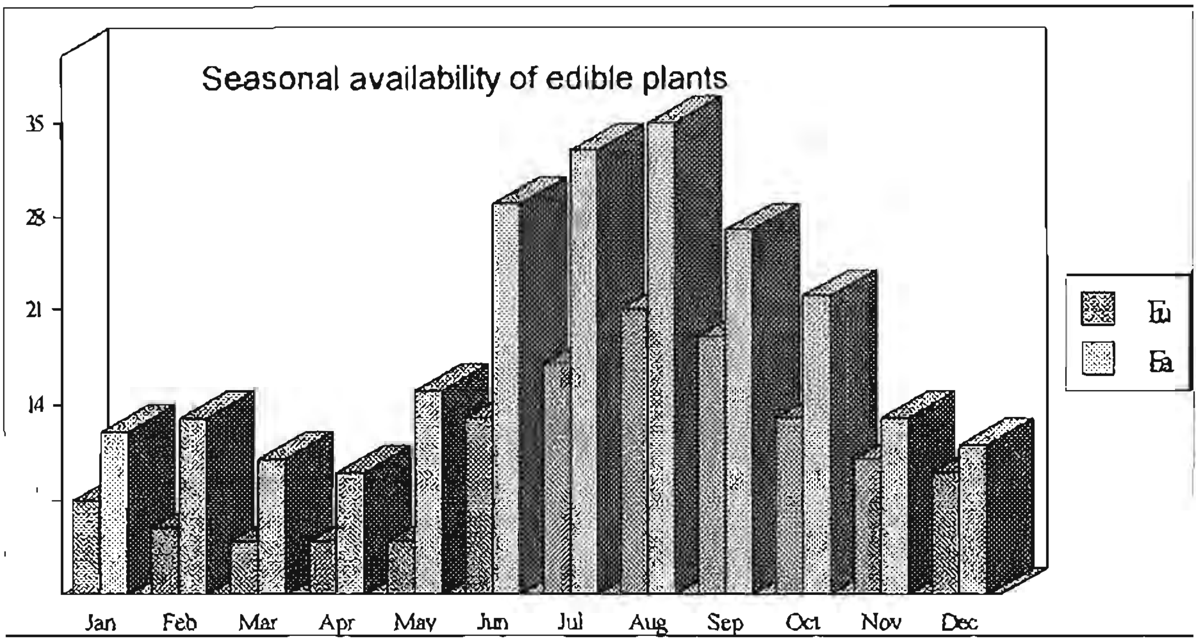


Figure 5.1 Seasonality of the edible plants

UNDERGROUND RESOURCES

In semi-arid to arid areas there is a preponderance of plant material below rather than above the ground. In these regions the below ground portion of the 'drought evaders' -perennial plants (geophytes and hemi-cryptophytes) - maintain a large part of their biomass below the ground ((Hatley & Kappelman 1980). The below ground portion of the plant is marked by storage parts that maintain a "reserve" of nutrients which can be used by the plant in droughts, or even after fire and grazing (Daubenmire 1968, Hatley & Kappelman 1980, Noy-Meir 1973). The underground plant food resources are the roots, rootstocks, corms and bulbs of plants. Hatley and Kappelman (1980) were the first to articulate the advantages of these underground tubers for humans as important nutrient resources, particularly of carbohydrates. They suggest that tubers could be a more stable food source than above ground resources in those environments which are subject to environmental vagaries such as drought, fire and grazing by other animals. They view tubers as having been critical to the early hominid diet during the dry season, when many other plants had dried up, not only as a source of food, but also of water (Vincent 1984). The underground edible plant food resources from the Richtersveld are listed below.

Table 5.2 Underground edible plants of the Richtersveld.

Species	Part Used	Species	Part Used
Anacampseros papyraceae	dried roots	*Grielum humifusum*	root
Annesorrhiza altiscapa	roots	*Hermbstaedtia glauca*	root
Boscia albitrunca	roots	*Hydnora africana*	rootstock
Crassula elegans	roots	*Moraea fugax*	corm
Cyanella hyacinthoides	tuber	*Oxalis copiosa*	whole plant
Cyphia crenata	tuber	*Oxalis obtusa*	corms
Cyphia digitata	tuber	*Oxalis pes-caprae*	roots
Cyphia phyteum	tuber	*Oxalis spp.*	corms
Cyphia sp.	tuber	*Parkinsonia africana*	roots
Cyphia volubilis	tuber	*Polemanniopsis marlothii*	corm
Cyphostemma bainesii	under ground stem	*Solanum tomentosum*	root
Fockea gracilis	tuber	*Whiteheadia bifolia*	tuber
Grielum grandiflorum	root		

ANNUAL SEASONALITY

During the dry summer season in Namaqualand (November - March)(Fig 5.1) underground foods are generally unpalatable because they are dry and fibrous. Their above ground parts such as the stems, leaves and flowers dry up, decay and/or blow away in the warm months, so that many of the subterranean parts are difficult to find. The above ground parts grow during the winter months of June, July and early August. It was after this period, when the corms had swollen to full size, that harvesting of the underground resource became an important aspect of the daily activity of many of the women who depended upon this resource to feed their families.

After the autumn rains the subterranean parts of the plants start growing and swelling. Depending on when the first rains fall (rarely from January, more generally between March and April) most of the plants are usually visible by June. Many of them flower around August or September, and it is from this time that many of the plants with underground food resources are edible. Roots and rootstocks are usually considered edible quite early in the year. *Grielum humifusum*, for instance, can be harvested as early as June/July if the first rains are early. At this stage *Grielum humifusum* is still quite small in relation to the size it can become, and is also fairly watery. At this time of the year it is usually seen as a thirst quencher rather than a food. It becomes prized later in the season when it has "dried out" a bit. *Grielum humifusum* has a particularly long season of use. At least two inhabitants of the Richtersveld could remember their parents collecting these roots in December/January. They recognised it by the dry leaves, dug up the roots, pounded it and made a porridge with milk.

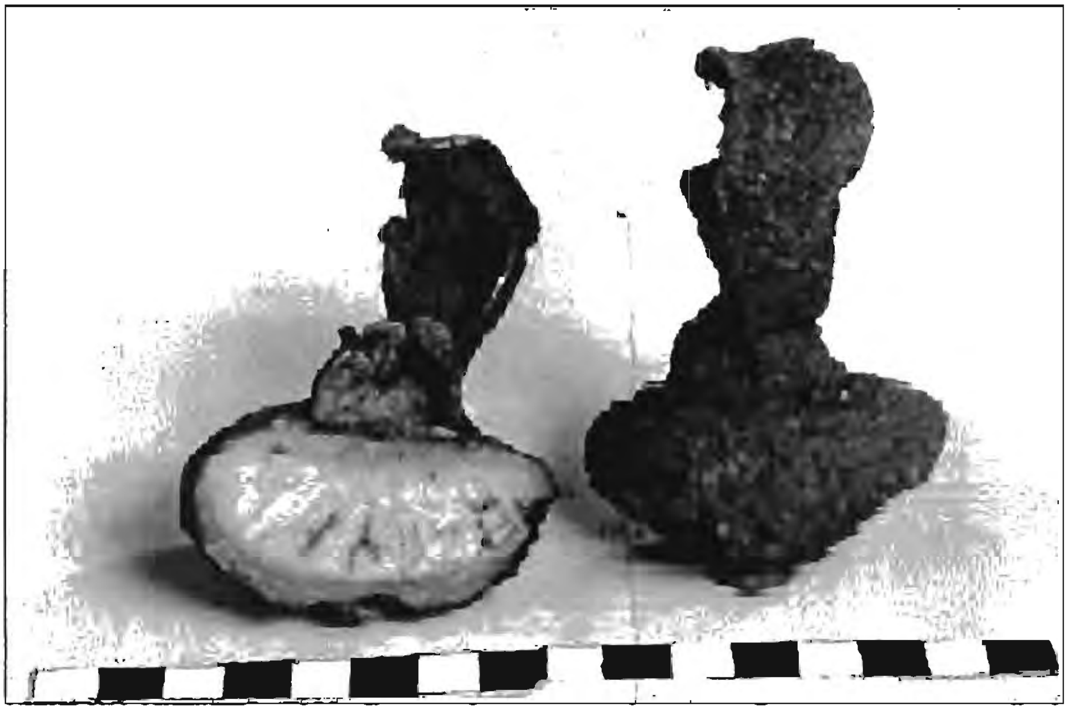


Figure 5.2 ***Hydnora africana*** **(cm scale)**

The fruit of *Hydnora africana(Fig 5.2)*, a parasite which grows on the roots of *Euphorbia* species - mostly *E. mauritanica* - is edible from about October to November when cooked; from late November to December when raw (see Appendix 1) This plant was probably more abundant before overgrazing and cultivation in the Namaqualand territory diminished populations of its host plants *(Euphorbia* species*)*

Corms and bulbs are generally edible from the end of July until October. However, certain *Oxalis* species (such as *O.comosa*) are edible in June. The important plants *Cyanella hyacinthoides(Fig 5.3)* and *Moraea fugax(Fig 5.4)* are edible from about the middle of August. The local people speak of the underground resources as "being there" ("hulle is daar") and of being "ripe" ("ryp"). When a plant is "there" it is not yet considered edible. It is called "ripe" when edible. Corms and bulbs which are not considered "ripe" are usually prepared in way which makes them more palatable, such as roasting.

Figure 5.3 ***Cyanella hyacinthoides*** **(cm scale)**

The time of year during which plant foods are available is variable. This can be the result of a number of factors, such as altitude. Observation in certain areas has shown that under ground plant food resources are available slightly later in the colder, higher parts of the Kamiesberg (Leliefontein, Nourivier, Twee Riviere) than in the lower-lying areas of Garies, Spoegrivier, Springbok and the Richtersveld. The difference in availability is about one month. This means plant foods in the Sandveld are available sooner than those in the Hardeveld. Plants in which this phenomenon were observed are *Cyanella hyacinthoides*, *Moraea fugax* and *Grielum humifusum*. Inhabitants of the Richtersveld mentioned that, in the past, they moved from one area to the other as the vegetation in different areas "ripened".

Figure 5.4 ***Moraea fugax*** **(cm scale)**

Further interviews indicate that transhumance patterns of pastoralists took them to the Sandveld in the colder and wet months of June/July/August but they moved towards the mountains (to be near permanent waterholes) and the Orange river during the warmer months of spring (September). This fits in well with the availability of plant foods. Given that the underground foods are plentiful for three months of the year, and available for about 4 - 5 months, (starting July-September in the sandy low-lying areas and August-October in the higher-lying mountainous areas), then it is apparent that they would have provided Nama speaking Khoi with an abundant resource for at least four months of the year.

The seasonal variability of plant foods must not be confused with the variability associated with plant food locality. Some plants grow more abundantly in the high-lying areas and some more abundantly in the low-lying areas. *Moraea fugax* grows in both areas, but is more abundant in the low-lying areas.

There is a further annual variability in the time in which the same plants of the same area are edible. In a previous chapter it has been shown how rainfall varies through time, across space as well as in quantity. This variability is a major environmental determinant as plant growth and abundance are very dependent on the area's rainfall and temperature. Some species are more affected by these climatic determinants than others. *Cyanella hyacinthoides* and some of the *Oxalis* species seem less affected by the variability in rainfall. Further, personal observations show that some plants are more abundant when the first rains fall earlier in the year when it is still warm. The *Oxalis* species seems to be more abundant if the rainfall is earlier rather than later.

If the first rainfall occurs during the colder months of May and June, it seems to affect the size of the corms. Corms were very much smaller during 1983 when the rainfall was quite late. This may have to do with the "short" season of growth of above ground parts which creates surpluses through its above ground parts during photosynthetically active periods. Unfortunately no literature is available on the seasonal variability in corm size for the underground plant foods. The above observations were made very informally and need to be supported by research.

Generally, early rainfall and warmer temperatures by August can affect the season of plant food utilisation, principally underground resources, by as much as a month. In other words, underground plant foods in a specific area may be available a month earlier or later than their usual period of August. In some areas such as the transition zone between the winter rainfall area and Bushmanland, no rain may fall in a specific year which restricts the underground plant foods available to the most hardy of plants (such as *Hydnora africana*).

HOW UNDERGROUND PLANT FOODS ARE RECOGNISED.

Underground plant foods are recognised by their above-ground parts The significant above ground parts may be leaves, flowers or disturbances in the soil which are barely visible. *Moraea fugax* is recognised by its tall grass-like leaves, and is more easily identified in sandy areas than in the more densely-vegetated mountainous areas. It is, for example, very easily spotted in the sandy areas of the Richtersveld. *Hydnora africana* is a parasite and is almost hidden by its host (usually *Euphorbia mauritanica* in Namaqualand.) Before it is "ripe" it is difficult to spot from a distance. Towards the end of November, however, it may be traced by the sweet smell it emits. The flower that protrudes usually does not have the edible fruit underneath it, as the fruit develops from the previous year's flowers but the locality of the edible fruit is often recognised by disturbances in the soil, or could be traced through the position of the dead flower of the previous season. The most difficult species to find are *Cyphia* and *Fockea* species. They grow in the shade of other bushes and have fine creeping stems with tiny leaves which can easily be overlooked.

According to the inhabitants of Richtersveld the above-ground parts of mature plants do not always indicate the size of the underground resource. In some plants, such as *Pelargonium rapaceum*, which has leaves similar to that of a carrot (according to inhabitants), foliage density and length do indicate the size of the tuber. *Hydnora africana* fruit can be estimated from the disturbance in the soil and/or from the size of the protruding dome of the fruit. Generally, however, the size of the resource cannot be estimated from the above-ground mature plant.

This phenomena is, of course, more important in those species which show great variation in size than in others which are more uniform in size. There is a large corm size variability in some species. The corms of *Cyanella hyacinthoides* which were removed at the same place and time show very little difference in size. *Fockea angustifolia* corms, however, differ remarkably in size.

Species are known to grow larger than average in certain areas. *Moraea fugax*, for instance, grows larger and more abundantly in the sandy areas than in the Hardeveld areas. According to interviews, people would visit areas up to half a day's trip away to harvest this resource in the sandy areas which provide bigger corms - the long journey being considered worth an overnight stop.

HOW UNDERGROUND PLANT FOODS ARE HARVESTED

A digging stick was used to remove subterranean plant food resources from the soil. Digging sticks were popularly made from the branches of *Maytenus linearis* or any straight hardy branch which was available in the area. Some people mentioned that digging sticks were often made where plant foods were found and then not discarded after use. The digging sticks which were kept were those which had been used during a particularly successful harvest. They could have been made from branches such as *Olea africana* as well as *Maytenus linearis* which were sharpened on one end, usually by scouring it against granite boulders. The grooved stones, described by Smith (1985) and Webley (1986), could possibly be stones used to sharpen digging sticks. When a woman (who did most of the gathering of underground resources) used such a digging stick for the first time, and her harvest was good, the digging stick became a prized possession as it was seen to bring good luck. Hoff (1984) mentions that a woman's hands were strewn with a sweet-smelling 'buxu' to bring her luck when she went harvesting. If her harvest was successful, either in terms of abundance or quality of food found, then she would eat some of the food before she went gathering again to maintain the good luck.

Today metal digging sticks called 'uintjie ysters' are generally used. They are extremely highly prized, and are borrowed only by family members. Some people have a collection of 'uintjie ysters' of varying sizes which are selected for use according to the kind of terrain in which harvesting takes place. 'Uintjie ysters' of approximately one centimetre diameter are used for digging in sand; whereas larger sticks/irons are used to extract corms from cracks in rocks. The 'uintjie ysters' vary in length from about 0,75 meters to just over one meter. One end is usually flattened so that it fits comfortably into the palm of the hand.

After the plant has been removed from the soil a preliminary cleaning process ensues: branches, leaves, roots and stems. Traditionally the "food" was then put in a small leather bag and transported to the stockpost. In the past, harvesting plants for food did not necessarily take place close to the campsite as these resources did not always grow near the dwelling-place. Day trips were, therefore, undertaken to gather supplies.

PREPARATION OF THE UNDERGROUND RESOURCES

The preparation of plant foods is described in detail in Appendix 1. Although most of the underground plant food resources can be eaten raw in small quantities, most of them are more palatable when cooked.

The underground resources were traditionally roasted or boiled in milk. The tunic around the corms and bulbs was usually not removed when roasted, but when boiled the entire tunic was usually removed. The debris was burnt as it was said to attract insects as well as scorpions. (The fact that such a thorough cleaning operation took place, of course, has serious implications for archaeologists.) When roasted in ash, care had to be taken that "poisonous" firewood such as *Ozoroa dispar* or *O. concolor* was not used as it could contaminate the food and affect palatability, or even cause toxicity.

Some of the underground resources such as *Fockea angustifolia* and *Cyphia* species were never cooked. These were usually consumed raw in the veld as snacks.

Figure 5.5 *Cyphia* unidentified species (cm scale)

With the advent of Europeans in Namaqualand there was a shift in popular cooking methods from cooking in ash to cooking in black tripod pots. The inhabitants of the Richtersveld made many trips into Port Nolloth to acquire these pots, often bartering traditional leathercraft in exchange. (Clay pots were used in the past, but today the inhabitants have no recollection of the manufacture or use of clay pots.)

ABOVE GROUND RESOURCES

The above ground food resources are fruits, berries, flowers, stems, pods, gum, nectar and branches of different plants. Unlike the underground resources, which are generally available from late winter to late spring, the seasonal availability of above ground food resources is more spread throughout the year.

Table 5.3 Above ground edible plants of the Richtersveld

Species	Part Used	Species	Part Used
Acacia erioloba	gum, pods	*Mentha longifolia*	leaves
Acacia karroo	gum	*Microloma calycinum*	pods
Albuca altissima	lower stems	*Microloma sagittatum*	pods
Aloe dichotoma	nectar of flowers	*Olea europaea*	bark & fruit
Anacampseros papyraceae	dried stems	*Orbea namaquensis*	fleshy stems, flower buds, flowers
Anacampseros sp.	stems	*Oxalis copiosa*	leaves, whole plant
Aptosimum sp.	leaf	*Oxalis obtusa*	leaves
Boscia albitrunca	flowers	*Oxalis pes-caprae*	leaves
Bulbine praemorsa	leaves	*Ozoroa dispar*	fruit
Carissa haematocarpa	berries, fruits	*Parkinsonia africana*	leaves, seeds
Cheilanthes capensis	leaves	*Pelargonium carnosum*	fleshy stems, new growth
Codon royenii	flowers	*Pelargonium gibbosum*	fleshy stems
Commiphora capensis	berries, fruits	*Pelargonium tenuicaule*	leaves
Crassula atropurpurea	leaves	*Quaqua (Caralluma)*	fleshy stems, flowers
Crassula columnaris	plant	*Rhus burchellii*	berries
Cucumis myriocarpus	fruit	*Rhus populifolia*	fruit
Cyperus esculentus	lower stem	*Rhus viminalis*	fruits, seeds
Cyperus longus	stem under water	*Salix mucronata*	leaves & wood splinters
Diospyros ramulosa	fruit	*Sarcostemma viminale*	young shoots
Euclea pseudebenus	fruit	*Tapinanthus glaucocarpus*	fruits
Euphorbia sp.	resin	*Tapinanthus oleifolius*	branches, leaves
Ficus cordata	fruits	*Trachyandra falcata*	young inflorescence
Ficus ilicina	fruits	*Trachyandra sp.*	flowers
Gasteria pillansii	buds, flowers	*Tribulus terrestris*	leaves
Hermannia macra	leaves	*Trichocaulon alstonii*	fleshy stems
Hypertelis salsoloides	leaves	*Viscum rotundifolium*	berries
Manochlamys albicans	leaves, seeds	*Ziziphus mucronata*	berries

ANNUAL SEASONALITY

Generally many of the edible fruits are available from early until late summer. The fruits of *Diospyros* species (kanobie) ripen toward the end of October and may be available until the middle of December. *Rhus burchelli* fruits (nara) which are regarded by the informed as one of the major food resources, are also available during this time. The fruits of *Rhus viminalis*, which grows on the banks of the Orange River, however, are available during the late summer (from the end of January for approximately two months). *Euclea pseudebenus* and *Ziziphus mucronata* fruits become available during January. The latter two species are very localised around the Orange River and its tributaries.

The gum of *Acacia karroo* and *A. erioloba* is collected throughout the year. However, in summer (November to March) the trees produce more gum than in the colder months as the gum is manufactured to prevent evaporation of moisture from parts of the tree. When the gum is removed the tree produces more to cover the "injured" part. It is precisely during the hot summer months that plant resources as well as other food resources are scarce, with the result that the high production of gum is considered very timeous by the inhabitants of Richtersveld.

Figure 5.6 Woman grinding gum of *Acacia karroo*

Depending on when the first rains fall, edible material from the family Stapeliaceae is usually available from April. About three weeks after the first rains, young shoots of *Quaqua mammilaris, Orbea namaquense* and other succulents appear. Many of these juicy and sweet stems are eaten raw. Later in the season, around June, the plants flower and produce pods which are highly regarded as delicacies. The family Crassulaceae provides food from about July, in the form of young stems which are often used to brew beer or are eaten raw.

During the famous Namaqualand spring flower time from the beginning of August to the end of September, the nectar of many flower species is consumed. The slower growing *Pelargonium* species also produces young edible stems at this time. This period is a time of abundance of other plant food resources.

The above ground resources are more vulnerable to variation in climatic conditions than the underground resources. For example, the fruits of *Rhus burchelli* sometimes do not reach maturity and rot, or occasionally the production of fruits is very low. Anecdotal evidence suggests that during the years when the wheat, oats and rye harvests are good, the !nara (*Rhus burchelli* fruits) are similarly abundant. This suggests that regular rainfall, which is the most important determinant in the production of wheat in these areas, is a prerequisite for the production of fruits of *Rhus burchelli.* During particularly dry years the fruits of *Diospyros* species as well as *Ficus* species become quite unpalatable because of the lack of moisture in the fruit. The most predictable of the above ground food resources are probably the fruits *Rhus viminalis,* the gum of *Acacia karroo* and *A. erioloba.*

HARVESTING ABOVE-GROUND RESOURCES

Two of the above-ground plant food resources, the gum of *Acacia karroo* and the fruits of *Rhus viminalis* can be regarded as central to the early diet of the inhabitants of Richtersveld. Trips were made with the specific aim of harvesting these resources. The gum of *Acacia karroo* was removed from the trees with a "hakstok" - a long stick with a bend in the top. The gum was transported to the dwelling-place in leather bags. Here it was either used or was dried, pounded and stored in leather bags for use later. The fruits of *Rhus viminalis* were also collected with a "hakstok" - usually made from the branches of *Ziziphus mucronata.*

The fruits of *Rhus burchellii* were obtained by spreading skins under the host bushes and then hitting the branches so that the dried fruits dropped onto the skins. The fruits could be stored in leather bags for a considerable time.

Many of the other above-ground food resources were consumed as snacks. Herders, as well as women, often brought small quantities back for children at the dwelling-place. However, most of these resources such as the fruits of *Diospyros* species and the young succulent stems of STAPELIADS were/are consumed on the spot.

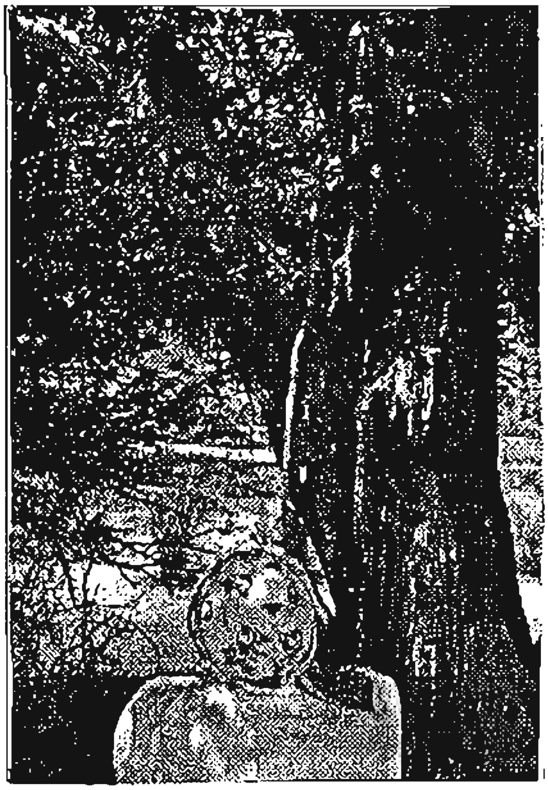


Figure. 5. 7 Woman removing gum from *Acacia karroo*

PREPARATION OF THE ABOVE-GROUND RESOURCES

All preparations are described in Appendix 1. Above-ground food resources were mostly consumed raw. However, some, like gum of *Acacia karroo* were often boiled with honey and/or fruits of *Rhus* species. This formed a sticky sweet. The fruits of *Rhus* species were soaked in milk overnight, and then consumed as a porridge. Young stems of *Pelargonium* species were often roasted. Apart from food from *Acacia karroo* and the *Rhus* species. above-ground food resources were rarely stored as these resources were mostly perishable.

EVALUATING PLANT FOOD RESOURCES.

AN EMIC PERSPECTIVE

From personal interviews it was established that the inhabitants of Richtersveld do not regard all of the above plants as being of equal importance in their diet. The system of criteria priority is complex, but it is clear that the most important aspects considered by people when evaluating plant species as food resources were the following: the nutritional value of the plant; availability in terms of abundance, resilience, stability (see definitions Appendix), season and accessibility. Other factors, including taste and taboos, play a minor role as well One variable may be particularly important in evaluating a plant at a particular stage/time. This importance may vary from plant to plant, area to area, season to season as well as from one year to the next.

THE NUTRITIONAL VALUE OF THE PLANT

One of the most important criteria which people apply to edible food plants is whether they are a "strong" (sterk) food or not. People from Leliefontein as well as the Richtersveld distinguish between "strong" and "less strong" foods. Plant foods are considered as nutritious (strong) when they assuage hunger for hours. According to interviews the 'strongest' foods will leave one satisfied for the entire day. Species which are highly rated in this regard are the following:

Moraea fugax; the corms of which are roasted, or boiled in milk, mashed and eaten as a porridge in the morning. It is said that having had one's fill of this porridge in the morning, one would not be hungry until the next morning. *Cyanella hyacinthoides* and *Grielum humifusum* are also rated as highly nutritious foods. Both are either roasted or boiled. Fruits of *Rhus burchellii* and *Rhus viminalis* are soaked in milk overnight and consumed as a porridge in the morning, and they are regarded as one of the most nutritious of these foods.

Examples of species which are not regarded as nutritious as the above are *Fockea angustifolia, Carpobrotus edulis, Quaqua mammillaris.* Although these plants are not regarded as being nutritious, they are popular for other reasons, such as taste.

When one examines the nutrient table (Appendix 3) it is evident that those species which are considered "strong" generally have a relatively low moisture content (less than 70%) whereas, with the exception of *Carpobrotus edulis* (which has a moisture content of 69%), those foods which are not considered nutritious have a moisture content of more than 80%. Some plant foods, such as the gum of *Acacia karroo* and the fruits of *Rhus viminalis,* have a moisture content amounting to less than 15% of their total. This means that in bulk, fewer of the foods which are considered nutritious by the inhabitants will have to be collected to satisfy nutrient intake. The quality of these plant foods in terms of their nutrients, is discussed later.

AVAILABILITY

Abundance is a further important criteria in assessing the importance of a plant food. *Moraea fugax* was described as one of the more popular plant foods because it is abundant.

This species occurs especially densely in the red sandy soils on the western coastal plains in the southern Richtersveld. *Moraea fugax* is considered 'strong' and is more abundant than another 'strong' food *Chamarea capensis*. The latter has a very sweet taste, is regarded as a strong food, but only grows in isolated groups of about three to four individuals. For this reason *Moraea fugax* is rated more highly than *Chamarea capensis* as a plant food.

Because the *Cyanella* and *Moraea* species which have been mentioned are resilient, being able to withstand very dry periods as well as other hazardous conditions such as floods, they are stable and predictable food resources. This adds to their perceived importance. Certain localities are known for the abundance of these select foods. The Sandveld region of the Richtersveld, to the west of the village Lekkersing, is known for the most abundant supply in the Richtersveld of *Moraea fugax* (in the red sandy areas).

The **season of availability** is also important in determining the priority rating. The gum of *Acacia karroo* is abundantly available in the dry summer months (November to March). The hotter and drier it becomes, the more gum is produced by the tree as a protection against loss of moisture through evaporation. This means that gum is plentiful during a period of relative scarcity of other plant foods. *Acacia karroo* (as well as *Acacia erioloba)* is thus seen as an important plant food, and was classified as a 'strong' food by people who were interviewed. In fact, many people who were interviewed about their diet in summer (a nutritional stress period) mentioned that one of the most important components of their diet during this time was gum. This is confirmed by literary resources, such as Cornell (1985).

The **accessibility** of the food supply is a function of the behaviour of the various food resources, the methods used to exploit them, the ethnology available and the terrain in which the resources are found (Bailey & Davidson 1983). Some plant foods are time consuming and difficult to harvest, and therefore inaccessible. *Cyanella hyacinthiodes* is seen as "strong" a food as *Moraea fugax*. But the former is not as accessible as *Moraea fugax* which grows on sandy plains with the corm about 5cm - 20cm underneath the surface. *Cyanella hyacinthoides* grows in the more rocky patches in the Richtersveld and can usually be harvested only with a very strong digging stick, making it less popular than *Moraea fugax*. However, it is always worthwhile attempting to harvest this plant resource, because it is delicious as well as very nutritious. In other areas, further south in Namaqualand, interviews indicate the importance of

Cyanella hyacinthoides over and above the importance of *Moraea fugax* - here *Cyanella hyacinthoides* is more abundant (on the cultivated rainfed wheatlands).

Species such as the *Cyphia x* grow in very rocky places. Very often, when trying to locate the tuber by following the thin twining stem which is noticeable above ground, the stem breaks. The tuber is then lost. This is an expenditure of both time and energy with no return. Given that it is not a particularly strong food, and that there is risk involved in its harvesting, this food is not rated highly. However, it is sweet so is taken out regularly enough to have value in the diet particularly by adding diversity to the diet on a regular basis (see short discussion, later).

Oxalis species (commonly known as "uinjies") are reasonably abundant, but since these are difficult to harvest as well as having tiny corms, the species is less accessible as a food. Further, the preparation before the corms can be eaten is relatively time-consuming, so in spite the tastiness of the meal, the species is, therefore, not as popular as some other plant species.

OTHER

Another criteria applied to the importance of a food is **taste**. Few plants are seen as too distasteful to eat at all, but figs from the *Ficus* species are not collected often because of their unpleasant dry and sour ("frank") taste. To many people in Richtersveld (as well in Leliefontein) *Caralluma mammillaris* and *Orbea namaquenses* are considered the tastiest of all plant foods. Both these plants are often utilised, and are available as long as the rain lasts and for about one month afterwards. Further studies should take the published literature about taste into consideration as taste is not an exclusively cultural expression (Garb et al 1974, Bernstein & Sigmundi 1980, Erickson 1981). The importance of this sensory pleasure-displeasure has been pointed out as an important (biological) determinant of behaviour (Cabanac 1971).

A further criteria is **side effects**. The consumption of certain plants leads to unpleasant side effects. Although *Fockea angustifolia* has a sweet and tasty rootstock as well as quenching thirst very effectively, it is known to cause hunger pains shortly after being consumed. It is therefore often avoided, even when people are slightly hungry. Some of the *Babiana* species cause flatulence and are therefore appropriately called "poepuintjie". Analyses show that some of the species have high sugar content which can cause flatulence. According to inhabitants excessive use of this food is to be avoided.

The fruits of *Carpobrotus* species are still consumed daily when available, but are not rated highly as a food because the intake of a large quantity causes bad diarrhoea.

It is known that specific **cultural meanings and values** ascribed to food plants determine patterns of use or avoidance in any given population (Etkin 1987). In Namaqualand superstition plays a role in assessing the importance of a plant food. Older women advise young women against the use of certain *Ferraria* species because it is said that these species cause women's' breasts to move to their back. (Hence the name "draaipram"). Some foods are said to have bad effects on the psyche of the user while others are said to have good effect and should be consumed.

The abovementioned criteria should not be seen as the only criteria in assessing the importance of specific plants as food resources. The dynamic reassessment of species cannot be ignored. Certainly as the environment and social values and needs change, the priority of the plant foods change as well.

Interviews seem to indicate classing in the following categories which have been made up in conjunction with some of the elderly people who were interviewed. In the interview people were directed towards the classes which Lee (1979) suggested for the Kung San. Elderly people were not in agreement with these classes and after debate the following classes could be distinguished. It must be emphasised that people were strongly encouraged to develop classes of use - this is not the way in which they perceived the plants prior to probing. As this investigation does not aim at entering the debate about the hunter-gatherers mode of production vs. the pastoralist mode of production the differences will not be explored further. (It is important to note that environmental determinants would have played a role in these distinctions).

The classes and a short definition are as follows:

major	nutritious, abundant, easy to harvest, resilient, stable, predictable, tasty - at least 2 months of use.
minor	nutritious, abundant, easy to harvest, resilient, tasty, at least 2 months of use.
supplementary	reasonably nutritious (sometimes has side effects), reasonably abundant.
occasional	tasty, not all that abundant, usually short season.
rare	rare, tasty
beverage	used to make drinks
sweet	used occasionally by children

THE ETIC PERSPECTIVE

Just over forty of the plant food resources from Namaqualand were analysed for nutrients during the course of this research (Appendix 3, only Richtersveld species included).

The value of plants is usually assessed against a standard called Recommended Daily Intake (RDI). Recommended Daily Intake is difficult to use as various countries have set different standards. The WHO standard is lower than the British and American standards and some researchers feel that the lower standard is more appropriate. Therefore this table is referred to.

The carbohydrate content of 100 grams of the fruits of the *Rhus* species and the gum of the *Acacia* species is very high and an intake of 100g will satisfy the RDI standard. The carbohydrate content of these is approximately three times that of the potato and more than 10 times that of carrots and onions. Apart from the high carbohydrate content, the gum of *Acacia karroo* is also high in calcium so that it is an important element in the diet.

Cyanella hyacinthoides corms have a higher carbohydrate content than all the selected cultivated taxa, including potatoes. A 100g intake is more than 20 % of RDI. It is also a good source of Vitamin C; and its overall nutritional status is, in every respect, higher than that of the onion (Arnold, et al, 1985). The same is true for the corms of *Babiana dregei, Pelargonium incrassatum, P. antidysentericum* and *P. rapaceum* which also have a higher carbohydrate content than the selected cultivated taxa. Intake of a 100g constitutes more than 20 % of RDI. *P. incrassatum* - further has a high Vitamin C content. The *Moraea* species also show a relatively higher carbohydrate content than the selected cultivated species. *M.*

fugax has a high Vitamin C content and a relatively high Riboflavin content. *Mentha longifolia* shows high carbohydrate as well as calcium levels.

An interesting clustering follows when one combines the energy content and low moisture content. The plants can be grouped into categories >1 000, > 800, > 600, > 400, >200, >200 for energy content; and then grouped them with moisture content classes ranging form less than 40 % with 10 % intervals up to less than 100 %. Eleven classes were formed by clustering hi-energy low moisture in this way. The most "nutritious" class is class I with highest energy and lowest moisture content. The classes appear as follows:

CLASS I

Rhus burchelli
R. pendulina
Acacia karroo
Mentha longifolia

CLASS II

Moraea fugax
M. serpentina

CLASS III

Pelargonium incrassatum
P. rapaceum
Babiana dregei
Cyanella hyacinthoides

CLASS IV

Pelargonium antidysentericum
P. carnosum
Hydnora africana
Allium dregeanum
Carpobrotus edulis

CLASS V

Grielum humifusum

CLASS VI

Allium dregeanum

Microloma sagittatum

Diospyros ramulosa

CLASS VII

Allium dregeanum (leaves)

CLASS VIII

Oxalis spp.

CLASS IX

Ficus lutea

Gethyllis cilliaris

CLASS X

Microloma sagittatum

Quaqua mammilaris

Solanum nigrum

CLASS XI

Fockea angustifolia

Huernia namaquense

When comparing this table with the hierarchy of foods as presented earlier, it indicates that the energy value of plant foods played an important role in the natural selection of plant foods.

Three of the plants which fall into the category 'major' also fall into this class. A fourth plant, *Mentha longifolia* which falls into this category is interesting as it is consumed very regularly as a beverage. It is medicinal and is seen as having curative as well as preventative properties. The leaves are also eaten raw occasionally. This plant, therefore, falls in two categories as proposed in this dissertation, edible and medicinal. By establishing these two categories it appears that medicinal and dietary plants are conceptually and functionally discrete. However, this is not so, and an assessment of the quality of diet of indigenous people should include medicines - especially preventative medicines which are used regularly and, therefore, contribute to the diet Such an assessment of medicinal plants is not within the scope of this dissertation.

DIVERSITY

Diversity in food selection is in itself an advantage as consumption of a large number of different foods often improves the nutrient content of the diet and also spreads the risk of high intakes of harmful substances (A-Ogle 1990). A varied diet also increases palatability and this can contribute to a higher overall food intake. The nutrient content of many of the wild plants is high. They are rich sources of minerals such as calcium, iron, phosphorus and zinc as well as many vitamins especially carotenes and ascorbic acid. They also contain numerous other trace elements for which recommended intake levels have not been set.

A discussion of the nutritional contribution needs to also consider the bio-availability of the nutrients. Plant food resources contain many anti-nutritional factors which interfere with uptake or utilisation. One such a factor is oxalic acid, which interferes with calcium absorption as it forms insoluble calcium oxalates. Levels of oxalic acid can be high in many wild plants (Watt & Breyer-Brandwijk 1962; A-Ogle 1990) and *Oxalis* species is known for its high oxalix acid content, hence the name of the genus. Food resources from this plant species are collected from about May to November (various species) in Namaqualand. One of the forms in which *Oxalis* is consumed most regularly is as a porridge with milk. (See preparation in Appendix) It is possible that the anti-nutritional factor of the oxalic acid is overcome by the excess of milk which is consumed in this time. Several other anti-nutritional factors may also occur in high concentrations in specific resources - and it has been pointed out that customary processing to eliminate these high concentrations needs to be researched (A-Ogle 1988). The difference which the preparation can make is clear when the nutrient value of *Rhus burchelli* berries is examined. The nutrient value seems to drop remarkably after the preparation which makes the fruit more palatable so that vast quantities are said to be consumed when the fruits are prepared in this way. The importance of preparation of plants has, so far, been neglected in the studies on customary plant use and many studies have avoided it completely. Appendix 1 gives detailed information on the preparation of the plant food resources.

QUALITY OF DIET

Gathering food plants was only one way of obtaining food in Namaqualand, and a qualitative assessment of the diet of the inhabitants must necessarily take cognisance of the other components in the diet. From interviews it is clear that hunting wild animals, collecting honey, gathering insects as well as collecting eggs, were important and that the inhabitants carefully managed the resources in such a way that they would be as predictable as possible and subsequently provide a stable food resource.

HUNTING WILD ANIMALS

From literary sources which mention all kinds of game - from hippopotamus to mice - being hunted by the Nama-speaking people, it is clear that a large part of the meat diet of Nama-speaking people consisted of wild rather than domesticated animals. Today game is still hunted. Table 5.4 gives a list of the animals still regularly hunted in the Richtersveld.

Table 5.4 Animals still hunted at present

Family	Species
ARTIODACTYLA	Sylvicapra grimmia
	Oreotragus oreotragus
	Raphicerus campestris
HYRACOIDEAE	Procavia capensis
LAGOMORPHA	Lepus capensis
	Lepus saxatilis
	Pronolagus rupertris
RODENTIA	Hystrix africacaustralis

Identified from: Smithers (1986)

MANAGING INSECTS TO PROVIDE FOOD

Entomophagy continues to have some dietary significance for the population in Namaqualand. The energy value of insects is usually high, between 425 and 661 kcal per 100g. Crude protein values are high as well, and the larval and reproductive forms are also high in fat(Belovsky 1987). It is possible that the larvae of termites were an important source of protein during the early autumn months as stock are usually still very thin at this time.

Larvae of termites (popularly called rice today) are collected just after the first heavy rainfalls (April - May), when other animal and plant foods are quite scarce. The larvae are traced by finding the tracks of the termites. Knocking on the surface of the ground, it is possible to assess where the larvae are. These are then dug out and roasted. The larvae are quite a predictable food resource as the hole from which they are removed is always cleaned out and a rock placed over the centre part of it. This encourages the continued utilisation in this particular area, so that larvae can be harvested from the same spot annually. The digging up of termites is an arduous and time-consuming task. In spite of the strenuous aspect of the activity, termites are still collected today. The fact that, in spite of the time-consuming and arduous aspects, people still harvest the termites, supports the theory that hunter-gatherers tend to allocate time for hunting and gathering in a fashion that maximises their daily energy and/or protein intake rather than minimising foraging time (Belovsky 1987).

Larvae of bees are available around August/September and were a very highly rated food because of the richness and sweet taste. The larvae (called bread, today) were eaten raw, with honey. Only small quantities were consumed because of the richness.

Most informants in the Richtersveld and Namaqualand have commented on the importance of honey as a food in the past. This reiterates what many travellers into the area have written . Bee hives are carefully managed (by cleaning the area in which they occur and never removing all the honey) thereby increasing the predictable availability of the resource. From August to about October honey is at its most abundant. It is still available until May. However, during the last few months it is available as "sandsuiker". In the mountainous regions plain honey is available from the end of August until December, whereas it is available around the riverine areas from about January until March. This coincides with the major flowering time in the mountainous regions (which is in Spring) and the flowering time for the *Acacia karroo, A.erioloba* and *Ziziphus mucronata* trees in the riverine areas.

Honey is consumed as is, but also in the form of honey beer, which is drunk as a beverage and as a medicine. The preparation of honey beer involves other plants and the preparations can be quite lengthy to ensure that bitter tastes are removed and there are no side effects. A basic preparation of honey beer is to dry and grind the plant material which is to be used (see Appendix 1) so that a powder is formed. An infusion of the powder, cold water and a little honey is made. The mixture bubbles, and the water is regularly changed until the bad taste (usually of bitterness) goes away. Then much honey and water are added. The broth can be kept for up to eight days if it is kept cool. The dried "mos", or plant material, can be kept for up to a year or even more and is re-used regularly.

Honey beer is reputed not to cause hangovers. It is seen as a preventative medicine if consumed in small quantities. Women drink it post-natally in order to stimulate lactation. Unprocessed honey is used for chest ailments, mostly when mixed with vinegar.

The hives from which honey are removed are protected, so that the bees will return. When people move from the areas where bee hives are, the hives will be cleaned out - for instance spider webs will be removed and stones packed to protect the entrance so that the hive will remain "clean". When a badger has been inside a hive, it leaves a very strong smell and bees do not return to such hives. The smell is removed by putting a small burning bush into the hive to fumigate it.

Brown locusts were collected during spring (September). These were caught by setting alight the bushes on which they descended for the night. The roasted locusts were cleaned by pulling off the wings and legs, and consumed. Van der Stel (Waterhouse 1932) also mentions the utilisation of caterpillars for food.

Many ostrich eggs were collected as ostriches were abundant throughout Namaqualand. Children also collected the eggs of smaller birds.

LAST COMMENT

Clearly, there was a variety of food resources utilised by the inhabitants of Namaqualand. These resources were, however, not abundantly available at all times, so that for survival, the inhabitants had to be both flexible and resourceful in their utilisation of the resources. The local availability of plant foods coincides with the availability of pasture for stock. Seasonal movements of pastoralists as proposed by Webley (1984) and Archer (1992a) would have facilitated the use of edible plants in the immediate or neighbouring areas within a day's reach.

This concludes the chapter on edible plants. The chapters on medicinal plants and on firewood must be seen as closely related to this chapter as it has been pointed out that the distinctions between edible and medicinal plants is really a euro-centric model (Etkin & Ross 1982). this aspect will be explored further in the following chapter on medicinal plants. Firewood and fires are closely linked to the processing of food. It could be said, therefore, that a chapter on edible plants and processing of food should contain the information on firewood as well as the information on the edible plants.

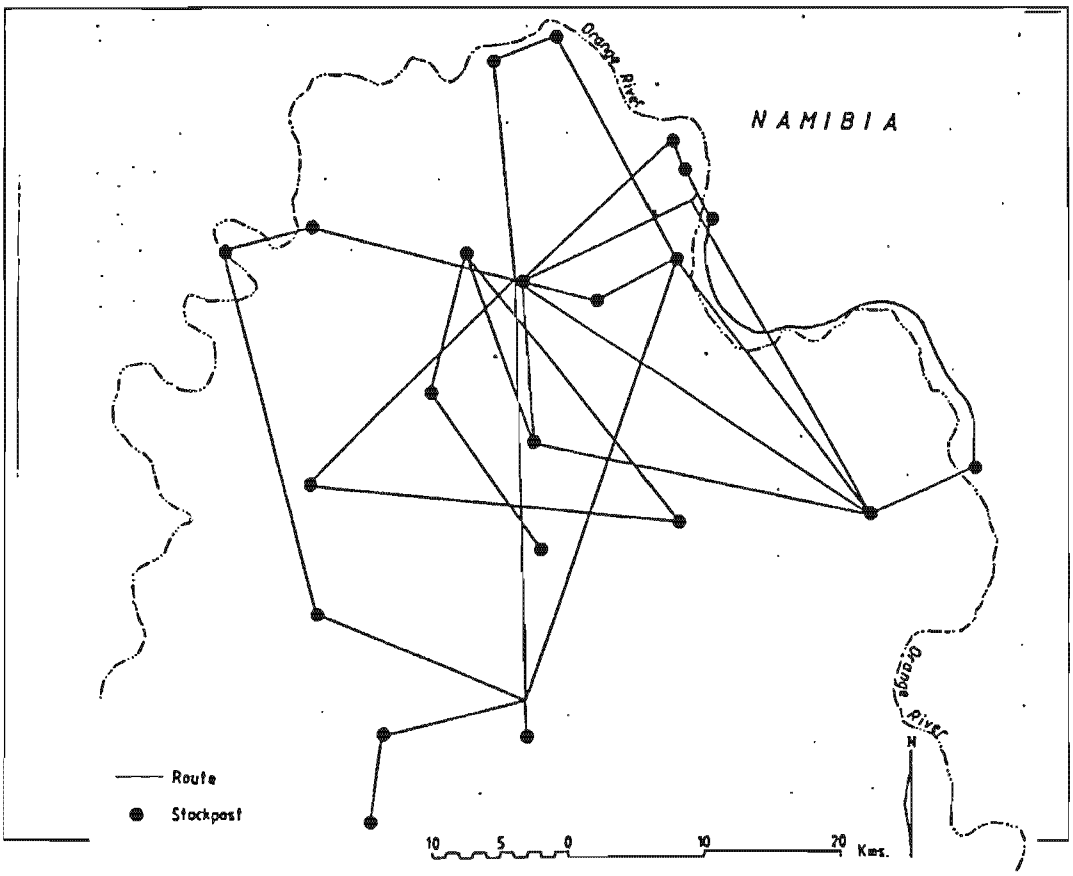


Figure 5. 8. Movements of one herd of goats over a period of forty years (1940-1980) indicates the vast distances travelled by pastoralists - even recently. From Archer 1992. (This information was gathered during a Participatory Rural Appraisal exercise during the late 1980s. Two people were involved in this time-line exercise which was completed over a period of about ten days. Approximately three hours per day were spent on the exercise. Triangulation was by interviews with two other individuals who also assisted in the compilation of the following illustration.)

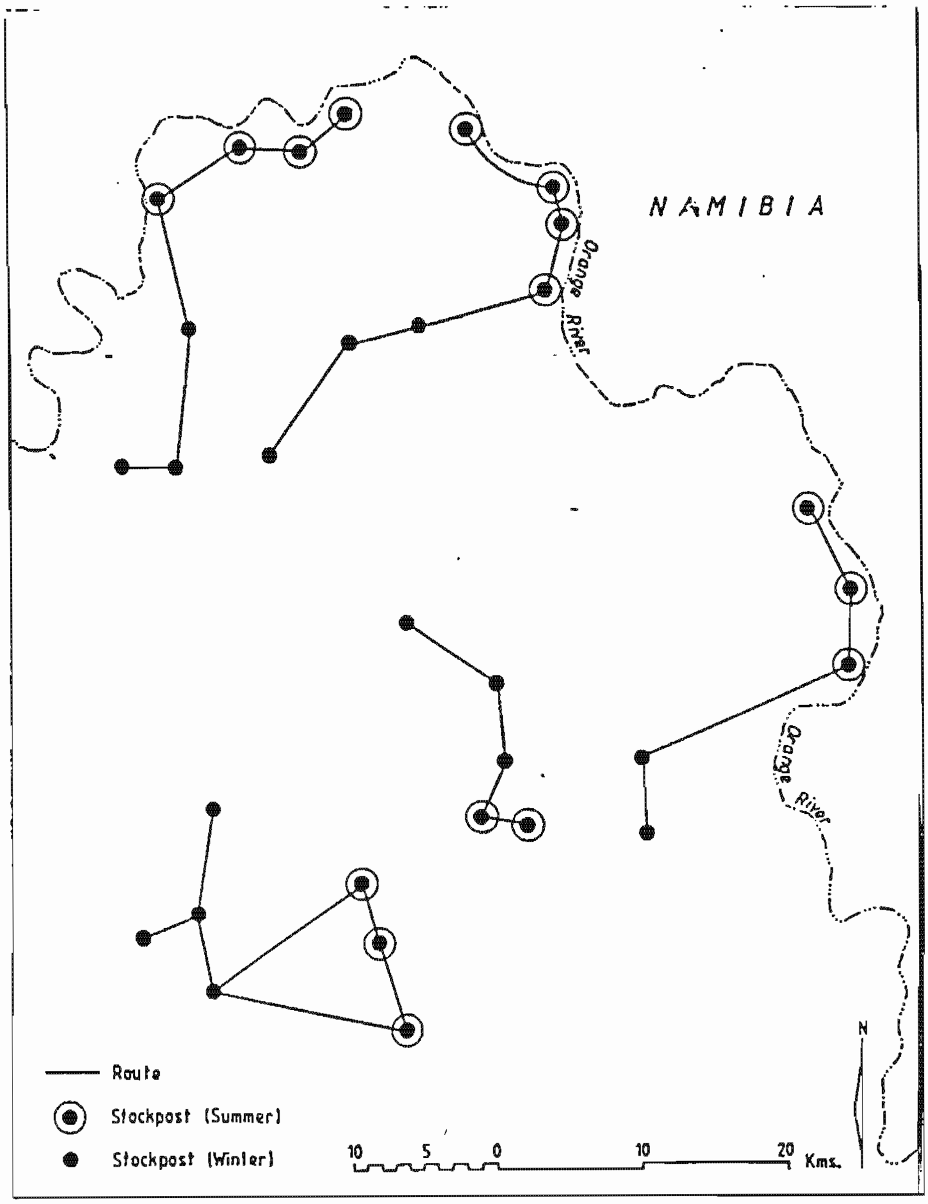


Figure 5.9 Major patterns of seasonal movements of herds in the Richtersveld National Park and surrounds. Period 1988 to 1991.

CHAPTER 6

A PHARMACY IN THE VELD

It has been pointed out elsewhere (Brown 1987) that the viewpoint that the function of plant medicines is simply the production of a desired physical response is too narrow. The use of plants as medicine is an integral part of healthcare, including the physiological well-being of users. This means that the use of plants is not merely an expression of biological need but an expression of social functioning as well. In the Richtersveld many of the users of plants as medicine remain anonymous and some of them are less than willing to talk about the use of plants. Some people still feel that they may be socially discriminated against or are aware that it is illegal to practise the harvesting of plants and other natural resources, including the fat of leopard, for healthcare. These attitudes are changing fast as people understand that they own a wealth of information which many people are keen to access - not to prosecute them but to recover and record the information. Most of the *attitudes* to medicinal plant use referred to in this chapter have been collected from the inhabitants of Leliefontein . Having worked in Leliefontein for years and built up a level of trust, the author was frequently invited by the inhabitants to accompany them when they went collecting plants - even if collections were made on land to which, legally, they had no acess. The more empirical information, such as the range of plants and the way in which plants are used, was drawn from both areas. Appendix I, however, covers only the information from plants which occur in the Richtersveld.

The use of herbs must be viewed in the context of a group's medical options (Messer, 1978) as the range of options exercised as well as the intensity with which a particular resource is used will depend on how many options can be utilised. The Nama-descendents in the Rural Areas choose from several different medical systems.

The first class of medicaments available to the inhabitants of Richtersveld are prescribed medicines in the form of injections, pills, syrups and powders. The government provides good preventative medical care through inoculations and instructions in primary child care (Whittaker & Archer 1984). Private and district doctors also provide "modern" medicine services. The district doctors visit Richtersveld at least once a month. This service is not easily accessible to all the inhabitants as only villages are visited. In the Richtersveld where many people are employed by the mines, access to curative health care is easy for many families because they have good medical funds.

Patent medicines are a second class of medicaments, which are sold over the counter by general stores. They are mostly traditional Dutch medicines such as "Lewensessens" as well as creams such as "Wonderlike Groen Salf".

Besides the above-mentioned, there is the class of folk medicines which are predominantly herbal. These herbal remedies, relative to expensive and inaccessible pharmaceutical products which are dispensed by pharmacies and hospitals, are freely available and are widely used, particularly amongst the poor who cannot afford the exorbitant fees of formal medical services. This investigation on the use of medicinal plants must be viewed as a rescue operation to recover as much information as is still available. As the range of healthcare options available to the people is broad, the use of plants for medicinal purposes is limited.

- the range of options in the Richtersveld is big enough that the use of plants for medicinal purposes is limited.

KNOWLEDGE OF MEDICINAL PLANTS

Detailed familiarity with and use of plant remedies varies greatly from person to person, but the knowledge of medicinal plants can broadly be subdivided into two categories:

A. General

B. Specialist

A. General

Many members of the communities in the Richtersveld have some knowledge of commonly used medicinal plants (Table 6.1). They recognise these plants and know where to collect them. This general kind of knowledge deals with the treatment of the more common ailments such as influenza, febrile complaints, colds, minor stomach ailments as well as burn wounds (which occur often) and cuts.

B. Specialist knowledge

As a guideline specialists can be subdivided into three categories.

1. The herbalists (home doctors). Certain members in the community, usually at least one or two in every village, know more about the use of herbal remedies than most people. If, for instance, children have a persistent cold, the herbalist will be visited. They usually keep a collection of fairly diverse remedies, and will often have substances which are difficult to obtain. If the herbalists are not successful in their treatment of the patient, the patient will consult a herbalist-healer, or send the patient to the herbalist-healer.

2. Herbalist-healers are seen as people with a special talent and vision. According to the inhabitants they have a keen knowledge of the efficacy of medicinal plants and, in addition, are able to cure supernatural diseases such as illness resulting from witchcraft. They can establish whether their patients are ill as a result of something tangible or whether the illness has resulted as an act of witchcraft. When a person is suffering from illness as a result of witchcraft, people in Leliefontein commonly say that the person suffers from 'baljas'. Certain specific plants are used to cure people from this kind of ailment. The most renowned healer, Willem Berend, was said to command an esoteric knowledge of herbs and the nature of good and evil.

3. Midwives. Not only women fall into this category; men can also be an "ouma". They have knowledge of illnesses related to pregnancies, sterility and uterine disorders.

THE PLANTS

More than 45 different species are used for medicinal purposes. These are shown in Table 6.1. Some abbreviations are used to indicate the use of the plants. For practical purposes the plants are divided into two categories: underground resources and above ground resources. 'M' is the abbreviation for medical; 'a' is the abbreviation which indicates that the useful part is above the ground (parts such as flowers, stems and fruits); 'u' indicates that the part used plant occurs under the ground (parts such as roots and corms).

Of these, approximately 20 are used regularly (14 of these are asterisked in the table, while three of the plants: rabas, galbos, griepbos have not been identified). These are the more herbaceous plants which are used for influenza, for pains and aches and for stomach ailments. Herbalists-healers travel extensively to get appropriate herbs and people who visit family or friends will often return home with some of the local herbs. Herbs are also sent to family and friends in other areas who need particular remedies, illustrating that plants which are used medicinally in any specific locality may have been harvested far away. Although certain popular plants do not occur in all of the areas it is common for people to know about some of the more popular species.

Table 6.1 Medicinal plants

Species	Code	Part Used	Species	Code	Part Used
Acacia erioloba	Ma	bark	*Gorteria diffusa**	Ma	flowers, leaves
Acacia karroo	Ma	bark from branches	*Hermannia stricta**	Ma	leaves
Acacia karroo *	Mu	bark from roots	*Hypertelis salsoloides*	Ma	leaves
Aloe dichotoma	Mu	roots	*Mentha longifolia**	Ma	leaves
Aloe pearsonnii	Ma	leaves	*Nicotiana glauca**	Ma	leaves
Annesorrhiza altiscapa	Mu	roots	*Nymania capensis*	Ma	leaves
*Antizoma miersiana**	Mu	roots	*Oxalis pes-caprae*	Ma	leaves
Aptosimum sp.	Ma	leaf stem	*Pelargonium antidysentericum*	Mu	caudex
Arctotis aspera	Ma	leaves	*Pteronia lucilioides**	Ma	leaves
Asclepias fruticosa	Ma	latex, leaves	*Rhus burchellii**	Ma	leaves
Asclepias fruticosa	Mu	fresh/dried roots	*Ricinus communis*	Ma	leaves, seeds
*Ballota africana**	Ma	leaves	*Salix mucronata**	Ma	
Boscia albitrunca	Ma	leaves	*Salvia dentata**	Ma	leaves
Boscia albitrunca	Mu	roots	*Sarcocaulon crassicaule*	Ma	branches
Cotyledon orbiculata	Ma	stem	*Sarcocaulon patersonii*	Ma	stem
Crassula elegans	Mu	roots	*Sarcostemma viminale*	Ma	latex
Crassula muscosa	Ma	leaves	*Sutherlandia frutescens**	Ma	leaves
Cyperus marginatus	Mu	roots	*Sutherlandia frutescens*	Mu	roots
Cyphia phyteum	Mu	roots	*Tamarix usneoides*	Mu	roots
*Dicoma capensis**	Ma	leaves	*Tulbaghia dregeana**	Ma	leaves
Diospyros lycioides	Mu	roots	*Tulbaghia dregeana**	Mu	corms
Euclea pseudebenus	Mu	roots	*Ziziphus mucronata*	Ma	bark, leaves
*Galium tomentosum**	Mu	root	*Ziziphus mucronata*	Mu	roots

HOW MEDICINAL PLANTS ARE SELECTED.

It has been pointed out (Etkin 1987) that the use of plants in a particular medical system is consistent with the prevailing medical cosmology (including concepts of illness, disease etiology, expected sequelae of preventive and therapeutic measures). It is, therefore, important to understand the foundations for discerning cognitive categories (Etkin 1987), which play a role in the selection of plants for medicinal purposes.

In Namaqualand most people see illness as a result of something tangible, e.g. one gets an upset stomach after having drunk water which was dirty, as a result of stress and/or as a result of having been bewitched. Illness is seen as an imbalance in the body's health system, and the treatment chosen is directed towards restoring the harmony of health.

Any illness or physical discomfort (which is recognised as an illness) is treated. This treatment may be patterned in accordance with the belief that an attribute of the plant will indicate its usefulness, e.g. Laidler (1928) points out that red substances are used to cure anaemias and weaknesses. The idea here is that because they are red and the blood is red they strengthen the blood. If the plant also grows on red ground it increases the value of the medicine tremendously (Laidler 1928).

The selection of the plants may also be guided by the anticipation of a physiological response which is seen as appropriate for the illness, e.g. stomach complaints are often seen as a result of having toxics in the stomach which have to be eliminated. In treatment for diarrhoea, therefore, which is seen as signifying that the body is trying to eliminate poisons preparations with a diuretic response will be chosen.

Treatments are often chosen to restore harmony e.g. for hot feet, plants which have an effect of cooling the feet will be packed in shoes. This hot-cold binary opposition is familiar in Mexico, Latin America and in parts of Africa, Asia and Europe (Etkin 1987). Sweet-bitter oppositions are recognised - e.g. when the stomach is uncomfortable after too many sweets have been consumed an infusion of the extremely bitter *Sutherlandia frutescens* is taken.

Some tastes and scents of plants are also seen as an indication of their curative powers. In general, most bitter plants are seen to be very effective for treating stomach ailments. It has been shown (Etkin & Ross 1982) that bitters act as sialogogres and gastric mucosal stimulants and, thus, have an appetite enhancing as well as digestion-facilitating effect. The scents of, for example, *Mentha longifolia*, as well as the *Salvia* species, are seen as indicative of their usefulness as a cure for colds. In selecting plants, therefore, people will often taste or smell the plants to asses their usefulness. During this investigation I took some medicinal plants which are endemic to the Cape Town area to Namaqualand. The plants were tasted and smelt - and the women interviewed suggested the same medicinal uses for the plants as the women from whom the plants had been bought on the Cape Town parade. Further experiments with Namaqualand plants on healers from Cape Town indicates that healers have a strong sense for their use. A decision to use a plant for medicine can be quickly taken on the grounds of its smell or taste. Plants from the same genus but different species were also recognised as similar to known species.

HARVESTING THE MEDICINAL PLANTS

Plants to be used as medicine are collected mostly from the early spring to early summer (August - November). This includes the growth period for plants in the winter rainfall region of Namaqualand. During this growth period, perennial plants are considered to be 'getting to full strength'. When the drier period of early summer arrives, the plants are "at full strength" medicinally. Annual plants are popularly collected in early spring, when they are still growing. These are considered to be at maximum strength at this time. Collecting the correct plant at the right stage of development or time of the year is considered necessary for maximum concentration of active compounds. Evidence of the primacy of biological status has been proved elsewhere (Croom 1983). Lewis & Elvin/Lewis (1979) for example, have observed that most polyploids grow more slowly than their diploid counterparts, resulting in later fruiting and flowering in the former case. Therefore, for the chemical evaluation of harvested plants, it is preferable to describe the plant's stage of development rather than the time of year that it was collected.

Some of the plants are collected in the mountainous regions, where herbaceous and tree species occur. Plants which are regularly collected are found over a wide area but are regarded as being more potent in some areas. *Mentha longifolia* which is widespread and abundant in many riverine localities in Leliefontein is regarded as being more potent if it grows in the vicinity of Paulshoek, than if it grows in the vicinity of Nourivier. The plants which come from the Paulshoek area certainly have a much stronger aroma than the plants from the Nourivier area. This probably indicates a stronger concentration of volatile oils in the Paulshoek plants. More research is needed to establish why these differences occur.

PREPARATION OF MEDICINAL PLANTS

In customary medicinal practises plants are rarely used in their crude form. Many simple and composite medical preparations are rather utilised. The preparations often increase the palatability of the remedy and make ingestion easier. More importantly, it can decrease the toxicity of plants or increase the potency. The safety of many plant remedies, therefore, depends on the preparation of the medicine and, indeed, the total therapeutic regime (Croom 1983). Details of therapy, gathering plants and preparations, are reported in Appendix 1.

Some of the more general preparations are listed below:

A. For internal use

1. Hot infusions: where the plant matter is steeped in hot or boiling water. The leaves of *Mentha longifolia, Ballota africana, Salvia dentata* and *Salvia lanceolata* are used for influenza and colds in this way.

2. Decoctions: when the material is boiled or simmered in hot water. The leaves of *Sutherlandia frutescens* are boiled and the extremely bitter decoction is drunk to cure stomach ailments.

3. Powders: when the medicine is dried and ground or burnt and the ashes used. Some medicines are ground to prepare them for storage so that they are available during drier times of the year. The gum of *Acacia karroo* is stored in this way. These powders are also used as snuff, especially in the treatment of influenza. The dried and powdered root of *Asclepias cancellata* is used in this way.

B. For external applications

1. Poultices: usually plasters made of leaves, which can be used hot or cold. The leaves of *Melianthus pectinatus* are applied to relieve backaches or pains in the legs and the leaves of the well established exotic *Nicotiana glauca* is applied to burns and open wounds.

2. Lotions: liquid extracts which are made from infusions or concoctions, and dropped on or poured upon the affected part or parts. The juice of the leaves of *Carpobrotus edulis* is dripped onto sore gums to relieve pain. Watt & Breyer-Brandwijk (1962) confirm the anaesthetising components of the species.

3. Ointments: when the vegetable matter is mixed (usually with fat), into a paste and smeared on the body. Often clays, ash and rock salts are used in ointments. The black oil from crushed seed of *Ricinus communis* is applied to the face as a protection against sunburn.

4. Vapour baths: prepared by boiling plants in big pots. The patient crouches over the pot to inhale the steamy fumes of decoctions of *Mentha longifolia* for colds and influenza. Vapour baths are also used by midwives in post-natal treatments. The leaves of *Melianthus pectinatus* are used in this way.

Most of the above-mentioned preparations are simple. However, some plants require quite a lengthy preparation before they are used. Kougoed or Channa (*Sceletium* species), one of the most popular medicines today, is picked and then buried in the ground for a couple of days to rot (or ferment). When it is taken out, it is dried, and kept in leather bags. This lengthy preparation is deemed necessary to prevent uncomfortable side effects, such as headaches and nausea. Much work has been done on analysing this plant for its medicinal compounds. Its efficacy as an anaesthetic as well as a psychoactive (through alkaloids) has been established (Popelak & Lettenbauer 1967). It is interesting that the mesembrine alkaloids were first discovered from the preparation from Namaqualand. It is as a result of the alkaloids that the medicine has a narcotic effect (Popelak & Lettenbauer 1967).

One of the fundamental concepts in the medical use of plants is that therapeutic benefits are strengthened through using mixtures of different plants; and in Namaqualand specific species can be isolated which are commonly used in preparations (if they are available).

Other basic ingredients are:

Mentha longifolia (leaves)
Salvia species (leaves)
Rhus burchellii (leaves)
Ballota africana (leaves)

Often medicinal plant mixtures contain a combination of substances which are not purely botanical. Animal fat is combined in poultices, rock salts are included in ointments, etc. The stomach content of the porcupine, *Hystrix africaeaustralis,* which feeds on roots of plants, is often mixed into an infusion of *Sutherlandia frutescens* for stomach complaints. The liver of the "D'aie" jackal, also known as aardwolf (Proteles cristatus), is also often used in the preparation of medicines for infants. Ostrich eggshell and ash are also ingredients of medicines. Laidler (1928) mentions a remedy "oubae C/namop" which consisted of burnt and powdered ostrich egg shells which were mixed with the tail fat of sheep or goats and rubbed into children's chests when they had snuffles or lotyza.

Laidler (1928) mentions other non-plant materials which were important medicines earlier, such as the inspissated urine and faeces of the dassie (*Procavia capensis*), which is used (infusion) for dry confinements as well as for poisoning. It is also rubbed into snake bites and scorpion stings. These uses persist today.

Earlier, nasal mucus, hyena dung, skins drawn warm off living animals (the latter is still used today); lizards, beetles and cupping horns (open ox horns) etc. were used for various ailments. Massage continues to play an important role in health care. It must be emphasised that the use of plants as medicine represents only one aspect of health care.

PLANTS FOR COSMETIC USE

Some of the earliest sources of information about the use of plants for cosmetic purposes (decoration, ritual, perfume) come from the writings of the early travellers who travelled into Namaqualand. They commented on the pigments used as well as the patterns with which women decorated their faces. Paterson (1790) and Mossop (Wikar) (1935) all mention the use of decoration on the faces of Nama dancers. Rudner (1982) has made a comprehensive study of the Khoisan pigments and paints when she tried to establish the relationship between the rockpaintings and decorative procedures. She made a very detailed examination of references to use of substances for cosmetic purposes. The following draws heavily from her literary research.

The cosmetics used by the Nama-speaking Khoi consisted of various substances, including plants. Fat was probably the most frequently used ingredient, taken from sheep, cattle, goats, game and fish. Other substances included dung, blood, urine, minerals such as hematite, hyraxeum, water, eggs and milk .Rudner (1982) lists references to plants which were used as follows:

Table 6.2 Plant sap used by the Khoi

Reference	Area	Plant & Part Used
Downtown 1610 et seq.	Saldanha, herders	'Juice of hearbes' on bodies and hair
Kolb 1731	Cape	Sap of Hottentot fig with cow-dung to clean new-born
Mentzel 1787	General	Sap of Hottentot fig after use of cow-dung to clean new born
Hoernlè 1918	Orange River	Brew of Euphorbia sap to cleanse widow (ritual)
Hoernlè 1918	Walvis Bay	Ground naras pips, goat dung and fat mixture to cleanse widow
Laidler 1928	General	Dagga leaves and fat for pain in eyes
Laidler 1928	General	Euphorbia milk for warts

(Rudner, 1982)

Interviews with inhabitants of the Richtersveld corroborate the use of natural resources as cosmetics. Plant products which were used varies from the gum of *Acacia karroo* to the oil from *Ricinus comminus* and the powder of certain fungii. According to the Richtersveld inhabitants, the main aim of the use of the plants is to protect the skin against the sun and against the brown pigmentation which occurs after women have children. Some elderly women in the Richtersveld still use the powder of a fungus for this purpose. While the use is for practical reasons and as a sunblock today, it is clear from the early writings that the use of cosmetics had a wider symbolic meaning earlier and that the cosmetic use of plants was an important part of ritual in Nama society. (Table 6.3)

Rudner not only comments on the early traveller records but also did fieldwork north of the Richtersveld with Nama-speaking informants. Fig 6.1 (on the following page) is an illustration which combines some of the patterns mentioned by the early travellers, Nama-speaking descendants of the Great and Small Namaqualand, and Rudner's research and the author's research on the patterns used by women to beautify themselves.

One of the most important aspects of cosmetics was the importance of sweet-smelling plants which were said to bring good fortune and ward off evil. In most of the important ceremonies sweet-smelling plants were subsequently used. Women in the Richtersveld have shown how talcum powder is produced from the roots of an indigenous plant which grows in the mountains beyond Kuboes. Hoff (1990) corroborates the importance of sweet-smelling herbs which were strewn on the hands of women who went collecting plant foods.

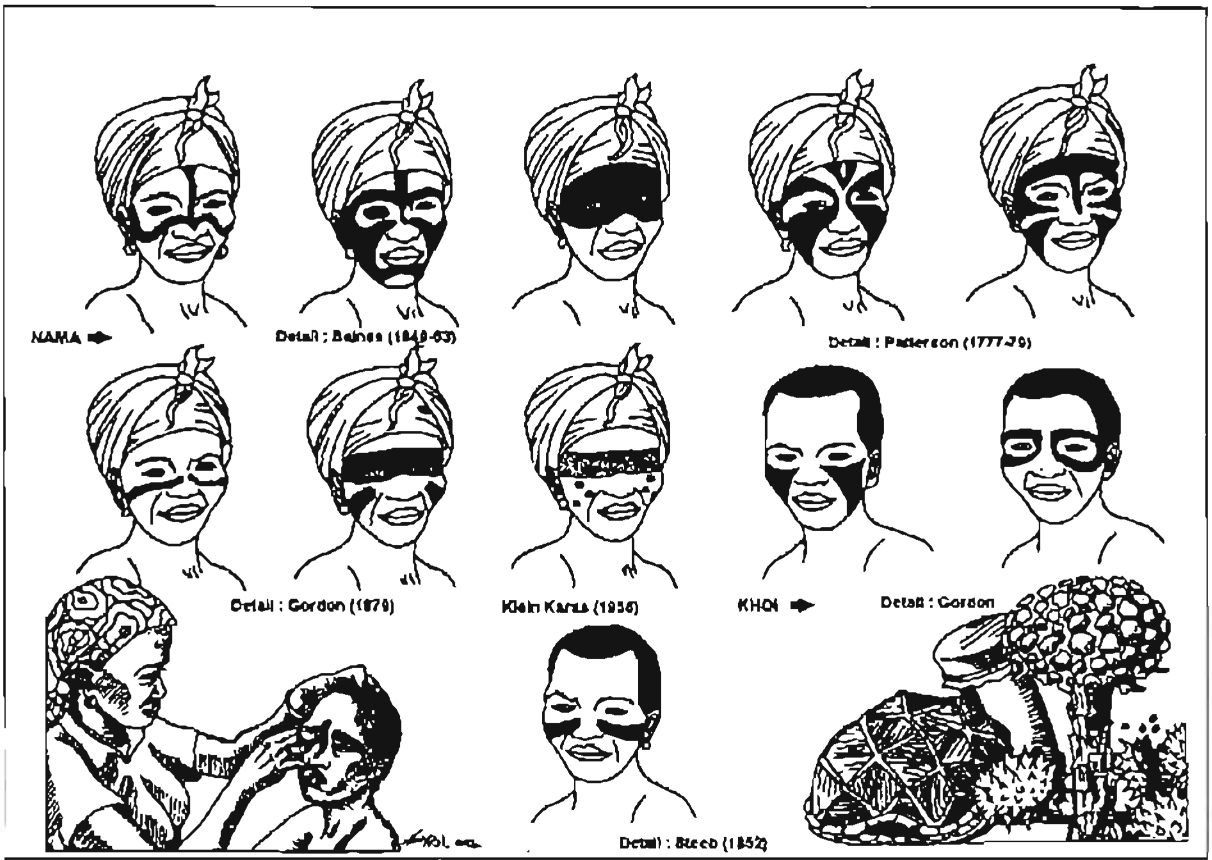


Figure 6.1 Patterns of Decoration

It has been mentioned that not only plant remains were used as cosmetics. Rudner (1982) mentions that the (Nama?) Hottentots did not like specularite (blinkklip) and that 'nowhere is *'blinkklip'* mentioned by early authors'; but the *'glittering sand'* (Van der Stel 1685) and the hard, dark mineral of the 'Namaqua' and, perhaps, the *'kind of ore'* used along the Orange River (Wikar 1779) might have been specularite. Woodhouse's record (1975) which stated that *'it was a recorded habit of the Nama Hottentots to rub specularite into their hair'* corroborates the statements that specularite was important. Further, Webley (1992) mentions that specularite was found in the archaeological site !aitomas in the Richtersveld. At the same site stone implements with clear traces of a reddish stain were found on grindstones. These remains may be indicative of early practises as described in all the sources mentioned.

Much is written on the use of red substances. Fritsch (1872) noted that Hottentot women (according to Rudner these were probably Nama women) painted red ochre and red *'earth'* on their greasy faces, sometimes in patterns. Hahn (1880) wrote of women who *'anoint'* themselves with red ochre' on certain occasions. He stated that *'Redman'* was the name the 'Khoikhoi' used to distinguish themselves from the black people and that this was the name adopted by a group of Nama tribes. It was Hahn who first suggested that red was associated with blood, that the word for red, i.e. */ava* or *aua*, blood-like, took its origin from */au*, 'to bleed', and that red ochre and other red paint replaced blood in ritual sacrifice and the worship of the Khoikhoi. Ridsdale (1883) saw a Nama woman (*'Veldschoen Draager'*) thickly besmeared from head to foot with fat and 'red dust'. According to Olpp (1888) red ochre was used on a boy's body in puberty rites. Further, it is known that Nama women in Namibia painted their faces red during menstruation (Schinz 1891). Women also made paint from red ochre and fat, perfumed with buchu, with which they regularly painted their faces, apparently in patterns. 'Iron oxide or iron rust' was mixed with raw, chewed fat for a facial paint for the women (Schultze 1907). Vedder (1928) wrote of a reddish ointment and blackish red salve used on faces during menstruation, early pregnancy and also on cold days to protect the skin. (This may well be the powder from the fungus which is still used today). Vedder (1938) also generalised about the Nama smearing their bodies with an ointment of 'red ironstone and fat'. Hoernlé (1918) recorded several Nama ritual uses for paints. During initiation girls' faces were painted in patterns with the salve of red ochre and fat. Girls were also cleansed with moist cow-dung and salve and their faces were painted in patterns with the same salve and 'ground white stone', possibly quartz. In a remarriage ceremony couples were similarly cleansed and smeared with the red salve. After the death of a spouse a widow, after cleansing with substances that varied according to the area and availability, was also rubbed with this red salve. The suggestion that red is associated with blood is corroborated by Laidler (1928). He worked as a district doctor in the Kamiesberg for years and noted that *'red paints were used for remedies as blood is red'*. Blood was apparently also used.

Black was also favoured and the Nama women made streaks with soot, mixed with fat, on their faces (Alexander 1838), or they mixed soot with fat to paint on cheeks and over eyebrows (Chapman 1849-63). According to Rudner, the women made a cosmetic of soot or charcoal, fat, and buchu with which they made patterns on their faces. Beads were made from a mixture of charcoal and gum (Schultze 1907). Hoernlé recorded the Nama ritual use of potblack for making marks under the eyes of a widow, or for making a line on the stomach of mourners. Kora women on the Orange River painted haematite salve on charcoal-blackened faces while, for festivals, both men and women made patterns with charcoal salve (and other salves) on their faces (Dunn 1872-3). Soot, charcoal and ash were also used - a new hunter had to have his face ritually smeared with potblack to create criss-cross designs. Today some women still use the black oil of roasted *Ricinus communis* seeds to decorate their faces and to prevent sunburn.

STORAGE OF MEDICINES

Croom (1983) points out that storage information is lacking for most ethnobotanical studies. Many people prefer to use fresh plants for medicine. This, however, is not always possible. Therefore, plants are collected during the season of abundance, hung to dry, and stored for later use. Because of the aridity in the Richtersveld area, plants dry very quickly. This may cause rapid hydrolization by enzymes which may lower the amount of desired chemicals (Croom 1983). This occurrence may account for the preference for fresh herbs.

Earlier small leather bags were used for the storage of medicines. These bags were stored in cool areas in the hut. The bags were often dyed on the outside (the hair was on inside). Medicines, especially snuff and cosmetics, were put in tortoise shells, hung on belts and carried around on the body. Today medicines are mostly wrapped in brown paper or in newspaper and stored in cool places.

Table 6.3 Gum used by the Khoi (Rudner, 1982)

Reference	Group	Parts Used
Van der Stel 1685	Amaquas	Gum was obtained from trees
Schultze 1907	Nama	'Gum of some plant' with or without charcoal for making beads
Schultze 1907	Nama	*'Gum of some plant' for closing apertures in tortoise-shell container*
Laidler 1928	General	Food; fat and boiled gum for salve
Laidler 1928	General	Boiled Euryops resin for fever

EVALUATING THE MEDICINAL PLANTS

Although recent botanical and chemical knowledge of medicinal plants has increased substantially, information on the medicinal values of these plants is far from adequate. Medicinal compounds have been isolated which can account for many physical reactions after administration of remedies. However, the controversy surrounding the well researched Chinese traditional medicine - the root of ginseng - illustrates the unsatisfactory status of research on the efficacy of plant medicines. Many studies have shown positive results in health after the administering of root of ginseng; but as many negate the former findings. The efficacy of ginseng as a factor in health care thus cannot be ignored but can also not be explained satisfactorily.

Many of the plants which are used medicinally in Namaqualand have been analysed for their phytochemical constituents. The conclusive volume on this was produced by Watt & Breyer-brandwijk (1962). Appendix 1 contains much of the information generated and collated by Watt & Breyer-Brandwijk.

Analyses are time-consuming and extremely expensive because the range of compounds that one has to test for is extensive. For cancer, alone, standard analyses test for more than four hundred compounds (Duke, 1987). At this stage this indicates that even if no one has found a chemical compound which can account for the expected physical reaction, after a remedy has been administered, the possibility that the reaction could have been as a result of a compound cannot be overruled.

According to the users in Namaqualand the efficay of a plant may be explained in non-physical terms - for example, the power of a plant to "purify" a patient, to chase away evil spirits or to encourage the return of the soul. Nevertheless the efficacy of plants cannot be seen only in terms of being cultural signifiers, although it has been shown that the continued use of special remedies shows a motive which is based on the perception and cognition of the users. Brown (1987) points out that a persuasive social analysis of medicinal plants should include an assessment of the cultural factors that make the use of the plants plausible to the group under investigation. This indicates that the efficacy of plants should be judged by the degree to which plants produce the effects considered desirable within the user's own system of medical knowledge (Browner & De Montellano 1987; De Montellano 1987; Brown 1987) Its efficacy, therefore, is measured in terms of the user's criteria, whether it meets western criteria, or not. In a rescue operation, such as this one, such an evaluation can be made for a limited range of the plants only. It can be said that the continued use of the plants indicates efficacy. Clearly an assessment of the biological factors at play, should also be made but a thorough investigation does not fall within the scope of this dissertation.

This concludes the chapter on medicinal plants. Further comments and illustrations of the medicinal plants are made in chapter nine. These comments and illustrations refer to some of the implications of medicinal plant use for the archaeological record.

CHAPTER 7

PLANTS USED FOR UTILITARIAN PURPOSES (EXCLUDING ENERGY)

Many people still use plants for utilitarian purposes (Archer 1982, 1990a, 1990b) such as for the construction of houses/homes (Archer 1989a), for doing leatherwork (Archer 1989b), for making soap and even for producing household goods for the local and ecotourism markets to enable them to enter the cash economy and to buy household commodities. In the Richtersveld some of the residents still live in the traditional reed huts, called "matjieshuise" and/or use these structures as outside kitchens. The branches of *Ziziphus mucronata* are used by pastoralists to make hakstokke (shepard's crooks) and kapstokke (long sticks used, for example, to hit fruits off tress). Women use the leaves of *Mesembryanthemum squamolosum* to remove the hair from skins when they do leatherwork. In the following section detailed accounts (with illustrations) of some of these uses for plants will be given - although this section will not fully address the range of uses and the diversity of plants used for utilitarian purposes. Table 7.1, on the following page, shows the range of plants used for utilitarian purposes. For more information on what these plants are used for, refer to Appendix 1.

MAKING A HOME WITH PLANTS.

Plants played vital role in the erection of shelter in Nama society. This section deals with the plants and activities associated with providing shelter. Some comments are made on the symbolic value as well as activities associated with the structures. Parkington and Mills (1991) point out that the way in which people choose to build structures and arrange them into settlements does not passively reflect or symbolise but, in fact, actively organises power relationships and the practise of social interaction. They mention that the built environment is particularly important because it forms the physical structure through which particular behavioural choices, including the ability to exercise power, are encouraged, required or discouraged.'

Table 7.1 List of plants used for utilitarian purposes

Species	Parts Used	Species	Parts Used
Acacia erioloba	wood	*Mesembryanthemum pellitum*	leaves
Acacia karroo	young thin branches bark from roots	*Mesembryanthemum squamulosum*	leaves
Aloe dichotoma	branches	*Nicotiana glauca*	young branches
Asclepias fruticosa	seeds whole bush,	*Nymania capensis*	branches
Boscia albitrunca	wood	*Olea europaea*	wood
Ceraria namaquensis	bark	*Othonna arbuscula*	gum
Cotyledon orbiculata	stem	*Oxalis copiosa*	
Cyperus marginatus	reeds	*Parkinsonia africana*	wood
Deverra denudata	whole bush	*Prenia sladeniana*	branches, leaves
Diospyros lycioides	bark	*Psilocaulon sp.*	leaves
Euclea pseudebenus	green	*Psilocaulon subnodosum*	white flowers
Euphorbia drege	resin	*Rhus viminalis*	branchlets & wood
Euphorbia hamata	leaves;plant	*Salix mucronata*	dry branches & wood
Euphorbia hottentota	stems and latex	*Sarcocaulon patersonii*	stem
Euphorbia mauretanica	juice	*Schotia afra*	branches
Juncus rigidus	reeds	*Scirpus inanis*	reeds
Karroochloa tenella	grazing grass	*Scirpus nodosus*	reeds
Limonium dregeanum	reeds	*Tamarix usneoides*	branches
Manochlamys albicans	fruit, leaves	*Tylecodon paniculatus*	stem
Manulea cephalotes	flowers	*Tylecodon wallichii*	bark
Maytenus linearis	young green branches	*Ziziphus mucronata*	young branches
Mentha longifolia	branches, leaves		

It is not within the scope of this dissertation to analyse the structure, or activities surrounding the erection of the structure in terms of power relations. However, the following points should be noted

Firstly, Nama-speaking people view the hut and the cooking structures as the women's domain. The hut and associated features are commonly known as the 'werf', where many of the women's chores are executed. The area can be clearly distinguished because it is usually cleared (Archer 1991a, 1993b). The term stockpost includes the werf, and the kraal or the area where the livestock are kept.

Figure 7.1 A typical 'werf 'in the Richtersveld.

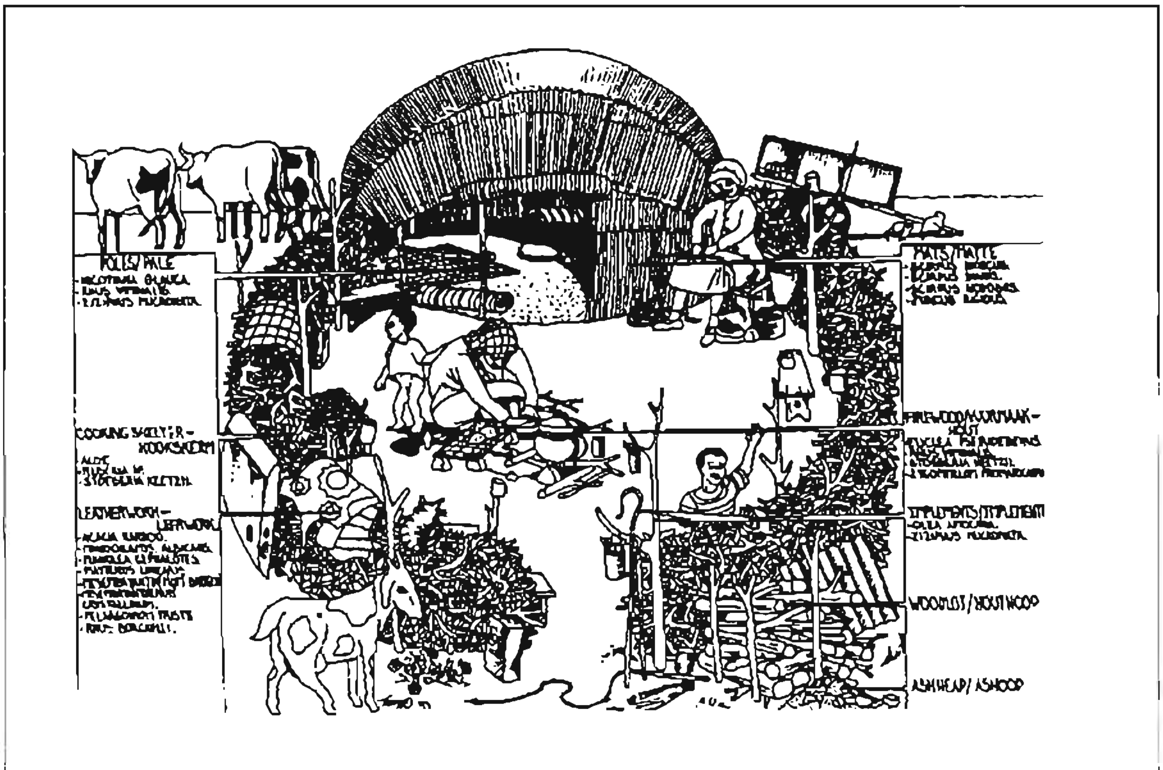


Figure 7.2 An illustration of the most important aspects of the werf.

The livestock are kept in such a position that they can be observed from the cooking area which corroborates the information from interviews that the women play an important role in the management of the stock. In fact, women also own livestock. Appendix 4 contains some illustrations of 'veeposte'. Figure 7.1 & 7.3 are photographs of a 'werf'. Figure 7.2 is an illustration of the most important aspects of the 'werf'.

Secondly, according to inhabitants, there have been changes in the settlement patterns of huts in relation to each other over the last 100 years. Recently families cluster together, and the campsites of different groups of families are spread out over the environment and the huts are widely dispersed.

Figure 7.3 A 'werf' showing an unfenced as well as a fenced kraal at the back of the settlement

THE "MATJIESHUIS"

The rush-hut (commonly known as matjieshuis) holds a special position among African huts in southern Africa because it is the only type that is designed as a portable hut to suit nomadic life. It can be dismantled and re-erected in a short time, should it be necessary to move (Haacke 1982). Several references to "matjieshuise" have been handed down from the early seventeenth century onwards. One of the earliest references comes from Christopher Farewell who wrote the following during 1614:

> *"Their houses are like beehives; and many together are a town, wherewith (upon occasion of changing their herds to fresh pastures, or the sight of two or three muskets whereat they tremble) away they scuttle (every one his castle on his back) posting to a new plantation."*

(in: Raven-Hart 1967:43)

Other early travellers describe villages of "matjieshuise". Patterson (1790) came across a small village of six huts. Gordon travelled into the Kamiesberg during the same year (1790) and encountered Wildschut and his clan in a village; and during 1816 Shaw found Wildschut and his followers at the present day Kharkams. Thom (1958) refers to a village of seventy huts.

Today's villages are very different. Stock are kept mostly on the outskirts of villages and the material structure of the various dwellings on one plot serves as an indicator of social and economic status. Brick houses, for instance, are seen to be owned by the very successful and prosperous. Owners of such houses may still identify strongly with earlier traditions so that they still have a "matjieshuis" in which they sleep.

Figure 7.4 Different stages of building a "Matjieshuis". See Appendix for description of stages.

Basically the "matjieshuis" consists out of two components: the skeleton structure, which consists of a framework of long, light supple and durable poles, ,and the reedmats which cover the framework. The manufacture of the poles, described by people as a chore performed both by men and women, is a relatively simple and quick process in comparison with the manufacture of the reedmats - a woman's duty - which is time-consuming and requires a high level of skill.

SELECTION AND PREPARATION OF THE POLES

The poles were traditionally cut by men, although the selection process was done by both men and women. After the poles are cut, the preparation of the poles to form the framework of the house, once again, is the woman's domain. The poles have to be slightly burnt in fire so that the bark can be easily removed. As the poles are too long to manage in the cooking shelter, the bark is removed in the area outside of the immediate vicinity of the cooking shelter, which leaves thin slivers of bark scattered around.. The poles are put into a frame that has been created to bend them into a slightly circular shape (Figure 7.5.). The poles remain in this kind of harness until dry which can take up to a week. Once the poles have dried they are removed. The branches which were dug into the ground to harness the poles are left in place. Usually the poles are shaped quite far away from the stockpost, but close to where the trees were harvested for the branches, usually close to rivers. Trees which are regularly used for the poles are *Ziziphus mucronata* because the branches are straight, pliable and ,when dried, do not split. Poles made from this species therefore last longer last than poles made from other species. Local women told this researcher that, in earlier times, people bartered the ready made poles for other products, and would come from as far as Leliefontein to barter mats for poles produced on the banks of the Orange river. Another species which is popular for the production of poles is the *Rhus viminalis,* as the branches of the tree are also pliable. However, it is known that poles made from this species do not last as long as poles from other species. In areas where these trees are scarce, exotics such as the poplar is used, or the straight branches of any tree. When the pastoralists move regularly in summer, they often use the branches of the exotic *Nicotiana glauca,* which grows along the banks of the Orange River. The poles made from this species do not last long at all - perhaps for the summer season only - as they split when they become dry.

Figure 7.5 Bending the poles for the framework

Haacke (1982) has detailed descriptions of the construction of the hut which will not be repeated here. Once the poles and mats have been completed, it takes a group of about six or more people at least four hours to dig the "foundation" holes for the poles and to secure the mats with rope or small strips of leather. This is usually done as a group activity. The "foundation" holes are dug with an "uintjie yster" (see section on edible plants), and are always dug from the outside towards the inside of the hole. This is to ensure that the poles push against the undisturbed wall of the outside of the hole, which is much stronger than the more sloping inside. After the mats have been fastened onto the framework, they are often secured with big rocks. Often an abandoned settlement site can be recognised by the circular formation of rocks which remains after the hut has been removed.

Figure 7.6 The poles are planted and fastened together.

SELECTION AND PREPARATION OF THE REEDS

Not all reed species which occur in Namaqualand are suitable for making mats for houses. Women distinguish between three different kinds of reed -!khowobes, !oeb, !ob (author's own spelling). Of these the !ob is the most highly rated because of its slightly thicker stalks and because it lasts longer than the other two thinner and more brittle species. The thinnest variety, !khowobes, is the reed which is most regularly used as it is the most abundant. (! - denotes a click sound)

The reeds are harvested when they are just beginning to turn from a deep green to a yellowy green colour. Traditionally harvesting was done by women who plucked the reeds. More recently reeds are chopped. This way of harvesting is heavily criticised by some of the older people who have said that the reeds do not grow as well the following year if they have been cut or chopped. After harvesting, the reeds are packed into bundles which are transported to the home base where preparation and processing is done. The bundles are left for at least two weeks before the reeds are prepared for stitching. The reeds are spread out to dry and gradually change from yellow-green to a bright blonde yellow. When dry, the seed and the flower heads are chopped off and the reeds are bundled according to length. The longer ones will be used for the long mats which run over the upper part of the framework, whereas shorter reeds are used for the mats at the entrances of the hut.

Women do the stitching of the mats, usually a few weeks after the reeds are plucked. Before they start, the reeds are sprinkled with water to prevent their splitting, and then the stitching of the "backbone" (centre) of the mat starts. The reeds are stitched together with home made rope, originally made from the bark and roots of plants (see section below) but more recently, made from twining together the unravelled strands of hessian bags. The rope is threaded through with an awl (called "matjies els") and a broken reed. The awl is made from a straightened and flattened sickle.

The blade of the awl is about 40-60 centimetres long, and about half a centimetre wide. The edges of the awl are blunt but the flattened tip is sharp. It is the sharp end which penetrates the reed stalks transversely, with a number of stalks pushed tightly onto the awl until it is full. When the blade is full it is turned along its longitudinal axis up to ninety degrees to widen the perforation in the stalks. The twine, which is attached to a smaller piece of a blade, is then threaded through. The stalks are then pushed tightly against each other with the handle of the awl. The process is repeated until the mat is finished.

Figure 7.7 The sedge stems are sewn together with string

The size of the mats depends on the size of the houses. Today people distinguish between two basic sizes: (1) a round house (rondehuis) and (2) a flat house (plathuis). A round house is a smaller hut. Webley (1984) measured round huts which have a diameter of about 4m. The more permanently settled inhabitants of Steinkopf mostly have "flat" houses, which have a diameter of at least 5m. At least 12 mats are used per house. The different mats are placed in specific ways over the framework.

Figure 7.8 The mats are placed over the framework

Figure 7.9 has been copied from Haacke (1982). The figure shows the placement of the mats as well as the different Nama names for the mats. Because rope is scarce, mats have become scarce and in recent years tarpaulins and plastic are used in the place of reed mats. In the Richtersveld some pastoralists choose to stay near the mine to obtain refuse for uses such as this. When plastic and other refuse is used in the building of huts, many people use the name "kaia" to describe such a dwelling, which they do not consider to be as nice as a mat house.

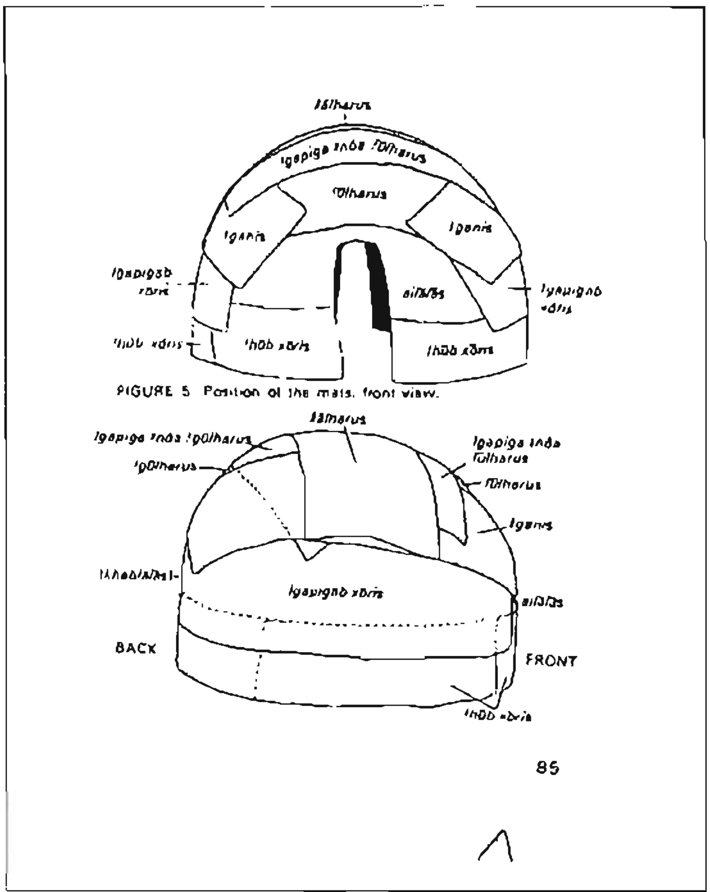


Figure 7.9 Placement of mats. From Haacke (1982)

Le Vaillant (1790) has an illustration of a "matjieshuis" covered in animal skins as decoration. Haacke (1982) mentions dyeing of reeds with cowdung to create patterns. In the Richtersveld some women create patterns by using sections of reeds root-side up, interspersed with the lighter-coloured top sections, which form the top side of the mat. They also create patterns by alternating different species of reeds of different thicknesses. Further south in Leliefontein, women generally decorate mats by plaiting certain sections in the mat. This is considered to be a very time consuming task, and

mats like these are highly valued. Decorated mats are only used on the insides of the houses.

As reed houses are a fire hazard, management of fire is very important. The sparks from firewood such as *Rhus burchellii* can easily set a house alight, as these sparks are very hot. An entire house can burn down within minutes.

According to the inhabitants of Leliefontein, the San (called Bushmen) posed a serious threat to sleeping families at night. The San were known to kill the inhabitants of a hut by sticking their poisoned arrows through the mats into the house. Therefore, the insides of the houses were lined by uncured skins of cattle. The uncured skins were very hard, and protected the families from the aggressors, the San.

The floor of the traditional "matjieshuis" was generally made with clay and dung (figure 7.10). The clay base was rubbed with fresh cow dung at least once every two weeks, to keep the surface attractive and clean. In areas where *Acacia karroo* was abundant, the gum of this tree was often collected as a polish for the floor. The dark brown "hyra", which collects at the base of the tree, was boiled, mixed with dung, and rubbed on the floor. This provided a harder, redder and very shiny surface to the floor. When enough hyra was available women would put the hyra over the dung floor, giving the surface a glass-like finish. The "polishing" of the hyra floors had to be executed every two weeks to maintain the lustre. This sticky mixture was applied with a small handbroom made of the reeds of *Restio sieberi Kunth* and other species.

The bark of the roots of *Acacia karroo* and *Rhus burchellii* were mostly used for the production of twine with which reeds were stitched into mats. Young roots were exposed and then chopped off. The fine red bark was pulled off in strips (the longer the better) and soaked in water. The rest of the root was shredded into strips which were rubbed and washed in water until they were soft. Long strands were then used to twist the rope. Two strands were taken, laid individually across the bare thigh and separately twisted with a downward stroke of the hand. Then an upward stroke would lightly twist the two strands together. Strips of different lengths used together were formed into a continuous long rope. The completed rope was kept moist in water until used. The rope was used to tie the reeds which formed a mat to cover the wooden frameworks of huts. It was also used to tie mats to the framework, and to secure other articles. Remains of similarly made rope have been found in archaeological remains at sites in the western and south-western Cape (Deacon 1976).

Figure 7.10 The floor was often smeared with a mixture of dung and bolied gum

USE OF HOUSE

Traditionally there are two entrances to a matijieshuis, diagonally opposite and always on the eastern and western sides. These entrances are used alternately in the mornings and in the afternoons, so that the house's open entrance is always in the shade. Two small mats are used to cover the entrances. When the inhabitants of the house are at home, one of the entrances will be opened by rolling up the mat. However, when no one is at home, both entrance mats are rolled down; and often a rock is placed in front of the most regularly used entrance (usually the one facing the cooking shelter - see section below).

Shade outside provided by the structure is also used extensively during summer, so that people move around the hut as the time passes. They sit on skins or little benches, and it is often in the shade of her "matjieshuis" that a woman does chores such as stitching mats or doing the washing. The house thus forms the focal point of domestic activity during summer.

The entire family sleeps in the house. A round house can accommodate up to eight people who sleep on the floor while a flat house can easily accommodate up to 14 people. People prefer to sleep with their heads on the western side and their feet on the eastern side of the house. This is because it is believed that you should be able to face the rising sun in the mornings when you awake, in order to awake and not die. For this reason many people who were interviewed will not face the west, when sleeping. When visitors arrive the wife of the head of the house decides where the visitors will sleep. She takes his/her bedding and makes the bed. When the sons reach adolescence, very often the time they start visiting women and/or start to smoke, a separate house is erected for them. At night, at stockposts, sheep or goat skins are spread over the floor to sleep on. In the morning these mats are picked up again by the women and are stacked along the inside sides of the house with the other belongings of the family.

There are symbolic uses of the house. When a young couple gets married it is custom that they spend their first night in a house which has yellow mats only which signifies a new beginning. A house with new poles and fresh reeds is specially erected for this couple. The erection of this hut is a group activity which involves family as well as friends. Further, at the start of a young woman's menarche she was kept in a "matjieshuis" until she stopped bleeding. No one was supposed to see her except an elderly woman who would clean, feed and decorate her after her first period stopped. A new mat would separate the "matjieshuis" into two; and the young girl sat in the furthest side. Here the older woman would bring her food, as well as clean her; and paint her body and face with buchu and sweet smelling plants. Gordon (Smith & Pheiffer, 1992) mentions this practise. The back entrance of the house is not used at all during this time. Recently houses are erected during festivals, indicating that peoples' sense of identity as descendants of the Nama-speaking Khoi is interwoven with this structure.

Some other practical uses include the following. Fresh meat is wrapped in skins and paper and stacked on the sides of the house during the warm days, but in the evening when it is cool the meat is hung from the dome to cool down. As soon as the sun's rays reach the house, the fresh food is again stacked away on the sides of the house. However, when dried meat (biltong) is made, the strips of meat hang from the roof until dry. Plants used for medicine are also dried in this way.

During the birth of a baby, midwives often encouraged the young mother to hold onto the framework of the house while producing the baby. She would stand on her knees, and bend over slightly to hold onto the strong poles on the ground while a midwife would assist her from behind by strongly hugging her during contractions.

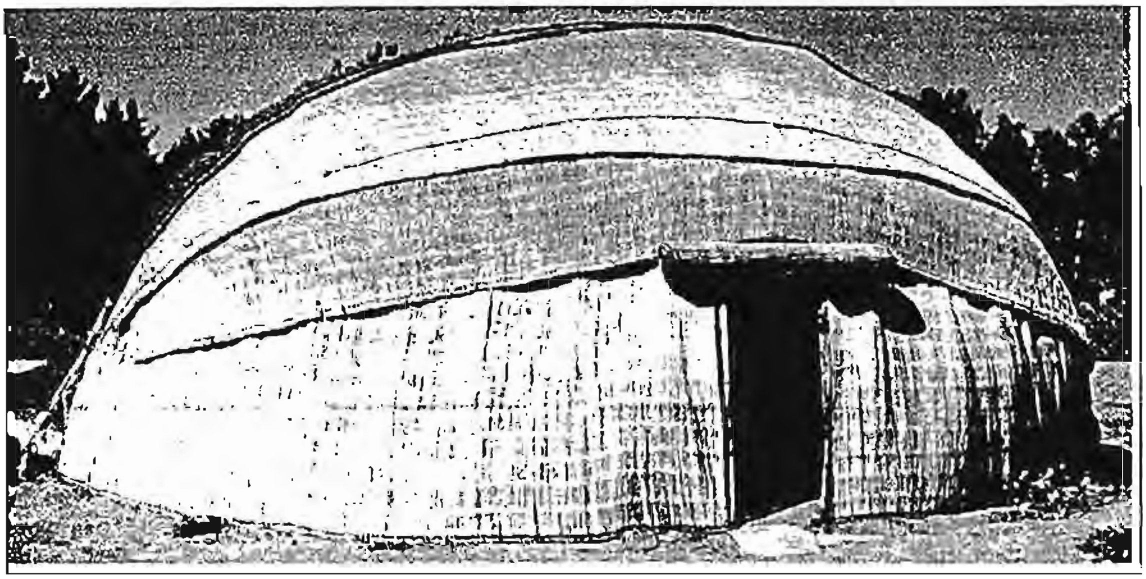


Figure 7. 11 "Matjieshuis"

MAINTENANCE OF THE HOUSE

The bottom parts of the poles, which are dug into the earth, often rot. The rotten parts of the poles are removed and the poles smeared with clay again before re-erection (figure 7.12) Poles are often decorated for festive times. In the Leliefontein area poles are dyed during December for the festive season.

During the winter months it is important to light fires in the hearth in the house regularly to prevent the reeds from becoming musty. This causes the mats to discolour and turn black (called "bloutrek") on the inside of the house. As this blackening is undesirable, the mats are scrubbed with course wet river sand to clean them. The mats last for approximately two years. Nowadays some inhabitants of Steinkopf and Richtersveld cover the houses with hessian, so that the mats last much longer. Mats which have deteriorated badly are used for the cooking house.

TRANSPORTING THE HOUSE

In earlier times, poles, mats, etc. were transported by pack oxen (Figures 7.12, 7.13, 7.14) Today donkey carts and/or automobiles are used to transport the "matjieshuise" to new stockposts. It appears that people moved very often in earlier days, and, from early travellers' records one can deduce that people may have moved as often as once every two weeks. Today most people move at least four times a year.

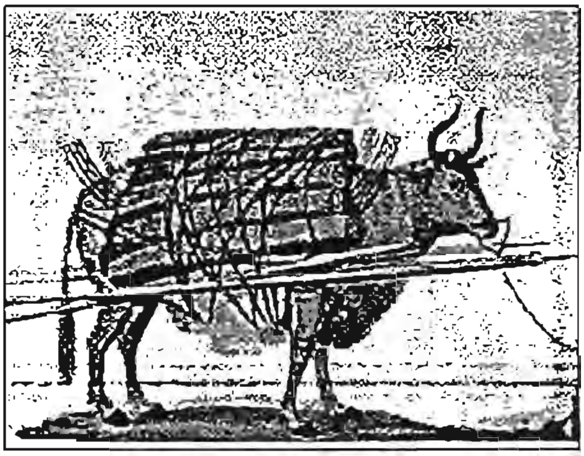


Figure 7.12 Traditional way of transporting a house.

Figure 7.13 A more recent way of transporting belongings. This way is still used in Namaqualand today.

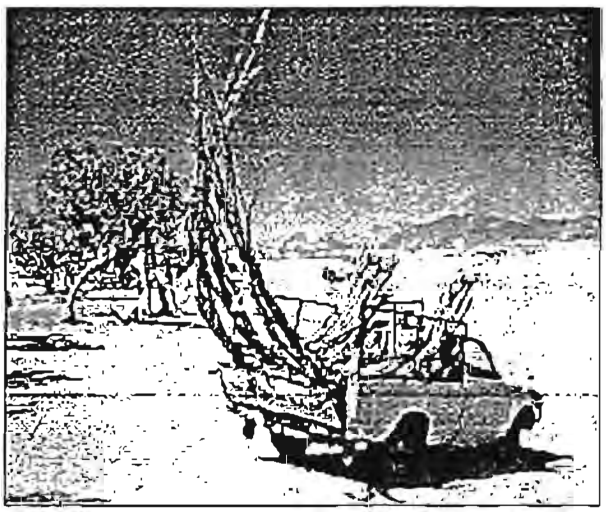


Figure 7.14 The most recent way of moving the house.

THE KITCHEN - COOKING HOUSE

There are mainly two types of structures which are erected as protected areas in which to prepare and consume food: the cooking house (at more permanent settlements such as rural villages) and the cooking shelter (at the stockposts).

The cooking houses are constructed in the same way as the matjieshouses, except that the floors are very rarely made with clay. (Preparation of food and cleaning up involves the use of water, which causes a slippery surface if the floor has too much clay on it.) The cooking house is approximately 4m in diameter, depending on the size of the family who uses it, as it has to have enough space for everyone to sit and eat around the hearth.

In the centre of the cooking house a hearth is constructed on which cooking takes place. The hearth is usually round (some square ones have been observed) and varies in size. Webley (1987) states that it is about 50 cm in diameter. The hearth, on which all cooking takes place, is usually made of clay, with an outer edge of stone, or the rim of a bicycle wheel (a very popular form of transport in Leliefontein and Richtersveld) The hearth is raised above floor level. After completing the hearth a big fire is made on top to bake the clay and make it solid. Both the hearth and floor are cleaned daily - usually with brooms made from indigenous plant materials, such as the reeds *Ischyrolepis sieberi* These brooms last for at least three months, and are used to sweep the werf, too.

USE AND MAINTENANCE OF THE COOKING HOUSE

Carstens (1983) points out that the women in Steinkopf own the hut, the kitchen and the cooking utensils. The cooking house in Leliefontein and the Richtersveld is mostly the domain of the woman. She performs many of her domestic duties here, and is certainly seen as the owner of all the cooking utensils.

The cooking house and cooking shelter often form the centre of social activity. Often the women will talk here, while the men discuss business in a shaded area, such as a tree or a rock. The cooking house is traditionally a place where young lovers can meet in privacy; and many proverbs have been developed with which young people get teased if there had been activities in the cooking house the night before. Further, when strangers needing shelter for the night arrive at a settlement, they will be offered a place to sleep in the cooking house.

The structure is usually rebuilt every year. The poles and mats become very black, but these are not cleaned, as is the case with the "matjieshuis". Every few years, however, the cooking house has to be shifted, as the daily cleaning causes a circular depression, which exposes the base of the poles and which makes the structure insecure. The hearth needs to be redone when it crumbles, because it needs to have a smooth straight surface to ensure that the tripod iron pots, which are mostly used for cooking, do not tip over.

THE COOKING SHELTER

The cooking shelter is a circular structure made of bushes which are usually stacked at one of the entrances of the house. It has no roof. At stockposts, where it is important to be able to keep an eye on the stock, cooking is done in this structure, rather than in a cooking house. The cooking shelter sometimes adjoins the "matjieshuis" but is usually separate (approximately two metres away) to diminish the risk of fire. Bushes such as *Ruschia* species, *Stoeberia* species as well as *Euphorbia mauritanica* were popularly used for the cooking shelter The freshly picked bushes are stacked upon each other until the structure is about one metre high (in summer), or two metres high (in winter). See figure 7.16. Bushes which are lighter in weight are overlain by heavier bushes to ensure that the structure cannot be destroyed by wind. It is especially important to "anchor" bushes in this way during August-September when the easterly winds become very strong.

Figure 7.15 Cooking shelter.

Usually some branches which are similar to the poles of the framework of the houses are planted first to secure the structure. The bushes are stacked over and in between these branches. For this purpose branches with short side branches (or forks) are often selected so that mugs, jugs and other utensils can be hung from the branches. Alexander (1838) shows a cooking shelter which is made from poles and mats. Some people who return to the same werf often, stack stones as a base for a cooking shelter. These are then overlain by fresh bushes when the werf is visited. On the banks of the Orange river cooking shelters are often square and mostly made of tall branches of *Tamarix useneoides*.

The cooking shelter has the same function as the cooking hut and often has long branches from which fresh meat and mugs are hung so that it is out of the reach of dogs and children. There may be two or more n/a poles (poles with one or two branches from which to hang utensils or food) which are usually erected at the entrance of the cooking shelter. Often a third n/a pole is erected outside the cooking shelter, on the werf, which is used for hanging up buckets. During very dry periods bees are attracted to water, and it is handy to have the water containers hang outside the cooking shelter where socialising takes place. N/a poles are mostly transported with the houses as it is difficult to obtain the ideal n/a pole. Often growing bushes are incorporated in the cooking shelter. These give extra protection and are also used as n/a poles, especially when an animal has been slaughtered.

Figure 7.16 Cooking shelter with natural growing bush used as a n/a pole.

It is interesting to note that the pastoralists usually take the stock to graze when the sun reaches the inside of the cooking shelter. In winter the sun reaches the inside much later, of course. Pastoralists have mentioned that it is important to wait until the winter frost has melted before the stock move out; as the frost causes the hoofs of animals to crack This researcher noted that the frost is usually melted by the time the sun reached the inside of the shelter which has higher walls in winter. When there has been heavy dew, stock are also held back until it is a bit warmer.

The cooking shelter and werf are swept every day, and ash in the hearth cleaned out when it starts to smother the fire. The hearth is cleaned at least twice daily. Ash is placed on the ash heap. While the cooking shelter is in use some people prepare the floor with cowdung. In earlier days this was common practise. Dung has to be re-applied every eight days to maintain a desirable floor. In winter dung is not used, because it becomes slippery when wet.

LEATHERWORK AND PLANTS

Traditionally leatherwork was a very important craft amongst the Nama-speaking Khoi. From early travellers' records it is clear that the Khoi wore clothes made from leather, slept on skins and used leather bags as containers. Plants were used in various steps of the preparation of leather - to remove the hair from skins, to stretch the skin, to dye skins for decorative work, and to wash leather garments.

To remove hair from skins, the leaves of the succulents *Mesembryanthemum crystallinum* and *M.barklyii* are crushed and the resulting pulp rubbed on to the skins, which are then often buried in the ground with the pulp for a few days. After the hair has been removed (hair is not always removed) the leather is cured by hand. The dry skin is rubbed with a little fat and then the women rub the different sides together until the leather becomes quite soft. Often the skin is sprinkled with water and then pulled open on the ground to stretch it. To anchor it on the ground the branches of "pennebos" - *Maytenus linearis* were used, as well as the horns from smaller antelopes such as the *Sylvicapra grimmia*.

Skins were often dyed and then cut up and the different coloured pieces stitched together to create patterns. The bark of *Rhus burchelli* as well as *Acacia karroo*; the ground tuber of *Pelargonium triste*; and the dried and pounded flowers of *Manulea cephalotus* created different shades. Except for the latter, (which dyes leather yellow) most colours are variations of red. The longer the skin was left in the wet mixture, the darker it stained the leather. Often the barks and powders were exchanged between different groups of women! The dyes which were mostly used were from *Rhus burchellii* and *Acacia karroo*.

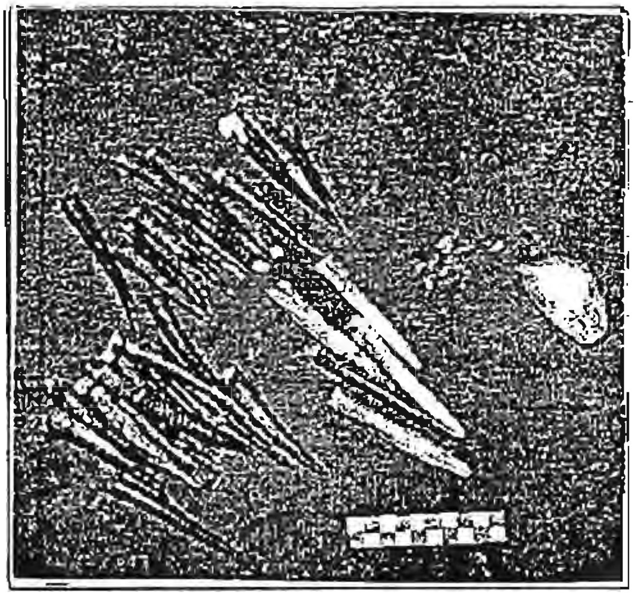


Figure 7.17 Some of the implements used for leatherwork.

Figure 7.18 Sleeping skin decorated with the bark of Acacia karroo.

Plants were used in the cleaning of leather. *Psilocaulon inconspicueri* and *P. foliosum* were used by rubbing the leather with the plant until it became foamy. The foam was left to dry and then wiped off.

PLANTS IN HYGIENE

Some of the mesembryanthemums are used in preparation of soap. *M. barklyii, M. crystallinum* and *M. squamulosum* three highly rated species. The dried plants are burnt to ash, then boiled with fat (hardevet) for a couple of hours, cooled down; and formed into cakes of soap.

Flies are seen by some people as the guardians of hygiene. One woman said the following about flies:

> *"They signify man's* duty to clean up."*

* Afrikaans indicates person and not male

Plants are used to keep flies away. Branches of fresh *Mentha longifolia* are hung in houses, and it is said that the pungent smell keeps flies away.

Sweeping the houses and werf every day is an important aspect of domestic activity and brooms are made from *Ischyrolepis sieberi* and *Limonium dregeanum*. The waste from sweeping is usually put on the ash heap and, therefore, burns. So although debris from daily activities such as preparing food, making mats, etc. often fall to the ground, the debris is eventually destroyed by this practice of camp maintenance. People clean the living area as meticulously as this because, they say, debris attracts insects - even scorpions.

PLANTS AND UTENSILS / TOOLS

Some household utensils are very important in the plant economy of the Nama-speaking Khoi. Previously the digging stick was one of the most important utensils that a woman could use. Any strong stick can be used to dig bulbs and corms. However, the most popular species used, was *Maytenus linearis*. *Olea africana* was also popular. Ownership of digging sticks is very important as a good digging stick will ensure good fortune (Hoff, 1984). Today, digging sticks are metal. Digging sticks are rarely lent or borrowed, as they are still considered to be very important although digging for food is practised only occasionally.

A "kierie" is a very important tool used by a herder. These are mostly made from the very hard "wilde olienhout" tree (*Olea africana*). The kierie has a knob on the one end formed by the natural growth of the tree. The knob is held in the hand when walking and when hunting rock rabbits or other small animals, this is the part which is thrown at the animal's head. It is considered a great honour to receive a kierie from anyone as it is a prized possession - prized because the natural production of straight branches with the knob at the top is quite rare. 'Hakstokke' (shepard's crooks) are also important. They are made from *Rhus pendulina* branches and are used to catch sheep in a herd. They are also used to harvest gum from *Acacia karroo* and *A. erioloba*. Some spoons, stools, etc. were also made from a variety of woods such as *Salix mucronata* (stools) and *Euclea pseudebenus* (spoons).

LAST COMMENT.

It has been mentioned that a wide range of plants were used daily by the Nama-speaking people. The use of plants in subsistence required an intimate understanding of different plants, their attributes and plant growth dynamics. Individuals select plants for specific reasons, and it should be possible to recapture some of the criteria which they applied in selecting plants for various purposes. Recapturing the criteria should enable archaeologists and others who wish to reconstruct the life of the earlier Nama-speaking people to do so, within limits.

Figure 7.19 Different uses of Acacia karroo. See Appendix I for further details on this illustration.

CHAPTER 8

DOMESTIC ENERGY - FIREWOOD

Charcoal assemblages are the most common plant material which is recovered from archaeological sites. Until recently relatively little attention was given to the significance of these remains as a product of human activity. Rather, scholars concentrated on the charcoal as an environmental indicator (Scholtz 1986).

One of the earliest studies to attempt to reconstruct aspects of past human use of firewood came from Salisbury and Jane (1940). They examined large charcoal assemblages from Maiden Castle in England. Their assumption was that all the firewood from the site - even the thinnest twigs - was probably collected from the immediate vicinity of the site. They further used the composition of the coal assemblages to reflect the actual composition of the woody part of the local vegetation. Their assumption was that all woody components of the vegetation would be exploited by the inhabitants of the site. Godwin and Tansley (1941) criticise Salisbury and Jane for some of their conclusions about why only small twigs were burnt at Maiden Castle. They pointed out that the small twigs were probably all that remained from the bigger branches which were burnt. They also suggested that the way in which the fire was stoked determined the occurrence of charcoal from thin branches. Their suggestions are probably appropriate as fires are often stoked by putting the thickest (biggest diameter) part of the wood into the fire and pushing it into the fire as is needed. I noted the same procedures in Namaqualand as well as in other areas of Namibia.

A more recent study (Scholtz 1986) strongly emphasised that charcoal assemblages potentially contain more information about past climates and human behaviour than had previously been acknowledged. Scholtz therefore explored and developed new ways to analyse this category of archaeological material. Much of his chapter on the minimum piece diameter analysis (MPDA) and the taphonomy for charcoal assemblages relies on information obtained from my research (Scholtz 1986). With regard to human behaviour, an important conclusion of my research is that the collection of firewood is not a random process, but a process of careful selection, in which factors such as intended use and availability play a major role. Random collections of firewood only occur where there is extreme scarcity, such as in Kuboes where a large number of people is concentrated in a small area. Once it was established that gathering firewood is a selective activity, it became important to know the reasons behind selecting particular species for firewood. Therefore, it is important to know which species people use more regularly and why those particular species are popular. To be able to comment on man-plant interactions it was deemed necessary to get information on the volume of wood which people need for cooking and heating. The use of fire and how this activity would be reflected in the archaeological record was also investigated.

In depth information was acquired in the following ways. Some 300 individuals at various stockposts and villages in Richtersveld and Leliefontein were interviewed about their selection, transportation and use of firewood. A basic set of questions was used, which are shown in the list below. Additional interviews, to obtain more qualitative information, were also conducted. Most of the interviews contributed towards obtaining detailed information on the criteria used in selection of firewood. Observation played an important role. Two families in Richtersveld and Leliefontein respectively, were visited for periods of up to five days every season for two years. From these observations, the seasonal variation in species selected in different climatic conditions and seasons became clear.

List 8.1 List of questions asked during interviews

What types of wood are in the woodpile?
What are the best pieces?
Why are these the best pieces?
Where were they collected?
When was the wood collected?
For how long will it last?
When will wood be collected again?
Where will wood be collected?
Are there species in this vicinity that are not worth collecting?
Is wood scarce here?

A questionnaire supplied information on gathering activities of families, prepared to complete forms, for a period of one month. This established patterns in relation to places visited, frequency of trips, time spent collecting and other details. In the Nourivier area two families completed questionnaires over a period of one year. The information from these questionnaires form a detailed record of types collected, localities where was collected, time taken to collect and the identity of the person who was responsible for the collection. A quantitative measurement of fuel-wood consumption was obtained by measuring loads (transported on the back - figure 8.1); bundles (transported on the arm) and wood stores. Wagon loads were also measured. Weights were measured on a standard kitchen scale. Field assistants were issued with scales to enable them to weigh wood.

Figure 8.1 Women carrying wood. This wood load weighed 33 kg.

Only 20 questionnaires were completed in the Richtersveld, because of the fear of the inhabitants of this area of being prosecuted under the nature conservation laws. As a result of low literacy levels amongst the older people, who lacked confidence to complete questionnaires, some lists were completed by schoolchildren. In Leliefontein, where people were more confident, a larger number questionnaires (60) were completed. Generally, the political problems pertaining to enforced changes in land tenure in Namaqualand (Archer et al 1989, Hill et al 1990, Boonzaier et al 1990, Archer 1990) have made people wary of paperwork. The procedure which was followed was: The questionnaire was first shown and explained to the field assistants and an example filled in. Questionnaires were then distributed. After three days (when possible) they were checked to ensure they were being filled in correctly. The questionnaires were collected after approximately one month. In addition, recordings were made of the length and diameter of dry wood collected (table 8.1). However, only a few measurements were made since it soon become clear that, it was primarily species and availability which determined the length and diameter of wood pieces.

Table 8.1: The diameter and length of pieces in a wood load collected at Nourivier.

Botanical name	Dia. (cm)	Length (m)
Rhus burchellii	3	1.2
	2.5	1
	3.0	1.1
	1.5	0.5
Rhus burchellii (Root)	14	2.3
Kgybie (Unidentified species)	1	0.3
	5	0.62
	2	0.45
Ozoroa dispar	1.5	0.56
	1.5	0.77
	2.5	1.4
	2.5	0.39
	2	0.38
	3.0	0.6
	2.0	0.62
Galenia africana	4	0.5
	0.5	0.46
Mean Value	3.03	0.77

KNOWLEDGE OF FIREWOOD

From a very young age inhabitants of Namaqualand collect wood. It is mostly collected by women who are accompanied by their children. By the time they are about seven or eight years old, all people have an intimate understanding of the plant types with regard to the quality of wood for fires. More recently, after firewood became scarcer in the densely populated areas, men began to gather firewood for commercial purposes. A much wider range of types of wood are now collected, in comparison to the early 1980s, when this research was initiated. In some areas some of the popular woods are now unavailable, so that the patterns of collection, in terms of species selected as well as locality where the wood is collected, have changed (Borchers et al 1990, Eberhard et al 1991).

PLANTS USED FOR FIREWOOD

The list (List 8.2) on the following page shows the major species used for firewood in the Richtersveld. All the woody vegetation can be used as firewood, but only the most popular woods have been included in the list.

As a rule only dry (dead) wood is used as firewood and surveys from all localities show that certain species are preferred. Dry wood is produced as part of the natural growth cycle of all plants but the rate of production differs between species. *Acacia karroo* and *Rhus burchellii*, for instance, produce more dry wood than *Datura stramonium*. Dead wood is also produced as a result of occasional floods, diseases and over-grazing. At Nourivier in the Leliefontein area the most popular firewood is from *Rhus burchellii*.

List 8.2 Major Species used for Firewood

Acacia karroo
Diospyros lycioides
Diospyros ramulosa
Euclea pseudebenus
Ficus cordata
Maytenus linearis
Ozoroa dispar
Rhus populifolia
Rhus viminalis
Sarcocaulon crassicaule
Sarcocaulon patersonii
Stoeberia beetzii
Ziziphus mucronata
Zygophyllum prismatocarpum

During 1982/1983 this species usually constituted the greatest mass in any of the wood loads or wood bundles. However, dry wood of this plant is increasingly becoming depleted faster than it is produced, therefore other species such as *Ozorea dispar*, *Lebeckia sericea*, *Pteronia* species, *Didelta* species and others are collected more regularly. Wood bundles for this village now consist mainly of wood of *Lebeckia sericea*. *Rhus burchellii* is sparingly used and special trips are made to collect it from remote localities. Figure 8.2,. 8.3, 8.4 and 8.5 show the selection of the species used at Kuboes, Bloeddrif, Klein Nourivier en Spoegrivier during 1983-1984. From the figures it is clear that certain species were collected on a very regular basis. At Groot Nourivier *Rhus burchellii* (taaibos) was collected on 160 out of 214 trips and on 107 out of 167 trips at Klein Nourivier. At Spoegrivier, where the vegetation differs from that of the Nourivier areas and *Rhus burchellii* is scarcer, this species was collected 28 times out of 57 trips. A greater variety of firewood species was selected in Leliefontein than in Richtersveld.

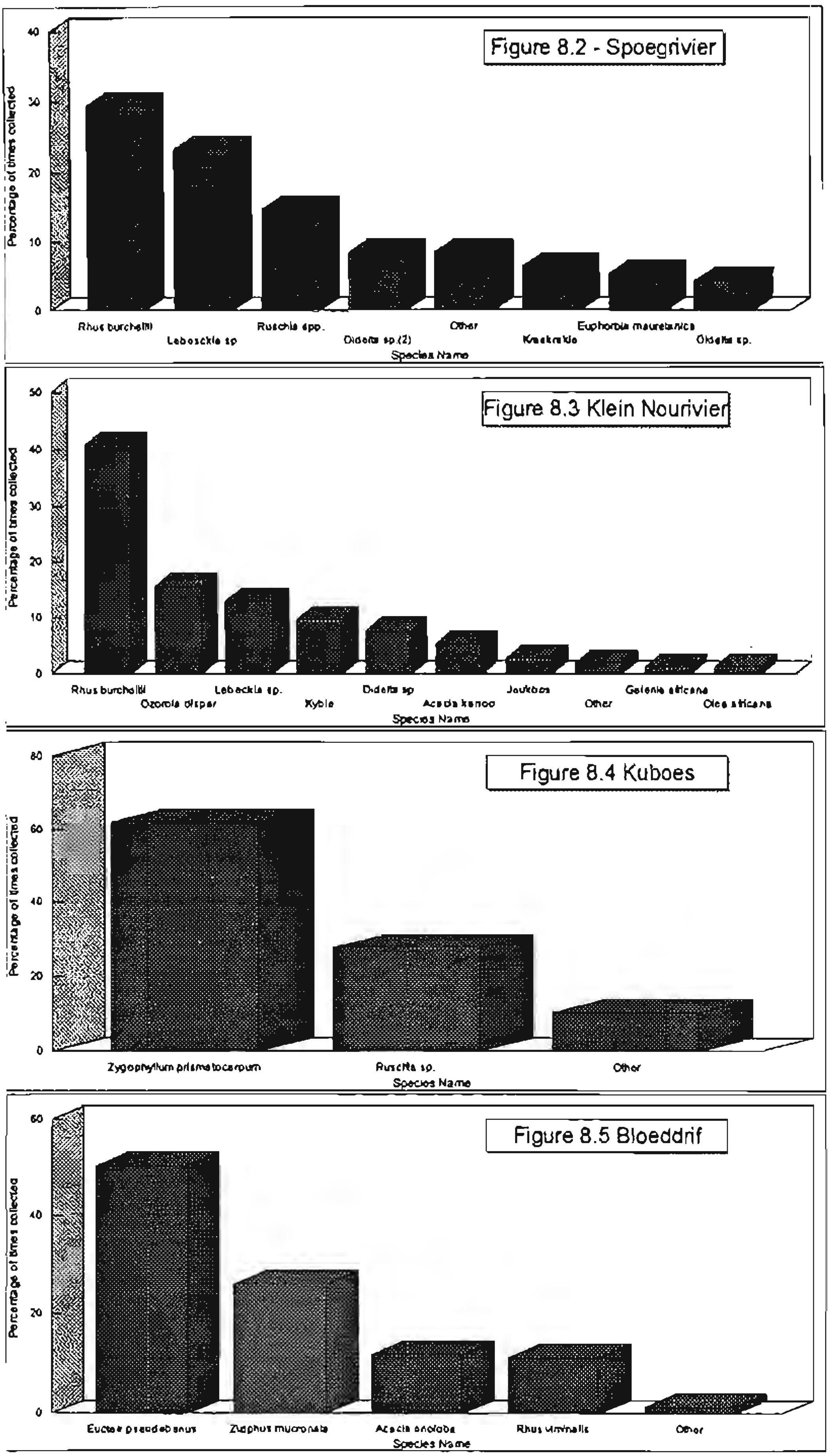


Figure 8.2-5 Histograms showing selectivity of firewood at Spoegrivier, Klein Nourivier, Kuboes and Bloeddrif.

When one examines the species of woody vegetation on the banks of the Orange River and contents of wood piles, the selectivity is clear. Only four of the 11 species available are used. The most common species, *Nicotiana glauca*, is not used at all.

List 8.3 Woody vegetation on the banks of the Orange River.

Acacia erioloba
A. karroo
Ficus cordata
Euclea psludebenus
Gomphostigma virgatum
Rhus viminalis
Salix mucronata
Sisyndite spartea
Tamarix usneoides
Ziziphus mucronata
* *Nicotiana glauca*

HOW FIREWOOD IS SELECTED

By far the most important consideration when firewood is collected, is how good ('goed') the wood is. People distinguish between 'good' firewood, 'bad' firewood, kindling and tinder. Good firewood usually comes from hardwood (woody) species and produces coals which give a constant release of heat over a reasonably long period, upwards of an hour. *Rhus burchellii*, for instance, produces a coal which can last for up to twelve hours or longer. In the evenings some people used to store live coals in a hole in the centre of the hearth , and ignite the kindling the next morning by blowing gently on the coals. This practise is used now only when people run out of matches. A *Rhus burchellii* bush which catches fire is known to smoulder for a week unless the fire is properly extinguished. *Acacia karroo*, *Datura stramonium*, *Rhus incisa*, *R. lancea*, *Lebeckia sericea*, *Euclea pseudebenus* and some of the *Ruschia* species fall into the category of good firewood. Bad firewood are species which may or may not produce good coals, but are avoided for reasons such as excessive and/or poisonous smoke when burning (white wood of *Ozoroa dispar*), or producing foul-smelling smoke (*Eucalyptus sp*).

Kindling is known as 'dorrogoed' (dry things), 'kraaineste' (crows nests) or 'krummels' (crumbs) and is usually produced by herbaceaous annuals. 'Kraaineste' or 'krummels' can sometimes be of a species which is considered a 'good' firewood only when the twigs are very small and do not form coals. The size necessary for forming of coals varies from species to species. Twigs of a diameter smaller than 10 mm of Rhus burchellii would be considered kindling. Although 'kraaineste', 'krummels' and 'dorrogoed' seem to be synonyms, there are slight differences between the three. A 'kraaines' is usually of fine twigs reminiscent of the twigs used by crows and other birds to build nests. 'Krummels' consist of pieces that have broken off from the handling of the 'good' firewood bundle. It is also used to describe the dried remains of the Carpobrotus edulis. 'Dorrogoed' is usually used to describe wood which is exceptionally good kindling - especially in wet weather. Species such as *Sarcocaulon* (commonly known as Bushmans candle) are examples of 'dorrogoed'. All kindling ignites easily, burns quickly and leaves only ash (not coals) after the flames have died. This hot ash can easily be blown about by wind, and is a fire hazard, particularly in close proximity to the reed huts/houses and reed kitchens. In the Richtersveld wood is said to 'blom' (flower) if it leaves only ash. Tinder is ignited by sparks struck from stones, (an infrequent use today) when starting a fire. Rotted heartwood of *A. karroo* is used as well as the white hair in the fruits of *Asclepias fruticosa*. When kindling (kraaineste, krummels and dorrogoed) is gathered the term sa-y is used by some people to distinguish the activity from 'houtmaak' (making wood), which describes the collection of good firewood.

The selection of firewood is also affected by other considerations, such as the ease with which it can be prepared for transportation, how easily the dry wood is collected and the shape and size of the wood. There are seasonal variations in the selection of species. This is probably a result of the bad performance, such as not burning well or producing excessive smoke, of some species in wet conditions. Other species ignite very well in the wet weather, and are therefore more sought after during winter. Certain species are avoided in summer because they are hard on the hands when dry, but when wet they are easier to handle, so are collected in winter only. *Acacia karroo*, which produces a high quality wood, is avoided in winter because it smokes excessively when it is damp. As a rule it is, therefore, only used in summer. *Sarcocaulon* species ('Boesmankers' = Bushman's candle) are often collected to use as kindling in winter because they ignite easily when wet, and burn like oil. Webley, et al (1993) reports on a site , Die Toon, which was excavated in the Richtersveld. At the site waxy deposits were found which are probably from a *Sarcocaulon* species which had been burnt. Rhus species contain resins which ignite easily in wet weather. In winter, large stumps or roots (especially from the *Rhus* species) are kept smouldering continuously. Kindling is regularly added, so that people can warm themselves. Fires are burnt for much longer during this season and consequently firewood consumption is higher.

WOOD GATHERING BEHAVIOUR

Inhabitants of both the Richtersveld and Leliefontein recognise two different types of activities related to the gathering of fuel for fires. 'Hout maak' (making wood) or 'hout toe' (to where the wood occurs) relates to the activity when good quality wood is collected, mainly for the purpose of cooking meals. 'Sa-y' is when people pick dry matter, at random, to complement the woodstack and for kindling. The difference between these two activities can be recognised on many levels.

In the first instance ('houtmaak'), people are very selective about the quality of wood which is gathered. This means that only dry wood of a few species is collected. In the second instance ('sa-y') the wood load represents a broader range of species, as most dry matter is collected until the quality is sufficient. Formal gathering aims at gathering enough good quality firewood for at least two cooking fires. This quality wood is often not found close to the homebase so that quite a distance needs to be covered to collect the wood. Distances varying from 50 m to + 46 km to be covered during the period of survey. A specific area, known to have the quality wood desired, is usually visited. When people sa-y, however, the gathering is usually done in the vicinity of the campsite, very often within a radius of 50 m. It can also be done on the way back from visiting friends, fetching water, collecting plant foods or other activities. The formal gathering activity usually involves gathering of wood only (excluding snacking). Figure 8.10 shows the routes travelled by a young woman when she 'makes wood'. The circle shows the area where most of the 'sa-y' is done.

Because of longer distances travelled for formal gathering, time spent per trip is usually more than time spent per sa-y activity. Table 8.3 shows the different time spent on the months' trips of wood gathering (by foot). Formal gathering always takes more than half an hour, whereas sa-ying usually takes approximately 10 minutes.

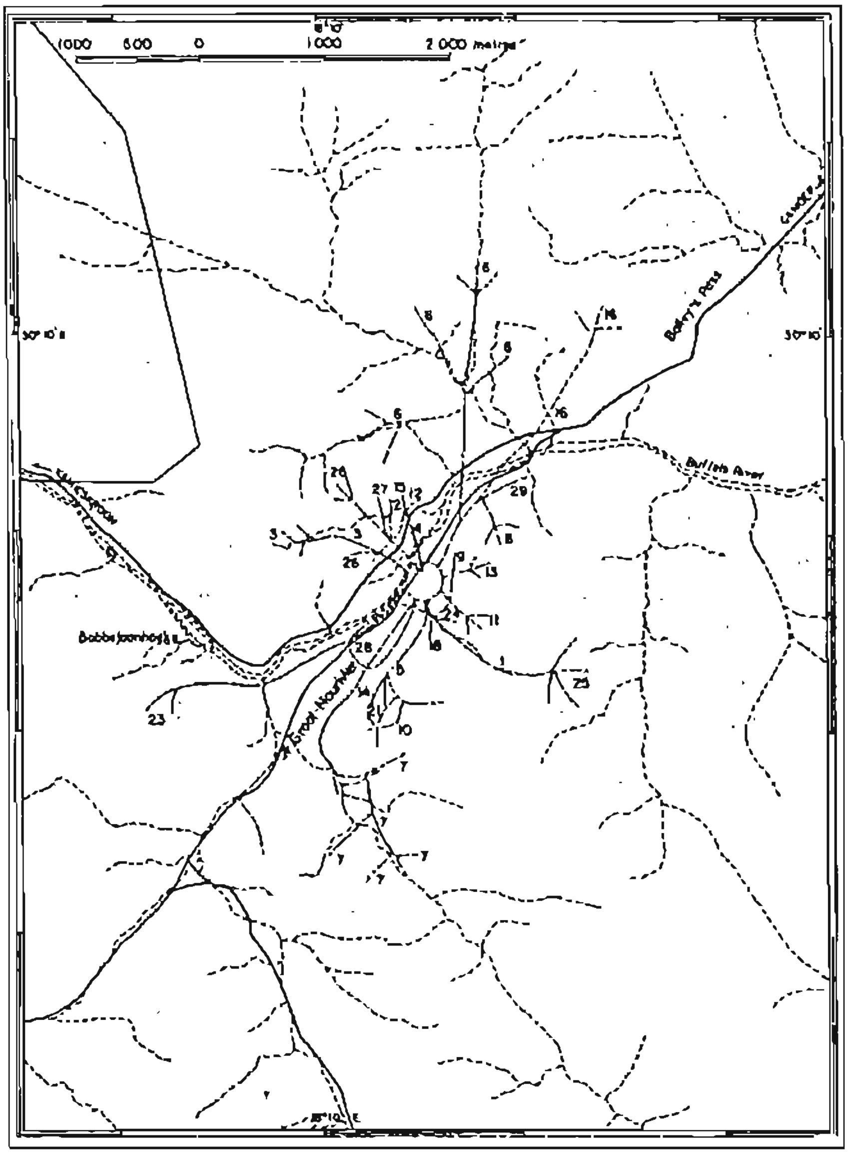


Figure 8.6 Firewood gathering of woman at Nourivier

Table 8.2 Time spent gathering firewood

Activity Type	Time spent collecting	Next trip after days
Formal	2 hrs	4
Formal	1 hr 15 min	3
Formal	1 hr	4
Formal	1 hr 16 min	3
Formal	2 hrs	2
Formal	1 hr	3
sa-y	+ 10 min	1
sa-y	1 hr	2
Formal	1 hr 50 min	2
sa-y	10 min	3
sa-y	10 min	0

Average time for formal collecting for this sample = 1 hr 14,4 min. Average time for casual collecting for this sample = 26, 6 min. Total 11 hr 51 min. These times were recorded in 1982/83.

There are further differences. During the more formal wood gathering exercise wood is carefully selected and prepared so as to get it to the right size and shape to make transportation easier. The wood is broken so that the dry branches are rarely longer than 1,2m. If it were any longer it would severely complicate walking in the veld, especially when descending from hills or mountains. Longer branches are usually split. The wood is also beaten on rocks, or on hard ground to get rid of the fine twigs. In most areas where quality wood is far away from the homebase and gathering trips are undertaken only every second day or less, wood is strapped to an individual's back with leather straps. More recently motor vehicles and bicycles are use to transport wood. Generally 'sa-y' wood loads are carried in the arm and sometimes in a bag. This varies from species to species, however, as certain Mesembryanthemaceae - which is select firewood - have twigs of a small diameter. Wood loads usually contain longer pieces and bigger diameters. 'Sa-y' wood usually consists of short branches with a small diameter, and is not usually prepared for transportation.

The weights of wood from two activities are also different. Table 8.3 gives the weights for quality wood loads, and 'Sa-y' bundles. The weight of quality wood can be up to 25 kg. 'Sa-y' bundles are hardly ever more than 9 kg. As wood was not very scarce in this particular area only a few different species were selected.

In the Richtersveld and Leliefontein it is mostly women who gather wood. Formal gathering is done by women physically able to walk the distances, to make the wood and carry the loads. Young children, older men and women 'sa-y' to supplement wood stacks. The dual character of firewood gathering is practised in most areas. With a decrease of good quality firewood the dual character becomes more pronounced. This means the gathering of wood in the immediate vicinity of campsites/stockposts becomes more pronounced.

TABLE 8.3 Differences in weights of wood bundles collected formally and wood bundles collected casually.

Formal Weight (kg)	No. spp.	Casual Weight (kg)	No. spp.
15,5	2	4,5	7+MANURE
15,25	1	3,5	2
9,25	2	2	2
7,0	1	6,75	2
13,25	1	5	2
25,25	1	2,75	3
33	1	3	3
15	2	3,5	2
21	2	8,25	1
13,5	3	7,5	1
8	1	3,25	5
22,5	2	5,25	6
18,5	2	7,75	3
21,5	2	5	1
22,25	2	8	3
12	2	6,25	1
31	2	1	1
29,75	2	3	1
30,5	3	*12	1
19	3	4,25	3
26,5	3	,75	1
11	2	1	2
18,5	2	4,5	1
14,5	3	7,75	1
17,25	2	4,25	2
21	2	2,25	MANURE
Average = 18,2		Average = 4,6	

*** unusual**

All weights taken in one area. 'Sa-y' weights = one family

Areas where 'sa -y was not practised, were on the banks of the Orange River, where dry wood is extremely abundant. Here a gathering trip never takes longer than +20 minutes and are often very frequent - up to three times a day. Apart from this area, no other areas of abundance were isolated, but it was clear that when an area was very sparsely populated e.g. one stock post in a well wooded area, such as the mountainous regions in the Richtersveld, 'sa-y' was not practised. One family will practise casual wood gathering in an area where quality firewood is scarce, but in other areas where wood is abundant the same family does not casually collect wood. Areas of abundance can rarely be isolated (as in the case of stockposts next to Bloeddrif) as the abundance of the wood is not only determined naturally but is also affected by the current population in an area. In the case of pastoralists in the Richtersveld, populations at campsites stockposts change constantly. Some areas which are visited regularly because there is semi-permanent water and/or good pasturage necessitates the 'sa-y' mode of gathering. The sandy areas of the Richtersveld do not produce much dry wood, so the 'sa-y' mode of gathering is regularly practised to supplement the firewood stacks in those areas.

COOKING AND MANAGEMENT OF FIRES

Most of the families in the Namaqualand Rural Areas use wood to cook their food. The area where cooking is done is separate form the sleeping area. Two types of structures, the cooking house (at more permanent settlements such as rural villages) and the cooking shelter (at the stockposts) are erected as protected areas within which to prepare and consume food. The cooking houses are constructed in the same way as the matjieshouses: A framework of bent poles which is covered by a reed mats and/or hessian, plastic, etc. The cooking house is approximately 4m in diameter - depending on the size of the family who uses it - which has to have enough space for everyone to sit and eat around the hearth.

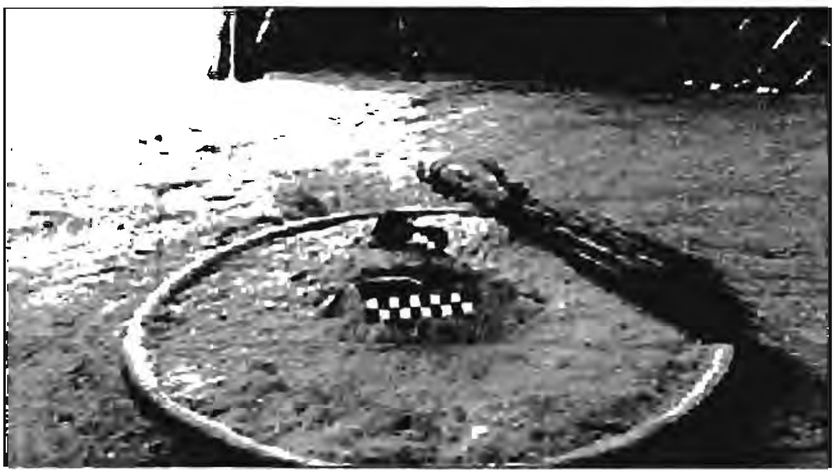


Figure 8.7 Hearth with broom

In the centre of the cooking house/cooking shelter, a hearth is constructed on which cooking takes place. The hearth is usually round (some square ones have been observed) and varies very little in size. It is about 50 - 60 cm in diameter. The hearth, on which all cooking takes place, is usually made of clay with an outer edge of stone, or the rim of a bicycle wheel (a very popular form of transport in Leliefontein and Richtersveld). The hearth is raised above floor level in the more permanent settlements. After construction of the hearth a big fire is made on top to bake the clay and make it solid.

Table 8.4 The distances between the house and skerm at 20 settlements in Leliefontein.

Settlement no	House-Skerm
1	5m
2	3m
3	1,5m
4	1m
5	5m
6	5m
7	5m
8	1m
9	3m
10	3m
11	4m
12	adjoining
13	adjoining
14	2m
15	3m
16	2m
17	4m
18	2m
19	0,5m
20	2,5m
AVE	2,9m

(From Webley, 1987)

The most regularly used cooking utensils associated with using wood for domestic energy are tripod or flat based black pots. People commented on the expense of changing from cooking on an open fire to gas, and mentioned that the cost of changing utensils was very high.

Other uses of fire in the area are for providing warmth. People who sleep in round houses usually make fire on the ground near the front entrance of the house. Other people put hot coals in a tin. A fire is kept going outside, and the coals are fed into the tin from there. Fires are made more regularly during the cold winter months than during summer months. In winter, fires are often kept going during the day - especially in the Leliefontein area where temperatures can fall to below freezing point. In summer, however, small fires are made only to cook meals or to boil water for tea. The fire is usually started in the morning. Many people prefer to cook lunch, and fire is made again in the afternoon. At many households fires are made for a short time during the evening just to brew tea. In the Richtersveld, beyond the Helsberge, people often have two fireplaces, one hearth and one informal place to make the fire. The second, more informal fireplace/hearth is used when the bees are abundant. Bees congregate in the cooking shelter because of the water in the water containers. People mentioned that they often get stung during the day if they use the cooking shelter. For this reason a second fireplace is made so that brews can be prepared.

ASH DISCARD

As in other areas in the world (Hodder 1987) it is largely women who produce and discard ash. There are important norms of behaviour related to the discarding of ash. Some of these pertain to practical considerations, including keeping the fire going while others are more socially determined.

Ash is regularly discarded during the day as ash in the hearth causes the fire to suffocate. In winter the hearth is cleaned out at least four times daily, while in summer the hearth is cleaned out at least once a day. It is always cleaned in the evening. A broom made from branches of trees or from reeds which are tied together is used to clean the hearth. In the more permanent settlements the hearth becomes hollow as a result of the cleaning. The hearth then has to be refilled with clay or sand.

The ash is thrown in the same place every day, which becomes the ash heap. Unlike in other areas such as with the Ilchamus in Kenya, where the ash heap and the rubbish heap are generally two different discard areas (Hodder 1987), the ash heap of the Nama-speaking people also acts as a rubbish heap. When women return to the same site they will use the same ash heap again provided that it is the one which they created. If it is a group's first visit to an established site a new ash heap will be created by the newcomers. Women have a propriety feeling about the ash heap, which is one of the most persistent features of the settlement site. When a site is visited the location of the site is identified by the ash heap. Women would take the author to their previous sites and point out the site, saying:

> *'Daar is my ashoop.' (There is my ash heap)*

During the recent and well publicised land struggles in Namaqualand the transhumance patterns which had existed before the new tenure system were disrupted in most areas. A family from the Leliefontein area moved to the winter stock post site of a female headed household. While they did not build their house on top of the "matjieshuis" site of the woman's traditional site, they built their house very close to the ash heap. The woman insisted that they were:

'bo-op my ashoop' (on top of my ashheap)

and that they should move. Subsequent social pressure on the newcomers resulted in their having to move their house well away from the woman's ash heap and closer to the remaining cooking shelter. Various people were outraged that the newcomers could be so insensitive as to move so close to the existing ash heap. It appeared that the ash heap signifies the right of the family to re-use the site. If anyone wants to put a house up anywhere near the ash heap, permission has to be granted. When two or more families are located in the same area they will each create their own ash heap.

Some beliefs are associated with the placement of the debris, other than ash, depending on what the debris is. Hair which has been cut will not be placed on top of the ashheap but will be dug into the heap as it is seen as dangerous for one's mental health to put the hair on top where it can be blown away by the wind. The belief is that if it should get stuck in the branches of trees then one will go mad. Ash is also used medicinally and is collected from the ash heap to treat certain skin diseases.

At the time of writing, inhabitants are preparing claims for the land court. Many families are referring to ash heaps and graves of their ancestors. They claim that these signify their right to the land. Apart from this interesting symbolic meaning, the importance of the ash heap is an indication of the powerful position women played. It was often said that women had access to resources, and controlled and allocated these, including products from cattle, sheep and goats. The important political significance of the ash heap corroborates women's importance in Nama society.

CHAPTER 9

PLANT USE AND THE ARCHAEOLOGICAL RECORD

Plant remains in the archaeological record are regarded as an important key to understanding gathering activities in the past (Deacon 1976, Cunningham 1988) yet archaeobotany remains a field in which much work needs to be done (Wilson 1990). It is accepted that gaps in our understanding are the result of techniques for the recovery of microbotanical remains not being applied as consistently as is necessary (Pearsall 1990); because research has emphasised dietary plants (Wilson 1990) and because the dynamics of human-plant interrelations that underlie the expression of the paleaoethnobotanical record, have not received adequate attention (Crites 1987). A review of the published literature on plant remains from archaeological sites in Namaqualand and other areas, indicates that plant remains are limited both in quantity and in the range of species represented (see List 9.1). The absence of plant remains in units in some sites is ambiguous as it could be the result of various factors, including poor preservation, changes in seasons of occupation (Webley 1992) or simply the way in which people used (or did not use) plants. In previous chapters I have attempted to deal with aspects of the dynamics underlying the expression of the ethnobotanical record. In this chapter I will expand on this aspect and deal with the production and survival of archaeological material as this aspect is informed by the investigation on customary plant use in the Richtersveld.

List 9.1 Plants from archaeological sites in northern Namaqualand, including the Richtersveld.

Euclea tomentosa
Rhus species
Boophane disticha
Scirpus species
Cyanella hyacinthoides
Oxalis species
Diospyros species
Rhus undulata

After Webley (1992)

PLANT DEBRIS AND WASTE.

The investigation of plant use in the Richtersveld shows a rich variety of activities associated with a wide range of plants both in the Richtersveld and in neighbouring areas in Namaqualand (Archer 1982, 1988). The palaeobotanical remains from archaeological sites in Namaqualand appear to be unrepresentative of the rich plant lore recorded through this investigation (see List 9.1).

Studies elsewhere have shown that people practise various techniques for disposing of refuse. This has important implications for the archaeologist who depends on remains for an understanding of the past (Gamble & Boismier 1991). Part of this investigation into customary plant use was to establish whether the way in which people prepared and used plants obscured their importance in the archaeological record. In order to answer this question, certain preliminary observations regarding the production and handling of waste were made. Brooks & Yellen (1987) subdivide debris-generating behaviour into four categories: procurement, processing, consumption and manufacturing For practical and discussion purposes this categorisation is followed informally in the following sections.

WASTE FROM EDIBLE PLANTS

The waste from eight different edible plants is illustrated in the figures 9.1 - 9.8. The plants which were examined for this purpose were collected at various sites in the Richtersveld and in Leliefontein. The plants were collected mostly during the end of August and in the beginning of September, a season is known to be one of abundance when the plants are likely to be optimally suitable for consumption. The *Cyanella hyacinthoides* were collected from an area in Leliefontein Rural Reserve known as Witwater, situated near the village of Spoegrivier. The *Babiana* species (two different kinds of *Babiana*), the *Pelargonium incrassatum* and the *Oxalis* species were collected at three different sites near the village called Nourivier in Leliefontein Rural Reserve. The *Moraea fugax* was collected from the Sandveld region between Lekkersing and Holgat in the southern Richtersveld.

Observations in the field at each of these locations mentioned above showed that a preliminary cleaning process got rid of the leafy and flowered parts of the harvested plants. This is illustrated on the extreme left of four of the illustrations (Fig 9.4, 9.5, 9.7, 9.8) and on the right of figure 9.6. Women who were interviewed explained that the purpose of this initial cleaning process during the procurement stage was to reduce the bulk of material to be transported in order that more of the corms and bulbs could fit into the collecting bags used to transport plants from the harvesting area to the home base. Some species, including *Cyanella hyacinthoides*, produced additional waste - apart from the leaves and tunic - in the form of the previous years corm (Figure 9..3).

In some instances there was a further cleaning process at the home base, when more of the excess tunic material was removed from the edible part of the plant (processing). Bits of the tunic dropped on the floor as the material was cleaned. After the processing or after the meal, the floor was swept and the remains were put on the ash heap, including the bits of debris from the plants. If the cleaning process happened outside of the cooking shelter then the debris was not swept away until the next day. It is, therefore, possible that debris could have blown onto the outskirts of the werf and against surrounding boulders and/or bushes. According to those interviewed, if sweeping were done with a bush instead of the broom, small pieces of plant material would remain on the werf, which would not be picked up, as would be the case in the cooking shelter.

When plants are roasted in the fire much of the tunic remains, but when the corm or bulb is boiled all of the tunic is removed (processing). The illustrations (Fig 9.2 - 9.8) show the parts of tunics which were removed by women. During eating, the remainder of the waste was discarded. For some species this last category of waste would be the sheaths of bulbs and corms, while for other species - including *Pelargonium rapaceum* (See figure 9.1), a hard pith would also be discarded. This waste was put onto the fire. The remains from cleaning the hearth were later placed on the ash heap. By the time the remains reached the ash heap very few recognisable parts of the above-mentioned material remained , as most of the matter had been burnt to ash. Those which were left on the ash heap were pieces of the sheaths, similar to the illustrations in the top right hand corner of the figures 9.2, 9.4 and 9.5. In some cases (it must be remembered that these dishes were specially prepared for this research) the remains from the previous year's corms (*Cyanella hyacinthoides*) were visible on the ash heap. Interviews with inhabitants to establish what one could expect to find at the site after a family had left, indicated that any waste from open sites left at the hearth would probably be removed by the wind within days of the family's departure.

Some of the species, such as *Oxalis copiosa* were prepared as a porridge by bringing the leaves and flowers to boiling point in just enough water to ensure that the leaves and flowers did not roast. The pulp that was formed was squeezed into milk, then the pulp was removed and put into the fire. After the meal had been consumed and socialising around the fire had ended, there were no visible remains left.

Discussions with many people indicated that plants were frequently eaten away from the base camps. The plants were regarded as snacks and included species shown in List 9.2. Clearly plant remains from these plants would be invisible in the archaeological record as they would be difficult to trace in the surrounding landscape; they would probably not preserve well, and it would be difficult to associate such remains with human activity.

List 9.2 Plants used for snacking in the Richterveld.

Cucumis myriocarpus
Lycium oxycarpum.
Tapinanthus glaucocarpus
Quaqua mammillaris
Trichocaulon alstonii
Viscum rotundifolium

Some of the waste which was produced was examined in detail. The volume of all waste (field and kitchen) was weighed and the weights of edible and waste material was compared. The results follow after the illustrations. It was found that there were both spatial and temporal differences in weights. For example here are different results for the same species collected over two seasons at different places. The results differ from place to place as well as from year to year for samples taken from the same locality at the same time.

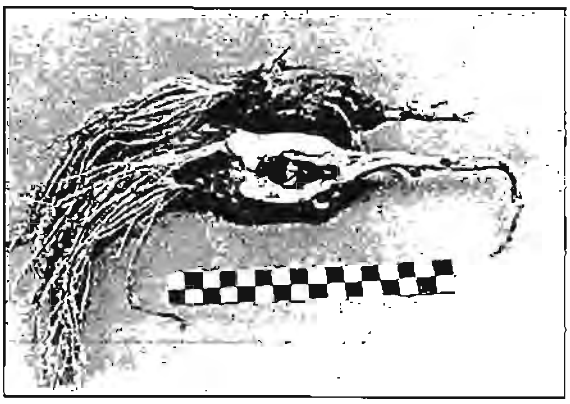


Figure 9.1 *Pelargonium rapaceum* - cross section

The first figure is the weight of the entire collection of edible plants, including the waste. The second figure represents the entire volume of waste from the sample, while the third figure represents the entire volume of edible material. The fourth figure represents the percentage of edible volume represented by the entire sample.

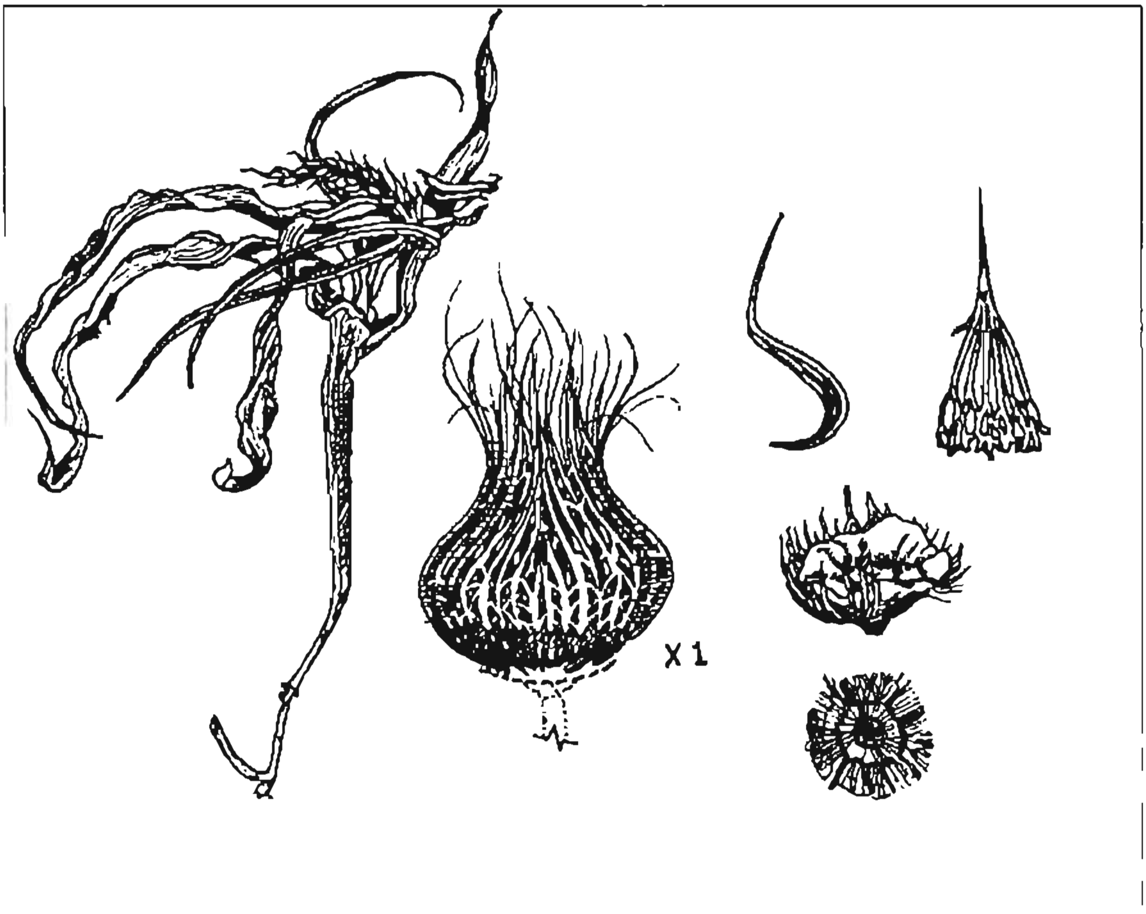


Figure 9.2 ***Cyanella hyacinthoides*** **(raap)**

a.Stem: Stem and leaves deeply parallel veined; leaves are simple, linear, alternative and acute.

b.Corm: Comprised of layers of veined shallots around the edible portion, each one brown-tan outside and whitish on the inside (ratio of corm to setae = 1:1).

c.Shallots: Each run into hairlike setae with irregular cross-veining at the bottom.

d.Basal plate: Shallots attached to inner ring and centre on outside of the hard bony basal plate.

Note: The basal plates of the later Spoegrivier samples were generally larger than those in the Kamiesberg samples.

Table 9.1 Proportion of waste to edible mass of *Cyanella hyacinthiodes*

	Units	Sample 1	Sample 2	Sample 3
Total mass	g	64.6	143.8	230
Mass of waste	g	37.5	51.5	102
Edible mass	g	27.1	92.3	128
Edible proportion	%	41.95%	64.19%	55.65%
Average mass of one corm	g	10.6	6.2	Not Counted

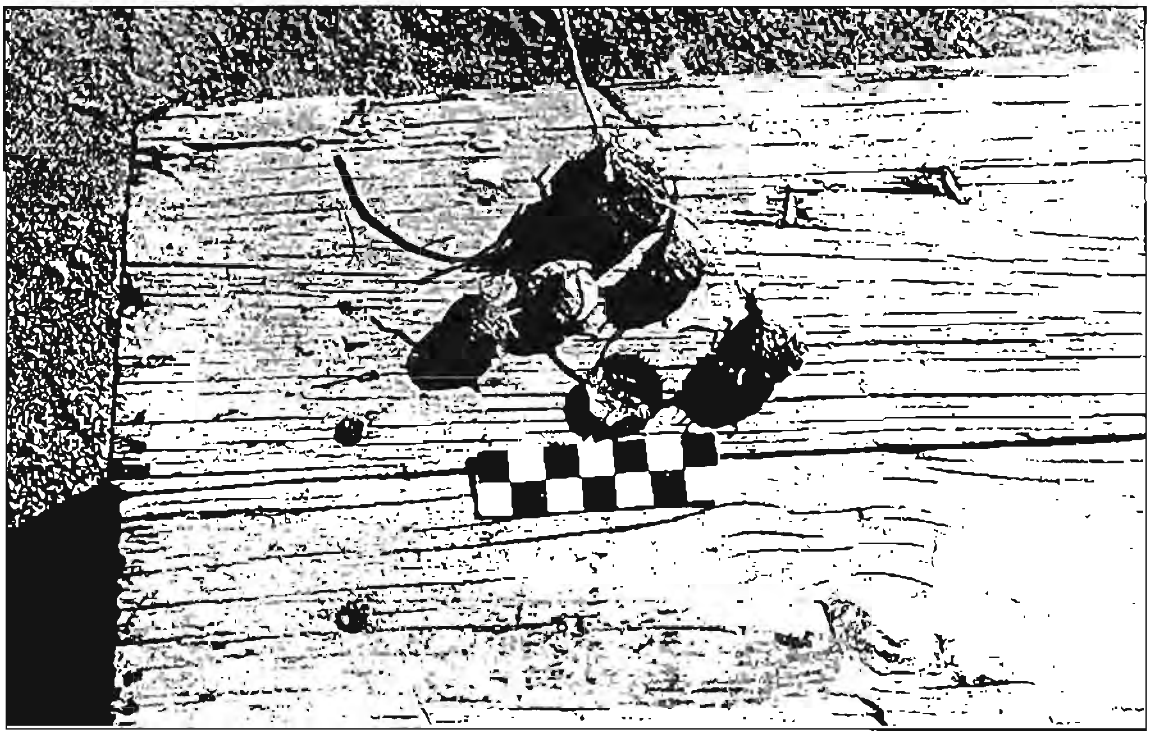


Fig 9.3 *Cyanella hyacinthoides* with previous years corm indicated. Immediately above cm scale.

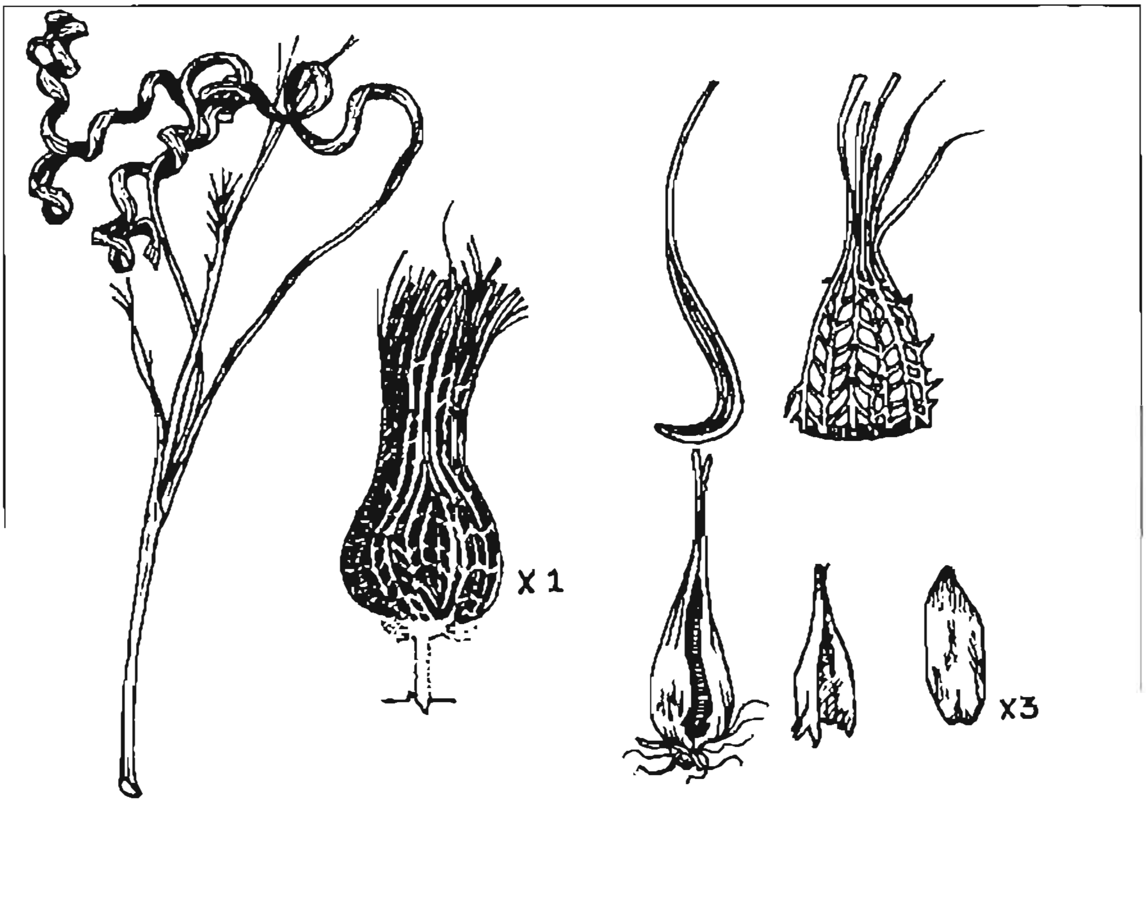


Figure 9.4 *Babiana* species (draaiuintjie)

a.Stem: Grass-like and yellow ochre to tan. The leaves are typically spiral and deeply parallel veined.

b.Corm: Comprised of layers of veined shallots around the edible portion, each one sienna-brown (ratio of corm to setae = 1:3).

c.Shallots: Each run into several grass-like setae with regular cross-veining from top to bottom.

d.Inner shallot: Connected directly to root system - therefore there is an absence of basal plates. The colours are sienna-brown.

e.Seed cover: Membranous white shallot with seed cavity.

f.Seed: Tan

Table 9.2 Proportion of waste to edible mass of a *Babiana* species (draaiuintjie)

Total mass	g	175
Mass of waste	g	54
Edible mass	g	121
Edible proportion	%	69.14%

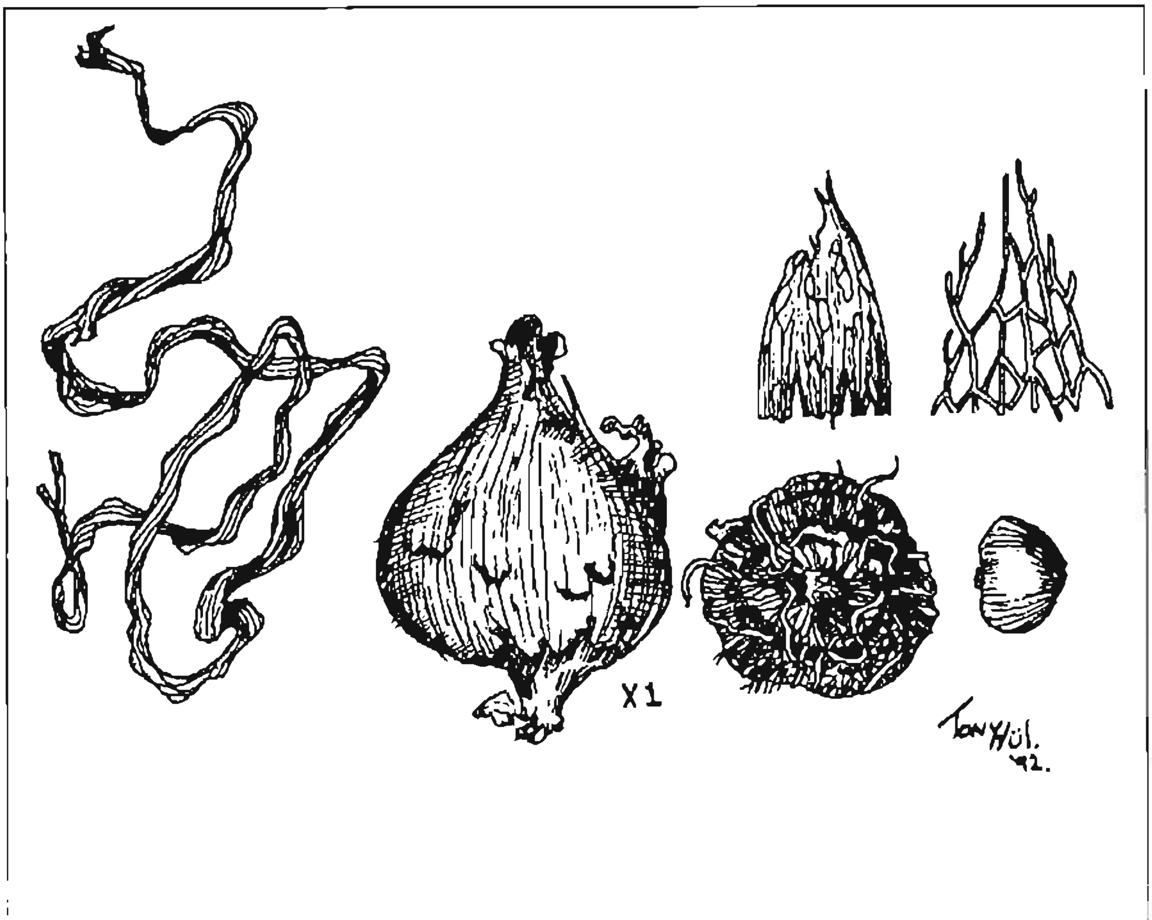


Figure 9.5 *Moraea fugax (sanduintjie)*

a.**Stem**: Grass-like olive-green with purple tinge at inter-nodes. The leaves are deeply parallel veined.

b.**Corm**: Comprised of layers of hairy veined. Shallots around edible portion are tan-brown and black ratio of corm to setae = 2:1).

c.**Shallots**: Each run into several fine hairlike setae with regular veining at the top and irregular veining at the bottom.

d.**Basal Plate**: Hair-like shallots attached to centre on outside of white to tan bony basal plate

Table 9.3 Proportion of waste to edible mass of a *Moraea fugax*

	Units	Sample 1	Sample 2
Total mass	g	135	49.1
Mass of waste	g	28	22
Edible mass	g	107	27.1
Edible proportion	%	79.26%	55.19%

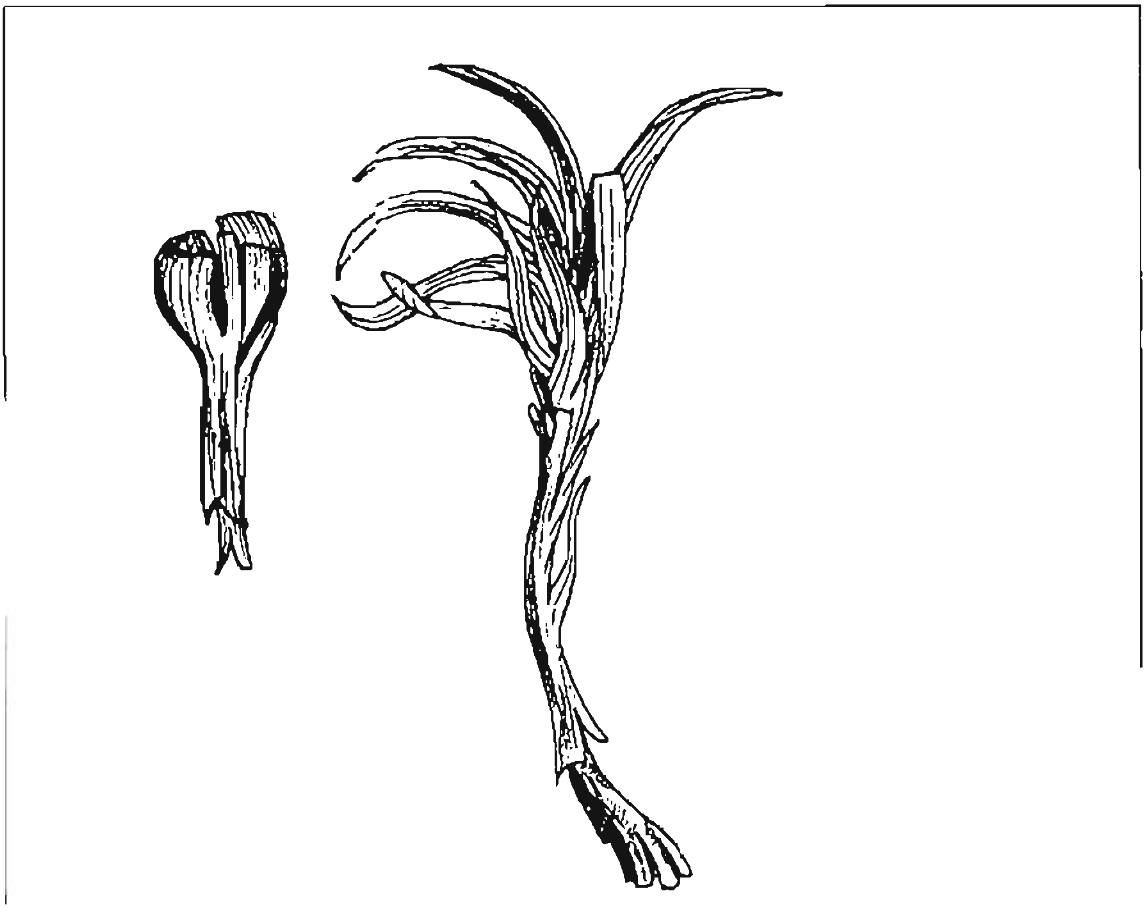


Figure 9.6 ***Babiana*** **species (poepuintjie)**

a.**Leaves**: Tough grass-like olive-green to tan deeply parallel veined leaves.

b.**Corm**: Comprised of layers of membranous veined shallots around the edible portion, each one tan to light-brown.

c.**Shallots**: Each one has an onion-like membranous covering which shows the inside veins (shown in illustration).

d.**Basal plate**: Large and thick (0.5 mm). Roots and shallots are directly attached. Seeds are tan to light-brown.

Table 9.4 Proportion of waste to edible mass of a *Babiana* species (poepuintjie)

Total mass	g	353
Mass of waste	g	236
Edible mass	g	117
Edible proportion	%	33.14%

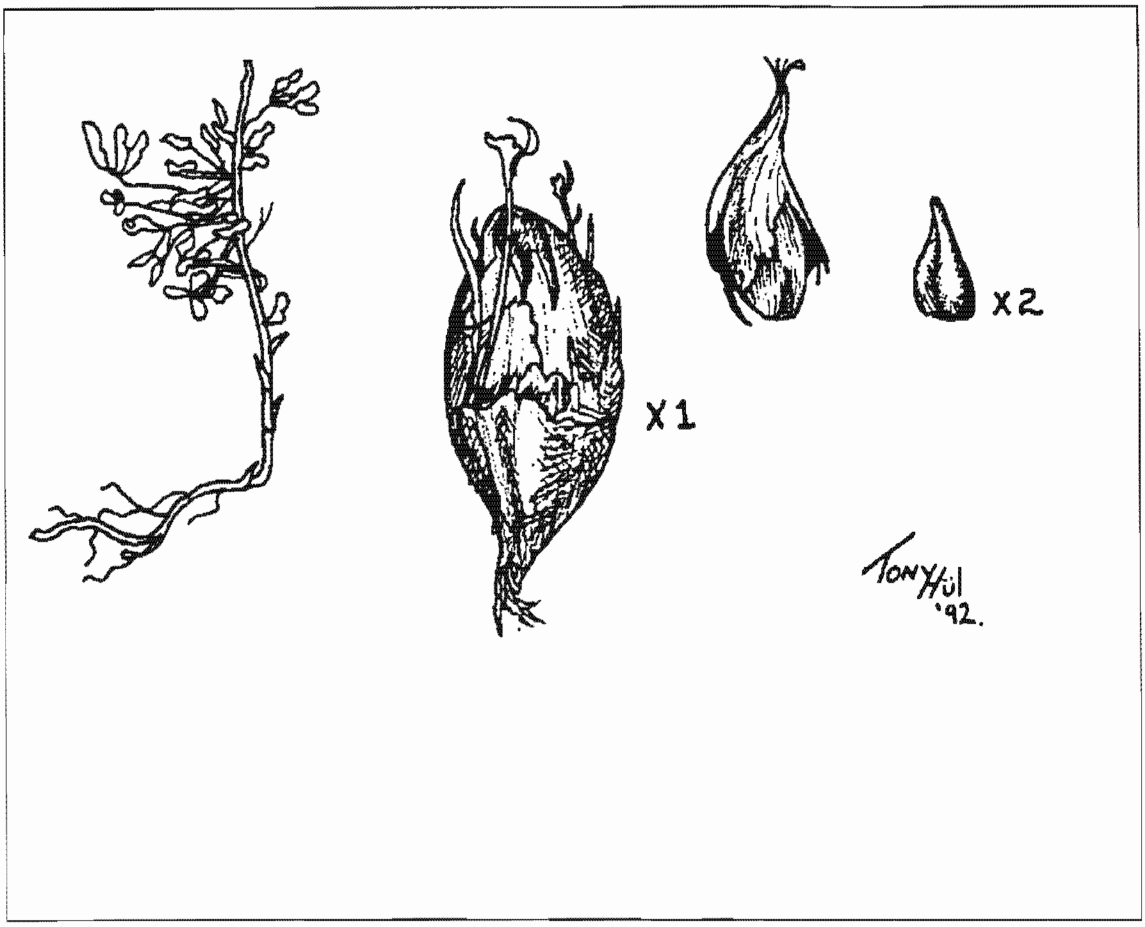


Figure 9.7 ***Oxalis sp*****(kraaiuintjie)**

a.Stem: Stem and leaves are fine and herb-like with olive-green to brown simple leaves and nodes. The root system is fine and fibrous.

b.Corm: Comprised of layers of membranous parallel veined shallots that seem to sprout. Colours are white to pale light brown.

c.Seed cover: Connected directly to the root system with seed cavities. The seed is ovoid, two lobed and light-brown.

Table 9.5 Proportion of waste to edible mass of an *Oxalis* species

Total mass	g	361
Mass of waste	g	230
Edible mass	g	131
Edible proportion	%	36.29%

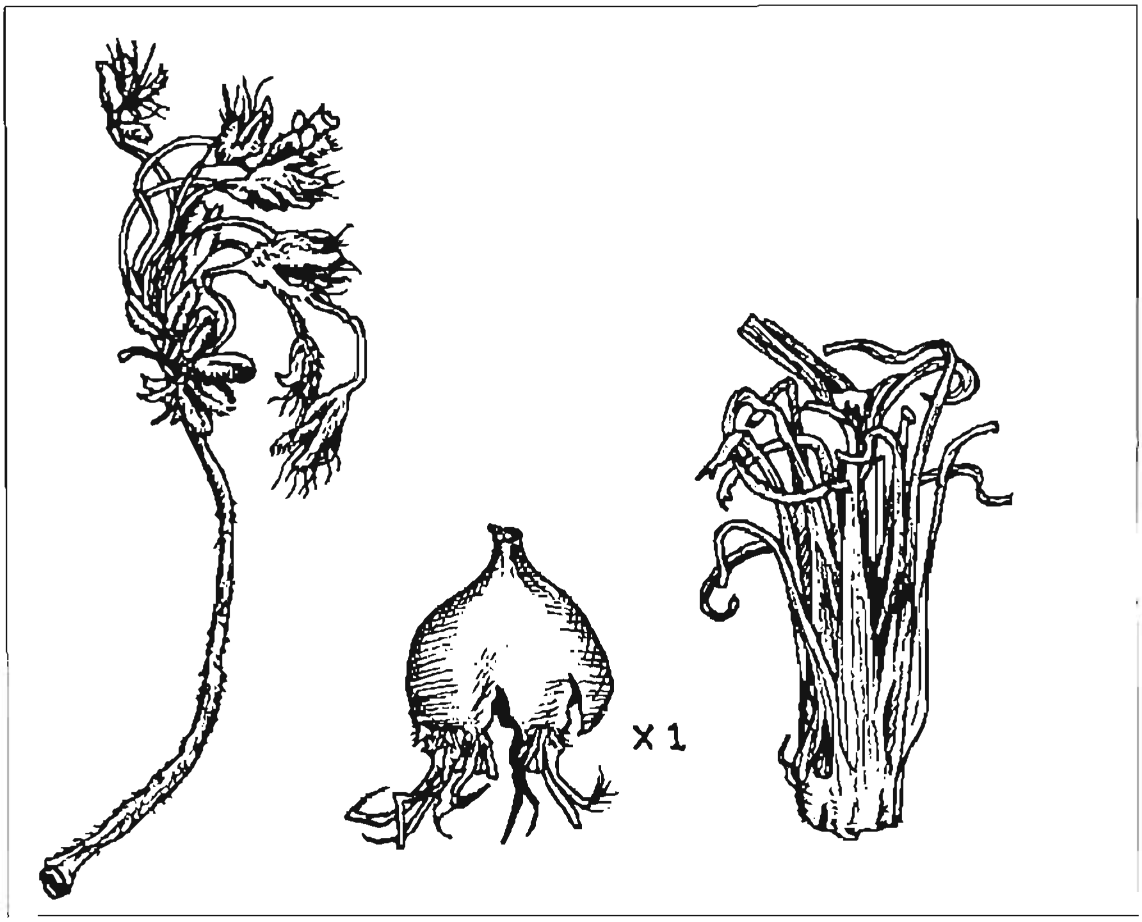


Figure 9.8 ***Pelargonium incrassatum*** **(nytjie)**

a. **Stem**: Greyish woolly stem.

b. **Corm**: Leathery skin terminating in hairlike setae

Table 9.6 Proportion of waste to edible mass of *Pelargonium incrassatum*

	Units	Sample 1	Sample 2
Total mass	g	557	66.7
Mass of waste	g	301	44.4
Edible mass	g	256	22.3
Edible proportion	%	45.96%	33.43%
Average mass of one corm	g	Not Counted	7.7

A close investigation of all of the remains commented on above shows marked differences between the different species in the colour of the different tunics.

After the procurement, processing and consumption of most of the edible plant resources, great care is taken to get rid of debris and to place most of these remains on the ash heap or in the fire. Most of the plant remains end up on the ash heap - mostly as indistinguishable ash. When interviewed, inhabitants said it was regarded as dangerous to leave plant remains and debris lying around as they claimed it attracted insects, scorpions and even snakes. This practise of cleaning up removes most, if not all, of the plant remains which archaeologists might expect to find in the archaeological record. Observations showed that cleaning up procedures were not necessarily followed on the last day that the site was occupied. However these plant remains were minimal. and, as was mentioned earlier, the inhabitants indicated that such remains were usually removed by wind within days of their departure.

Aboveground resources, including the small fruits of *Rhus viminalis* and the seed of *Ficus* species, have been found in archaeological sites in the Richtersveld (Webley 1992). Because of their small size (about 4 mm in diameter) these remains probably represent fruits which were accidentally dropped during the preparation of food.

It must be cautioned that not all plant remains from sites were definitely deposited by people. Observations in the field showed that the activities of mice left debris from corms and bulbs which were very similar to the debris left by human activity. The debris observed in this study was seen mostly in open holes in the ground. However, some of the lighter remains were carried by wind and deposited in bushes and against rocks. Further, it is known that jackal feed on the fruits of *Ziziphus mucronata* and that the core (seed) of the fruit is excreted, often under rock overhangs. These factors serve to illustrate how difficult it would be for the archaeologist to distinguish, with certainty, between debris associated with human behaviour and debris associated with animal behaviour.

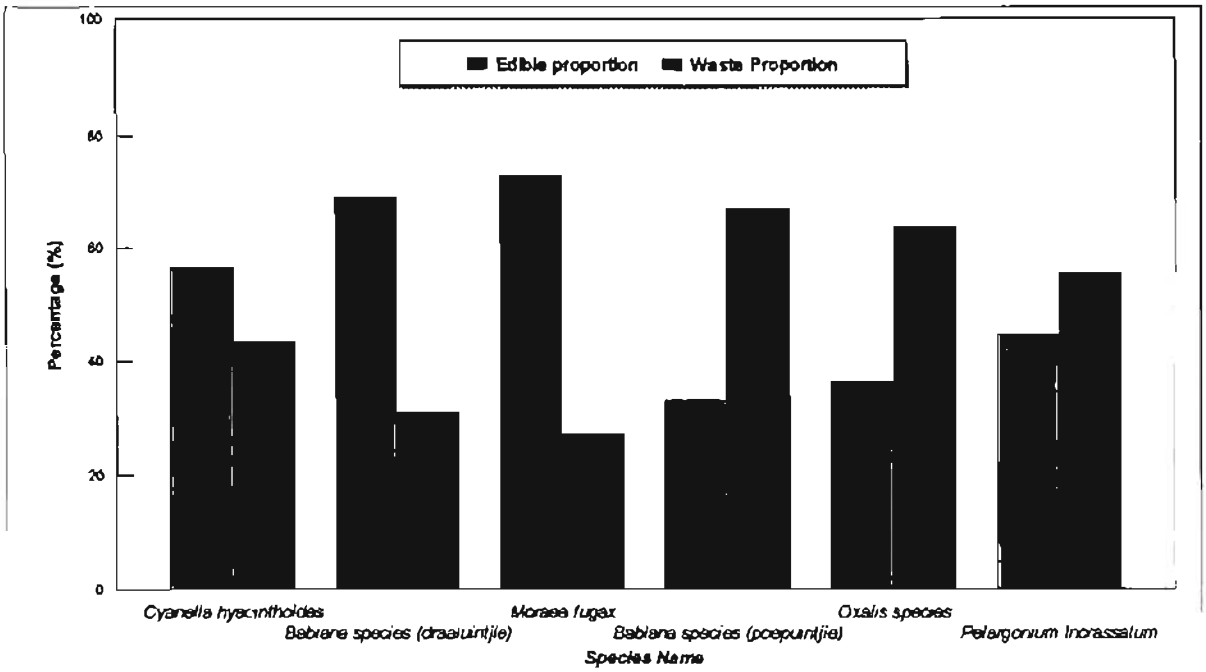


Figure 9.9 Proportions of edible and waste material for 6 different plants

Table 9.7 Data used to produce Figure 9.9

	Cyanella hyacinthoides	*Babiana species* (draaiuintjie)	*Moraea fugax*	*Babiana species* (poepuintjie)	*Oxalis species*	*P. incrassatum*
Total mass	146.13	175	92.05	353	361	311.85
Mass of waste	63.67	54	25	236	230	172.7
Edible mass	82.47	121	67.05	117	131	139.15
Edible proportion	56.43%	69.14%	72.84%	33.14%	36.29%	44.62%
Waste Proportion	43.57%	30.86%	27.16%	66.86%	63.71%	55.38%

The above comparisons of the proportion of waste to useful edible mass shows that the waste is lower than the edible portion for the first three species. The proportions of waste to edible matter changes dramatically for the same species collected in the same place in different years. See figure 9.10. All specimens were collected in the same season (late August and early September). The difference is probably due to the different growth rates of plants in different years, which is largely influenced by rainfall. Both the time of year when the first rains fall, as well as the quantity and frequency of rain influences the growth rate. Observations showed that growth was activated by the first rainfall, provided it was more than a light shower. The first rain could occur any time from the end of February to April.

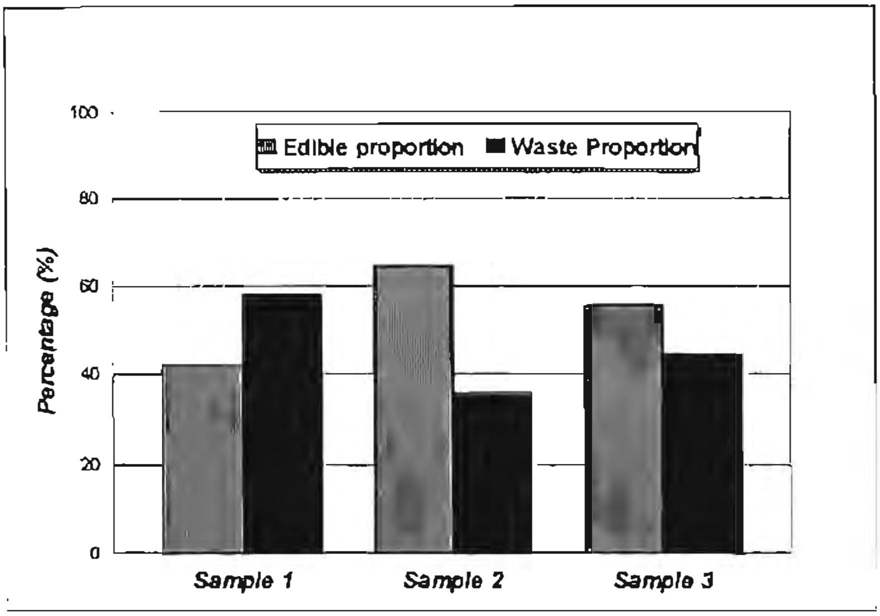


Figure 9.10 Proportions of edible and waste material for 3 samples of *Cyanella hyacinthoides*

WASTE FROM MEDICINAL PLANTS.

Waste from medicinal plants is disposed of in the same way that the waste from the edible plants is disposed of. Many of the brews made from species, including *Mentha longifolia* and *Sutherlandia frutescens* produce a pulp which is put in the fire after use. Observations of waste from various brews showed that the pulp gets burnt to ash very quickly (as in the case of the pulp from the *Oxalis copiosa*) so that no recognisable matter even reaches the ash heap. Plants used for magic are disposed of in different ways. They could be buried at the site or away from the site, depending on the instructions of the healer involved. This practice is not common any more and it was difficult to establish what the archaeological implications could be. The two people who were interviewed about this matter were reluctant to discuss it as they were concerned that the discussion could have adverse effects on the potions. In both of these cases plant material was disposed of to ward off the evil spell that other individuals had cast.

Figure 9.11 shows the material produced from the preparation of *Sceletium namaquense*. The material was collected in the summer rainfall Bushmanland area adjacent to the east of Namaqualand. This locality is still visited by people from other areas in search of this very popular plant, which has been over-exploited to the extent that it is now considered very scarce. All of the material from the plant is used, which is processed over a period of about nine days. The process involves alternately pounding the material with stones, then covering it and allowing it to ferment. Once it has been dried, it is ready for use. The material is chewed and then chewed at intermittent periods, the material which had been chewed and then discarded onto the hearth at the home base (where it is burnt) or it is spat out if in the field. It is only likely to remain in the site if it was accidentally dropped. This use of this plant can be traced archaeologically through the impact the preparation of it makes on the boulders and stones used in its preparation.

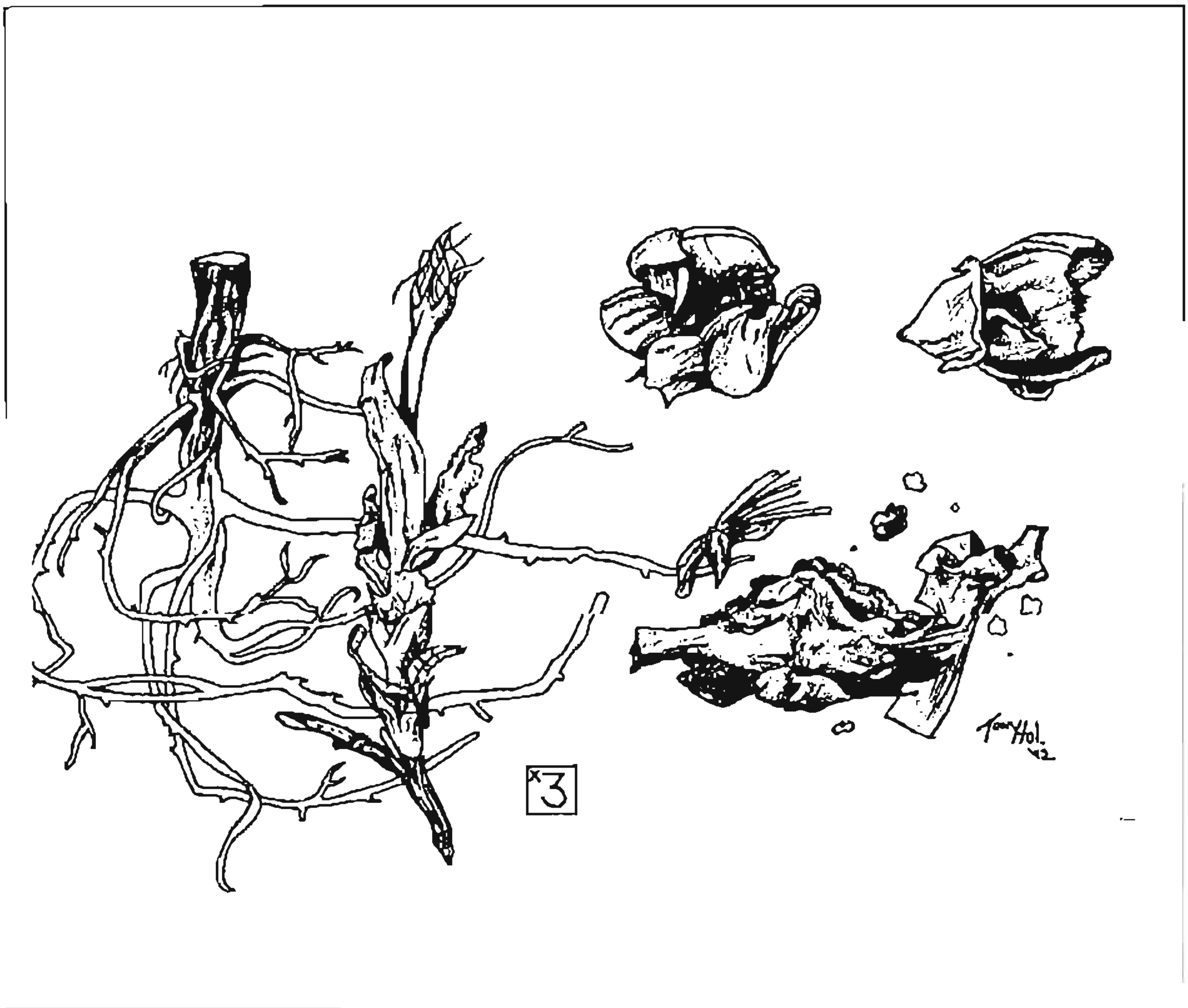


Figure 9.11 ***Sceletium namaquense.*** **Illustration of plant material after preparation**

Medicinal plant remains can be found in the tortoise shells in which they were stored for use. The plants contained in the shells were probably the sweet smelling plants which were considered to bring good luck and which were carried on the body in the shell. Today people keep medicinal plants in brown paper bags which are stuffed into the dome of the "matjieshuis". Generally, only snuff and cigarettes are carried on the person which are stored in small tins and in the cigarette boxes, respectively.

WASTE FROM UTILITARIAN PLANTS

The construction and use of stockposts leaves plant and other remains, as well as modifying the land surface. In Archer (1992) the impact which the erection and use of the stockpost has on the environment is discussed. In the following section aspects of these remains are discussed and details about the land surface modifications

In chapter 6 the construction and maintenance of the "matjieshuis" and cooking shelter were discussed, and the manufacture of reed mats. Observations showed that the manufacture of reed mats scattered remains from the site of procurement - which could be up to 100 kilometres away - to the home site, where final stitching of mats was done.

Figure 9.12 shows the remains which can be expected from the initial manufacturing process when the unused parts of the plant are discarded. The reeds are cut to a uniform length before they are stitched. The pieces which are discarded are usually put on the ash heap, not on the fire or hearth. Because the cut-offs are light, they are likely to be completely removed by wind from the ash heap where they were deposited. In this study the complete removal from the home site of cut-offs from reeds of three mats was monitored over a period of two years.

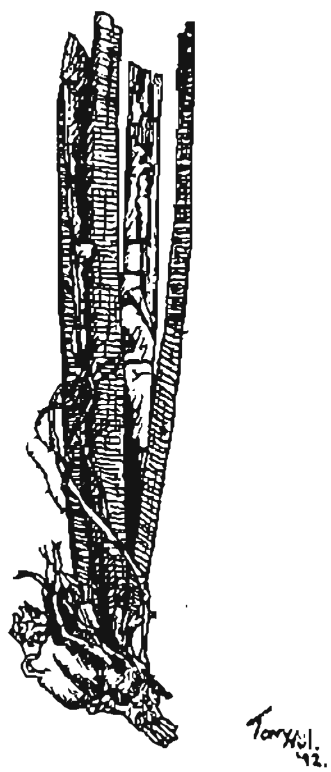


Figure 9.12 ***Scirpus dioecus*****, outer casing of the reed removed and discarded**

Preliminary assessments of abandoned sites and associated plant remains revealed that plant remains from the cooking shelter, firewood debris (called 'krummels' or crumbs), ashheap/s and a few broken implements, including walking sticks, were found months and even years after the site had been abandoned. If anything which had been left behind is removed from the site by people other than those who left them, existing social manners prescribe that the people who left the debris should be informed. It considered unacceptable to remove anything from a site which is visited seasonally and which is associated with a particular family or families.

The results from the above survey indicate that plants are likely to be under represented in the archaeological record and that some plants may not be represented at all. Edible plants which are most likely to be represented because of the resilience of the plant material, are the underground edible plant foods, such as corms (represented by tunics, for instance) and above ground resources such as fruits of *Rhus* species. Some plants, including those in List 9.2, will not show up in the archaeological record at all. Medicinal plants are also unlikely to show up, unless the tortoise shells in which these were stored were left at the site, or the plants were buried as some form of healing ritual. Plants used for domestic purposes, such as broken walking sticks, may be found after considerable time, but remains from the structures, including the cooking shelter ,will probably not survive for longer than a few decades at the very most.

LAND SURFACE MODIFICATIONS ASSOCIATED WITH PLANT USE

In the following section comments on land surface modifications associated with plant use are made. The Brooks and Yellen (1987) classification in land surface-modifying activities: construction, excavation and compaction, is used informally.

Apart from the holes which are dug by people to remove edible parts of plants (bulbs and corms) there are other activities which modify the land surface. One such activity is when women sharpen digging sticks on the granite boulders close to areas where they harvest corms and bulbs. At certain areas, including at Spoegrivier in the Leliefontein area, some boulders are worn quite smooth from this activity.

Figures 9.13 and 9.14 show the preparation of the plant for medicine. The site where the photographs were taken has been used for preparation of the resource for as long as the two people who were interviewed could remember. The round stones with which the plant material is pounded, remain on the site. The granite boulder has been worn completely smooth. The women interviewed said that they preferred to use the same site for preparation because the smooth boulders did not produce as much grit in the plant material as an unused surface would.

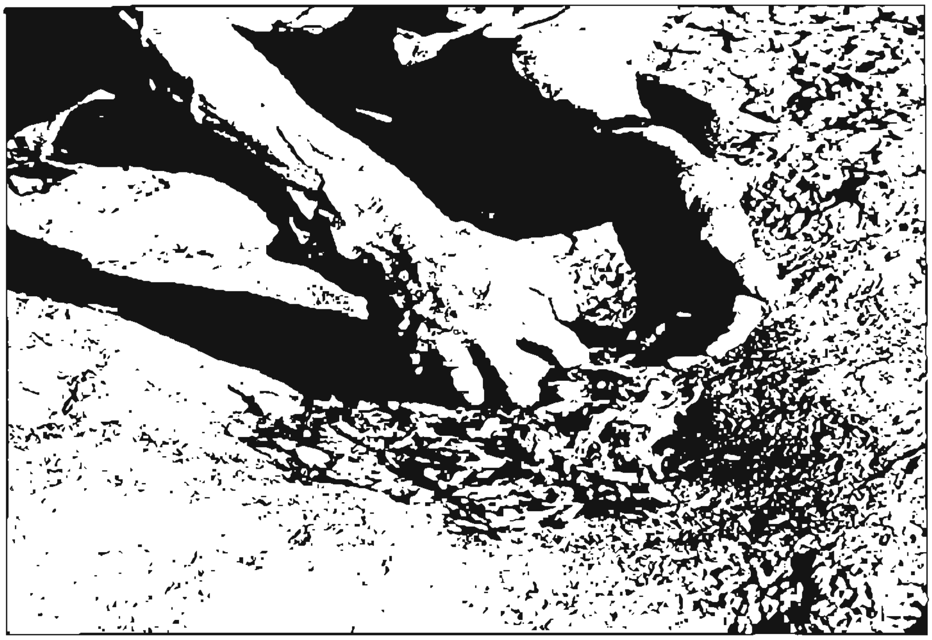


Figure 9. 13 Crushing plants with stone (see worn out surface of granite stone)

Figure 9. 14 Crushing plants with stone (see worn out surface of granite stone)

This illustration is from chapter 7, Figure 7.2 on page 79.

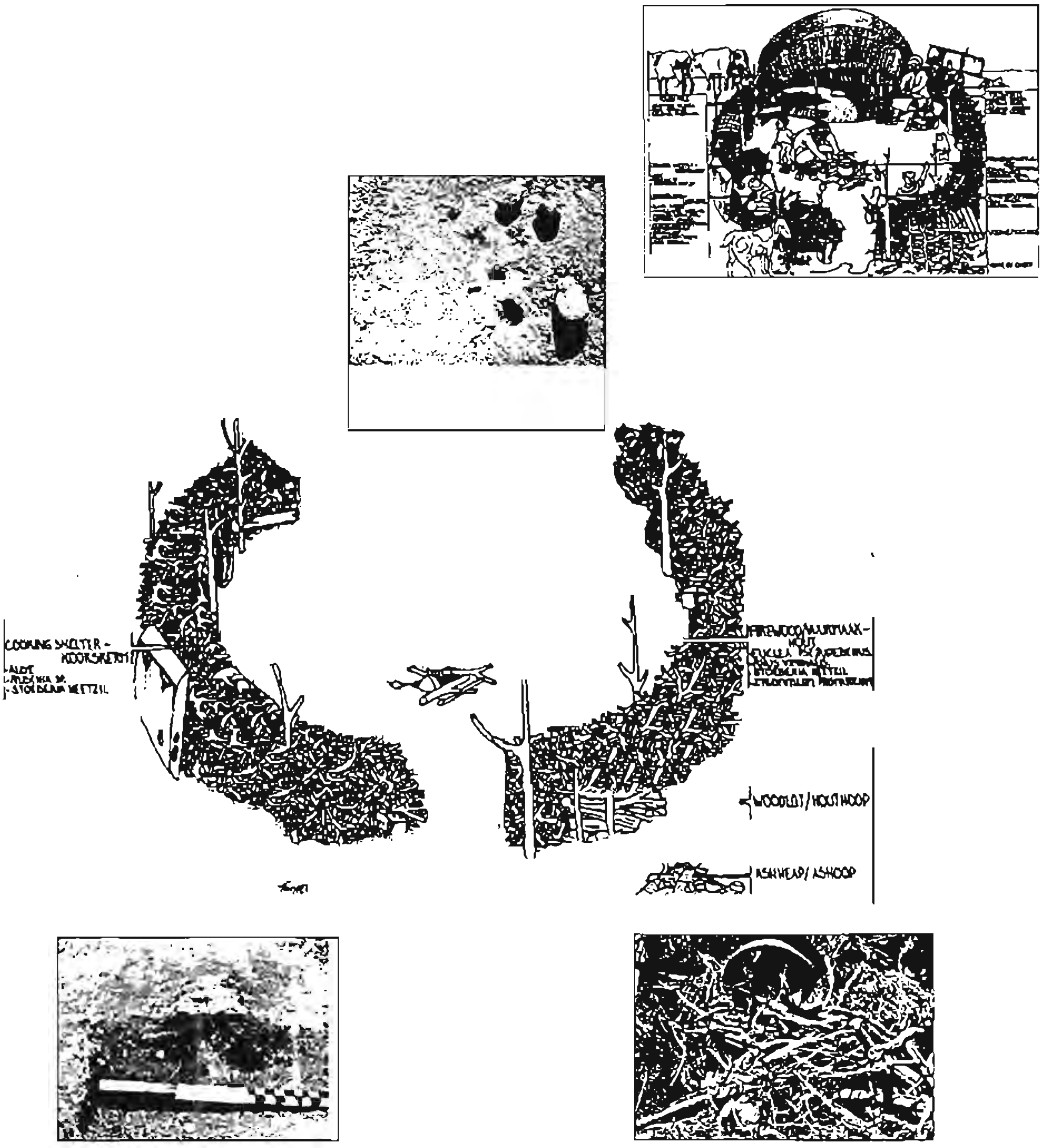


Figure 9.15 Illustration showing some features after a site has been abandoned. Top centre photograph shows land surface modification (excavation for pole). The bottom left photograph shows a cross-section of hearth - the depth of ash-heap and burn is indicated by the scale. The bottom right photograph shows remains of firewood heap.

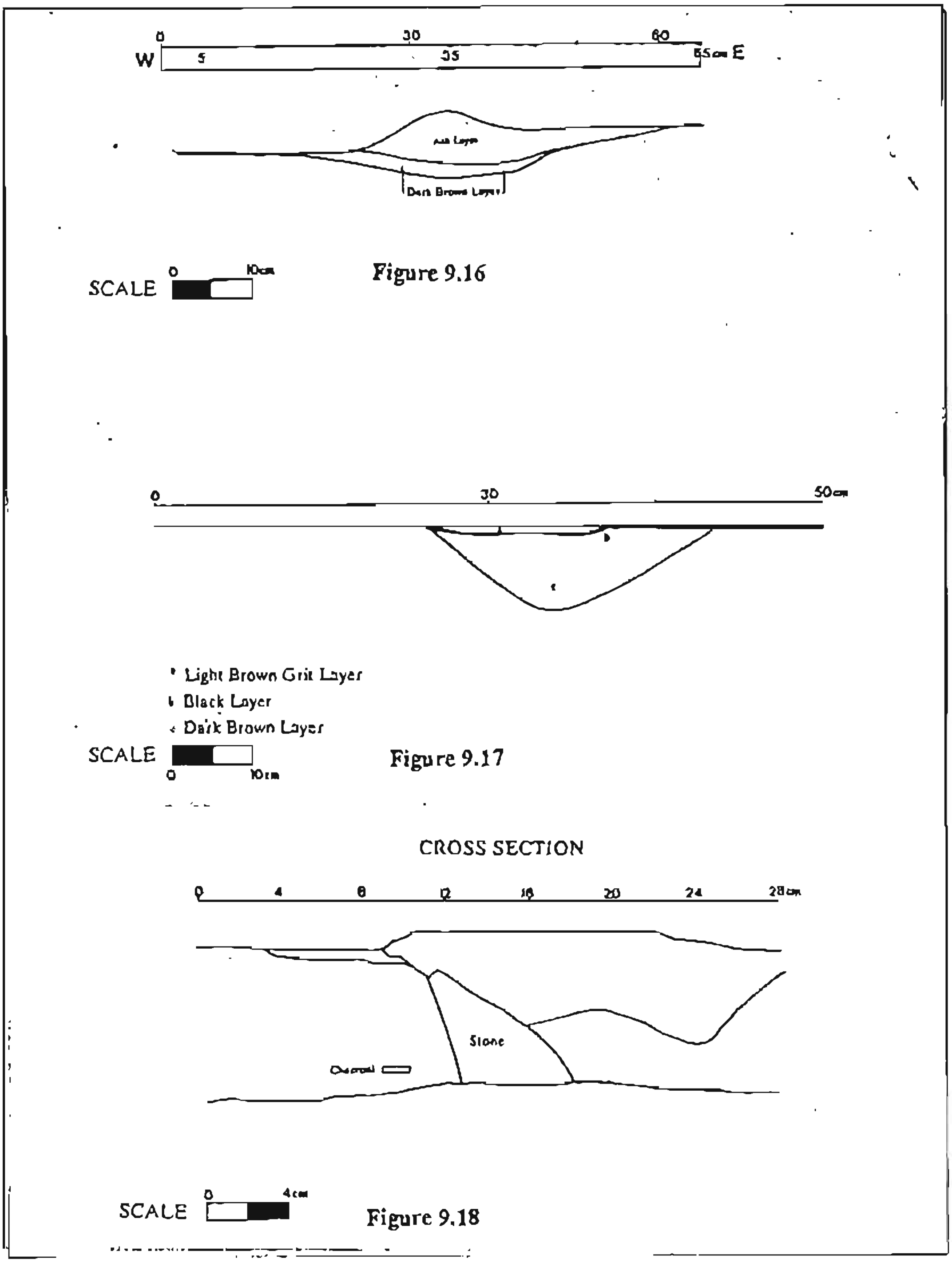
Figure 9.15 has been adapted to show what remains after the hut has been moved. The accompanying photograph shows the holes left in the ground after the framework (poles) of the hut have been removed. The most enduring remains are the hearth and the ash heap, which are visible for years after the family has moved from the site.

The most durable features of the stockpost are the ash heap and the hearth. Observations showed that the ash heap consisted mostly of burnt plant remains and of soil swept up during cleaning. Ash heaps remain visible for years after the site has been left. The longer the site was occupied, or the more frequently it was occupied, the bigger the heap. Inhabitants of Namaqualand showed this researcher ash heaps which were made by their forefathers. These features are important, today, as people feel that they should be able to claim land which shows visible signs of their occupation before the land was alienated by whites.

The cooking shelters also survive for a number of years. After the plant remains have worn away, the site of the cooking shelter can often be recognised by the inner area which is compacted, and by the stones which are sometimes packed to secure the poles around which the bushes are stacked. The hearth is in the centre of the cooking shelter and can also be regarded as a land surface modifier. The hearth is often constructed with baked clay. The baked clay remains visible for a number of years after the site has been abandoned. In this research three hearths were excavated (figures 9.16, 9.17 & 9.18). The hearths were all smeared with clay.

The site of the "matjieshuis" can be recognised by the holes which were excavated to plant the poles, by the compacted inner area and, in most instances, by the circle of stones which were packed around the poles to secure them. (See illustration.) Sometimes holes can be detected where cooking shelters had been. These holes were formed by the framework of heavy sticks which are used to anchor the bushes.

The area around the "matjieshuis" and the cooking shelter (the werf) can also be recognised because of the compaction. The areas which are compacted through usage are swept regularly as part of the maintenance procedure. Often the top soil is removed in this way , which alters the chemical context for plants. *Mesembryanthemum squamulosum* will often grow on these disturbed areas. This researcher often spotted sites in the Richtersveld by recognising a patch of different vegetation. When one walks on the site surface one can often feel the different consistency of the soil. Some of the sites spotted in this way are reputed to be more than 50 years old. The layout of some stockposts is given in Appendix IV.



Figures 9.16, 9.17& 9.18 Cross-sections of three hearths which were excavated

This concludes the chapter on plant remains in the archaeological record and certain land modifications associated with plant use. The following chapter, the conclusion, assesses the usefulness of this investigation and includes critical comments on the way in which archaeologists have used plant remains to interpret the archaeological record.

CHAPTER 10

PUTTING MEANING TO THE ARCHAEOLOGICAL RECORD

PUTTING MEANING TO THE ARCHAEOLOGICAL RECORD

The major aim of this dissertation, as set out in chapter 2, is to investigate the range of useful plants in the Richtersveld. The investigation should be viewed as a rescue operation because people in the Richtersveld are dependant on plant resources for subsistence only to a limited degree. In spite of the fact that this investigation is a pioneer study, the components of the vegetation of the Richtersveld are not yet fully understood. Much of the customary plant lore of the Richtersveld has been lost. This investigation has resulted in the recording of the uses of approximately 120 botanically identified plants from the Richtersveld. There may be many more useful plants which were used earlier. The lists, descriptions and analyses of this record provide a useful reference for archaeologists who have to deal with a limited range of static material derivatives of past dynamic activities and who are dependant on an analysis of ethnographic and historical and environmental information to provide the raw material for building models which give explanations for the behaviour of early people.

From the investigation it is clear that, the range of plants as well as the range of activities and products associated with the plants are high. Only a limited range of the plants and activities will contribute to the archaeological record. This corroborates suggestions made about the material remains from archaeological deposits elsewhere in southern Africa (Brooks and Yellen 1987) . In fact, the material remains of plants are potentially so small that it would be virtually impossible to reconstruct the cultural life of the Nama Khoi pastoralists and their interaction with plants only from the plant remains. For any understanding at all of how people have interacted with plants we can use the information as collected from this ethnobotanical project. While a study such as this one gives much information which can be used in building models of behaviour, the limits of doing this, should however be mentioned. The range and importance of specific plants change over time. It is difficult to reconstruct the past behaviour of people under the present circumstances of diminished plant use. Exotic species, for instance, including *Ricinus communis* and *Nicotiana glauca*, are part and parcel of the existing plant lore while many other endemic species have not been recorded as useful. Further, *Cyanella hyacinthoides*, which was rated as a major plant food in the Leliefontein area may have become so important only after cultivation was started in the eighteenth century. This is because this plant occurs extremely abundantly in disturbed soil - especially in fallow lands.

The material from this investigation is particularly useful as it challenges some of the inferences which archaeologists have built up. These inferences, in turn, influence the way in which the archaeologists interpret the archaeological record. One of the inferences made about absence of plant remains in sites where preservation is good, is that plants were not an important resource - if used at all. Remarks on scarcity of plant food remains at various sites (H. Deacon 1976, Webley 1992), including comments which suggest that shellfish gathering replaced plant food gathering at given times, when plant remains are not found in certain layers (J. Deacon 1984). This inference may be unrealistic and heavily biased towards the probability of plant remains being preserved, as well as the notion that there would be remains of plants if they were used. This investigation indicates that the lack of abundant plant remains does not necessarily indicates lack of use, neither does it indicate lack of importance. The investigation, however, does not assist in explaining why abundant plant remains are found in sites. Wadley (1979) uses an integrated approach to analyse botanical samples when she argues convincingly that the significant quantities of *Cyperus fulgens* remains indicate that this species may have been a staple diet at Big Elephant Shelter for approximately 3 000 years. She draws from a number of factors which characterise the plant and which could make the plant more attractive for harvesting. These factors include abundance, availability, and dietary value. She also draws from early written records to corroborate her view. This more integrated approach is exemplary in that it is effectively employed to comment on paleaobotanical remains. The difference in concentration of plant remains in Elephant Shelter to those found by Webley (1992) in the Namaqualand sites could possibly indicate differences in different modes of production between hunter-gatherers and pastoralists. It is not the intention of this dissertation to compare the different uses of plants which may have characterised these different modes of production. Further investigations into plant use would be needed to explore this possibility.

It must be kept in mind that the occurrence of plant remains gives us hardly any indication of the power or gender relations that existed in the lives of the people who used these resources. This should be considered in the case of comments such as those which have been passed by Mazel (1987) and the following by Webley (1992).

> *"During these initial stages (2 000 years ago - my insertion) men would have been able to continue hunting but women would not have been able to make their contribution to diet because they were ignorant of the available plant foods......I would suggest that during the period 2 000-1 600 women's status decreased relative to what they enjoyed previously"*

(Webley 1992:265)

While there are suggestions in the literature (Leacock 1978, Cohen 1978a, Cohen 1978b, Schlegel & Barry 1986) and elsewhere (Archer 1993b) that women's' status were affected by their contribution to subsistence, there is no evidence in ethnobotanical literature that the learning process to become acquainted with natural resources will take some hundreds of years. My investigations show different dynamics and a very intimate understanding of the environment. People have quick ways of assessing the resource and will, within months, acquaint themselves with the usefulness of a wide range of plants in an area. They can do this with ease because of their understanding of plant taxa which are related. The author has often been in situations where someone not acquainted with the specific area and vegetation, will point out similarities between the plants present there and the plants they know. Plants from the same genus are mostly recognised. Informal interviews with supermarket buyers in Cape Town and elsewhere corroborate that resources are assessed quickly by clients - especially where food resources are concerned. It is a matter of weeks at the most before a product is used or not.

Further, in working with traditional medical practitioners (TMP's) from the Cape Flats the author has exchanged plants which they use regularly with medicinal plants from Namaqualand. The Cape Town TMP's not only recognised the substituted plants as useful, but could also say which ailments could be treated with which plants. The plants were assessed by smell and by tasting the fresh plant and also the processed medicines. (The plants included specimens of *Salvia spp.*, *Sceletium namaquense* and *Sutherlandia frutescens*).

Similarly, two people (a herbalist and a midwife) from Namaqualand were given plants which had been purchased at the Grand Parade in Cape Town where fresh medicinal plants are sold. The midwife was familiar with one of the plants (popularly called wynruit). Plants used for influenza were recognised for their medicinal value. Plants were also smelled and tasted. Interviews indicate that people perceive familiarity with unknown useful plants as a gift from God or the ancestors. The knowledge is said to be communicated through dreams.

Investigations in Namaqualand emphasise the intimate knowledge and understanding which some people have. During the investigations on which this research is based, local experts from Namaqualand often pointed out that a plant was the 'male' or 'female' version of another plant - these plants were invariably from the same genus. Taxonomists from Kirstenbosch Botanic Gardens identified three herbarium specimens as *Cyanella hyacinthiodes* in spite of the fact that local Namaqualanders pointed out that these three plants are different. During her revision of the genus, Scott (1986) went back to the specimens and found that there are three different species *C. hyacinthoides*, *C. alba* and *C. orchidiformis*. It is clear that there is a tendency amongst some researchers and archaeologists to overlook the fact that indigenous plant lore reflects an understanding of the environment and its functioning far beyond that which we can achieve when we do our 'short' (looking at the dynamics of natural resources in a period less than 10 years is too short) investigations.

Sometimes archaeologists base oversimplified suggestions about plant use on a few plant remains. Criticism of interpretation of the palaeobotanical record per se is not intended, since such interpretation is essential. However, the following interpretations made of these records can be challenged.

Often the plant remains from a site are listed out of temporal context (charcoal is an exception). This means that the lists of plant remains contain little information about the layers in which the particular remains were found (see Parkington & Poggenpoel 1968, Deacon 1976). Where information on plant remains are associated with specific layers (see Wadley 1984 and Webley 1992) it is clear that very little information is available on the specific plant remains and associated activities within a particular occupation period. The available information is often linked to only one or two different species. In subsequent discussion, archaeologists often lump together meagre palaeobotanical remains from various occupation layers in order to comment on behavioural aspects about plant use - as if the occupiers represented by the different layers would have behaved in a similar way. This compaction of evidence, to explain behavioural aspects around plant use, could obscure the dynamic changes in both culture and environment and also the possible differences between and within user groups. Changes in the culture and/or environment may (and probably will) result in different dynamics of plant use. Linking the ecological aspects to social behaviour, after having lumped evidence together, seems sometimes to be far-fetched. Information from which this thesis has been compiled has been collected over a period of more than ten years - and still the information is incomplete. Had data collection stopped after two years, much simpler explanations of how plants are used in Namaqualand would have been offered . In this respect, the following is important:

> *"But unless we work at building bridging theory that allows us, with some degree of confidence to impart meaning to the archaeological record - theory which links statics with dynamics - then we cannot hope to move productively from the statics of the archaeological record to reconstructing past lifeways, understanding past cultural processes, and writing culture histories of the past."*

(Sabloff, Binford & McAnany 1987:207).

Many ethnobotanists and other scholars use a Eurocentric and piecemeal approach - divisions are made between biological determinants and cultural determinants - when they analyse the ethnobotanical data.. Debates which hinge on questions such as: *Is the choice of plants biologically determined or is it culturally/socially determined?* may well lead to a less integrated and more unrealistic assessment of the value of plants in human behaviour and subsistence. Brown (1987) points out that there are two ends of the intellectual spectrum: On the one hand there are hardy empiricists

> *"who can distinguish a phagocyte from a polysaccharide or a triterpenoid from a lectin"*

(Brown 1987:6)

and who remain blissfully ignorant of modern social theory, while, at the other end of the intellectual spectrum there are social anthropologists

> *"who insist on seeing plants primarily as signifiers and express little interest in the plants' bioactive principles or, worse still, dismiss study of such principles as a brand of vulgar materialism."*

(Brown 1987:6)

However, studies in Namaqualand and in other areas in the world have shown that indigenous people often perceive resources to be elements of a single whole. This epistemological premise is often expressed through the concept of the integration of humans, nature and the supernatural (Stoffle & Evans, 1990).

Not only is a distinction drawn between cultural and biological aspects of plant use, but distinctions - such as in this thesis - are also made between, for instance medicinal and dietary plants. In their article titled: **Food as Medicine and Medicine as Food**, Etkin & Ross (1982) challenge such distinctions and encourages multidisciplinary or concerted interdisciplinary studies which will more effectively articulate biomedical and behavioural dimensions of plant use. Others also plea for this more integrated approach. Wilson (1990) laments the emphasis on dietary plants while other uses for plants are neglected in investigations. When considering the publications on diet over the last ten years, it is clear that even further distinctions are made. At first the importance of plants in subsistence was obscured because scholars measured importance of elements of the diet according to how much protein was provided by a resource. Later the importance of carbohydrates was realised and it was generally accepted that plants with a high carbohydrate content formed a major part of diet. The emic perspective supported by an etic consideration, as in this thesis, broadens our understanding to include aspects other than merely the specific components of plants. It also includes other factors, cultural and biological, including general availability of food resources, the availability and importance of other plant resources in subsistence and also health care. While the chapter on edible plants show that high energy content combined with low moisture favourably affects the rating of edible plants, the inclusion of other plants which do not qualify in this way, shows that to assess the importance of edible plants merely on the grounds of what these contain, is not enough. More recent research is giving attention to the importance of diversity in diet.

The fact that plants high in protein and carbohydrates are not necessarily the most important aspect of diet at all times. The emphasis of one aspect of diet to the exclusion of other aspects, happens more broadly. Buchanan (1986) suggests an unacceptable diet of protein from marine resources because he bases his submission on the static remains of shell remains, without considering other aspects of diet. The narrow focus by individual researchers should be broadened by scholars in the archaeology and ethnobotany disciplines so that an understanding of the broader economy of the people who used the plants can be developed. Only then will we be moving towards a more comprehensive understanding of subsistence behaviour in the early communities.

There are further ways to broaden our understanding of the meaning of the archaeological record. Myths have been shown to encode intricate ecological relationships between the human (social) and natural worlds. The role of myths has not been investigated . The mythology around plants (such as the myth of the lion who took a woman's shape - Bleek 1864) may indicate that the biological determinants of plant use is often expressed culturally/socially as taboos or as desirable actions for good health. This may show that there are certain biological needs which people have and which are expressed through their social behaviour and stories. An evaluation and analysis of this aspect is not within the scope of this dissertation but will be addressed in ongoing research.

The published literature shows that explanations about human-plant interactions are often driven by the evidence which survived. This evidence is not necessarily representative of activities associated with subsistence in the area. A superficial investigation which does not unpack the multitude of factors which influence peoples' choices and behaviour may offer simplistic solutions as to why people behave in specific ways. These solutions may have some value in containing elements of 'truth' but could prioritise important aspects so differently that the realistic evaluation of biobehavioural aspects of human actions remain elusive.

BIBLIOGRAPHY

A-OGLE, B. 1990. Dietary use of wild plant resources in rural Swaziland. **Mitteilungen aus dem Institut fur Allgemeine Botanik Hamburg.** Band 23 b: 895-910.

ACOCKS, J.P. H. 1953. Veld types of South Africa - **Memoirs of the Botanical Survey of South Africa 28.**

ADAMS, J. 1976. **Wild Flowers of the Northern Cape**. Cape Town. Department of Nature and Environmental Conservation.

ADAMSON, R.S.1938. Note of the Vegetation of the Kamiesberg. **Memoirs of the Botanical Survey of South Africa 18.** Pretoria. Dept. of Agriculture.

ALEXANDER, J.E. 1838. **An expedition of discovery into the interior of Africa**. London. Henry Colburn.

ARCHER, F.M. 1982. 'n Voorstudie in verband met die eetbare plante van die Kamiesberge. **Journal of South African Botany** 48 (4) : 433-449.

ARCHER, F. M. 1988. Customary plant use in Namaqualand : ***Acacia karroo Hayne*** - a tree with many uses. **Veld & Flora** Vol. 74 no 3 : 111-112.

ARCHER, F.M. 1989(a). Die konstruksie van 'n tradisionele Nama Matjieshuis. **Sagittarius** Vol. 4, number 4 : 20-22.

ARCHER, F. M. 1989(b). Plantgebruik in die tradisionele velverwerking van Namasprekende Khoikhoi van Namakwaland. **Sagittarius** Vol. 4, Number 4 : 23-24.

ARCHER, F.M.. 1991(a). **Gender and plant use in Namaqualand**. Unpublished paper presented at the Gender and Archaeology Workshop, Centre for African Studies and Department of Archaeology Workshop, 12-13 Sept.. 1991.

ARCHER, F.M. 1990(a). Planning with People - Ethnobotany and African Uses of Plants in Namaqualand. (South Africa). **Mitt.Inst.Bot.Hamburg**. Band 23 (b) : 259-972.

ARCHER, F.M. 1990(b). Why people use plants. **The Botanical Society of South Africa** Report No 91/1 : 6-8

ARCHER, F.M. 1991(a). **Richtersveld Nasionale Park - Formele bekendstelling van die Interdissiplinêre Navorsingsprogram met betrekking tot die Richtersveld Nasionale Park. Algemeen - Verslag 1.** Unpublished working paper for the HNRE of the HSRC. Pretoria. Part of the programme: Interdissiplinêre Navorsingsprogram met betrekking tot die Richtersveld Nasionale Park.

ARCHER, F.M. 1991(b). **Richtersveld Nasionale Park Sosiale Inwerking Bepaling** Projek 4 Verslag 1. Unpublished working paper for the HNRE of the HSRC. Pretoria. Part of the programme: Interdissiplinêre Navorsingsprogram met betrekking tot die Richtersveld Nasionale Park.

ARCHER, F.M. 1991(c). **Vorderingsverslag.** ***Nommer 1*** **- Interdissiplinêre Navorsingsprogam met betrekking tot die Richtersveld Nasionale Park.** Unpublished working paper for the HNRE of the HSRC. Pretoria. Part of the programme: Interdissiplinêre Navorsingsprogram met betrekking tot die Richtersveld Nasionale Park.

ARCHER, F.M. 1991(d). **Vorderingsverslag.** ***Nommer 2*** **- Interdissiplinêre Navorsingsprogram met betrekking tot die Richtersveld Nasionale Park.** Unpublished working paper for the HNRE of the HSRC. Pretoria. Part of the programme: Interdissiplinêre Navorsingsprogram met betrekking tot die Richtersveld Nasionale Park.

ARCHER, F.M. 1991(e). **Vorderingsverslag** - ***Nommer 3*** - Interdissiplinêre Navorsingsprogram met betrekking tot die Richtersveld Nasionale Park. Unpublished working paper for the HNRE of the HSRC. Pretoria. Part of the programme: Interdissiplinêre Navorsingsprogram met betrekking tot die Richtersveld Nasionale Park.

ARCHER, F.M 1991(f). **Richtersveld Nasionale Park. Notas oor veeboerdery.** Projek 3 - Werksdokument. Unpublished working paper for the HNRE of the HSRC. Pretoria. Part of the programme: Interdissiplinêre Navorsingsprogram met betrekking tot die Richtersveld Nasionale Park.

ARCHER, F.M. 1991(g). Picking is illegal? **Kagenna** No 5 : 28-29.

ARCHER, F.M. 1991(h). Richtersveld Park off to a shaky start. **New Ground** Number 5 : 47.

ARCHER, F.M. 1992. **Vorderingsverslag** - ***Nommer 4*** - Interdissiplinêre Navorsingsprogram met betrekking tot die Richtersveld Nasionale Park. Unpublished working paper for the HNRE of the HSRC. Pretoria. Part of the programme: Interdissiplinêre Navorsingsprogram met betrekking tot die Richtersveld Nasionale Park.

ARCHER, F.M. 1992(a). **Integrasie van veeboerdery en bewaring** - die Richtersveld Nasionale Park. Projek 3 - Verslag 1. Unpublished working paper for the HNRE of the HSRC. Pretoria. Part of the programme: Interdissiplinêre Navorsingsprogram met betrekking tot die Richtersveld Nasionale Park.

ARCHER, F. M. 1993. **Biomassa Program vir Namakwaland**. Verslag (PRCC/B&W/93/1) aan die Departement van Departement van Mineraal en Energiesake.

ARCHER, F.M. 1993a. **Land tenure in the Namaqualand Reserves.** Unpublished report for Surplus People Project. Athlone.

ARCHER, F.M. 1993b. **Die rol en regte van die vrou in Namakwaland.** Unpublished report for Surplus People Project. Athlone.

ARCHER, F.M., E. BOONZAIER, A.B. SMITH. 1989. **Preliminary study of pastoralist management strategies, Richtersveld-North.** Unpublished report for the Richtersveld community, the National Parks Board and the Legal Resources Centre. Cape Town.

ARCHER, F.M., J.E. DANCKWERTZ, M.T. HOFFMAN. 1989. How economic are the farming units of Leliefontein, Namaqualand. **Journal of Grassland Society of Southern Africa** Vol. 6:211-216.

ARNOLD, T., WELLS, M.& WEHMEYER, A.S. 1985. Khoisan food plants: taxa with potential for future economic exploitation. In Wickens, G.E., Goodin J.R. & Fields, D.V. (eds). **Plants for arid lands.** Proceedings Kew International Conference on economic plants for arid lands, Royal Botanical Gardens, Kew, 23-27 July. London. Allen and Unwin.

BELL, C.D. & M.S. NOLLOTH. 1855. **Reports of the copper fields of Namaqualand and Bays and harbours of that coast. Cape of Good Hope Report**. Cape Town. Saul Solomon & Co. Steam Printing Office.

BELOVSKY, G. 1987. Hunter-gatherer foraging: A linear programming approach. Journal of **Anthropological Archaeology** 6: 29-76.

BERNSTEIN, I. L. & R.A. SIGMUNDI. 1980. Tumor Anorexia: A Learned Food Aversion. **Science** 209: 416-418.

BLEEK, W.H.I. 1864. **Reynard the Fox in South Africa; or Hottentot fables and tales**. London. Trubner & Co.

BOND, P. & P. GOLDBLATT. 1984. Plants of the Cape Flora. A descriptive catalogue. Eloff, J.N. (ed). **Journal of South African Botany.** Supplementary vol. No 13.National Botanical Gardens of South Africa.

BOONZAIER, E. M.T. HOFFMAN, F. M. ARCHER, A.B. SMITH. 1990. Communal land use and tragedy of commons: some problems and development perspectives with specific reference to semi-arid regions of Southern Africa. **J.Grassl.Soc.South.Afr.** Vol. 7 (2) : 77-80.

BOONZAIER, E.A. 1980. **Social Differentiation in the Richtersveld: a Namaqualand rural area.** Unpublished Masters Thesis for the Department of Anthropology. University of Cape Town.

BOONZAIER, E. 1984. **Economic differentiation and racism in Namaqualand: a case study,** Carnegie Conference Report nr 68, Cape Town

BORCHERS, M.L., F.M. ARCHER, A.A EBERHARD. 1990. **Namaqualand household energy survey.** Project report for the National Energy Council. Report No. INT 151: 1-127. Pretoria.

BORCHERS, M.L., F.M. ARCHER, P. RAVENSCROFT. 1991. **Namaqualand urban household energy survey.** Project report for the Energy for Development Research Centre. University of Cape Town. Cape Town.

BROOKS, A.S. & YELLEN J.E. 1987. The preservation of activity areas in the archaeological record: ethnoarchaeological and archaeological work in northwest Ngamiland, Botswana. In Kent, S. (ed.) **Method and theory for activity area research.** New York. Columbia University Press.

BROWN, M.F. 1987. Toward a Human Ecology: Medical Ethnobotany and the Search for Dynamic Models of Plant Use. **Reviews in Anthropology** 14(1):5-11.

BROWNER, C.H., B.R. ORTIZ DE MONTELLLANO. 1987. Herbal Emmenagogues used by women in Columbia and Mexico. In (ed.) Etkin, N,L **Plants in indigenous medicine and diet Biobehavioural Approaches.** New York. Redgrave Publishing Company.

BUCHANAN, W.F. 1986. **Sea shells ashore. A study of the role of shellfish in prehistoric diet and lifestyle at Eland's Bay, South-western Cape, South Africa.** Unpublished PhD thesis for the Archaeology Department, University of Cape Town.

BURCHELL, W.J. 1822. **Travels in the interior of Southern Africa.** 2 vol. London. Facsimile reprint 1953. London Batchworth Press.

CABANAC, M. 1971. Physiological Role of Pleasure. **Science** 173:1103-1107.

CARSTENS, W.P. 1966. **The social structure of a Cape Coloured Reserve.** Cape Town. Oxford University Press.

CARSTENS, W.P. 1983. The inheritance of private property amongst the Nama of Southern Africa reconsidered. **Africa** 53(2):58-69.

CHAPMAN J. 1849-63. Travels in the interior of South Africa 1849-63 Ed. from the original MSS by E.C. Tabler. Cape Town:Balkema 1971

CODD, L.E. 1977. Rhus viminalis - a plea for greater popularity. **Veld & Flora** - vol.63:4.

COHEN, R. 1978a. Ethnicity: problem and focus in anthropology. **Annual Review of Anthropology** 7:379-403.

COHEN, R. 1978b. Comment on Leacock. **Current Anthropology** 19(2)257-259.

CORNELL, F. C. 1985. **The glamour of prospecting.: wanderings of a South African prospector.** Cape Town. David Phillip.

CRITES, G.D. 1987. Human-plant mutualism and niche expression in the paleoethnobotanical record: A Middle Woodland example. **American Antiquity**52 (4): 725-740.

CROOM, E.M. 1983. Documenting and Evaluating herbal remedies. **Economic Botany** 37 (1): 13-27.

CUNNINGHAM, A.B. 1988. Collection of wild plant foods in Thembe Thonga Society: a guide to Iron Age gathering activities? **Ann. Natal Mus.**29(2):433-446.

DAUBENMIRE, R. 1968. Ecology of fire in Grasslands. **Advances in Ecological Research** 5:209-273.

DE LA HARPE, D.1993. **Land claims of Namaqualand.** Unpublished report for Surplus People Project. Athlone.

DE MOTELLANO, B.R. 1987. Aztec Medicinal Plants: Evaluation of therapeutic Effectiveness. In (ed.) Etkin, N,L **Plants in indigenous medicine and diet Biobehavioural Approaches.** New York. Redgrave Publishing Company.

DEACON, H.J. 1976. **Where hunters gathered: a study of Holocene stone age people in the eastern Cape.** South African Archaeological Society Monograph Series 1: 1-231.

DEACON J. 1984. Later Stone Age People and their descendants in Southern Africa. In Klein, R.G. (ed.), **Southern Africa prehistory and Paleoenvironments**: 221-328. Rotterdam. Balkema.

DEACON, H.J., J. DEACON, M. BROOKER,. M.L. WILSON. 1978. The evidence for herding at Boomplaas Cave in the Southern Cape. **S.A South African Archaeological Bulletin 33**:39-65.

DENTLINGER, U. 1977. An ethnobotanical study of the !Nara plant among the Topnaar Hottentots of Namibia. **Munger Africana library notes** 38 3-37.

DUKE, J.A.. 1987. Folk anti-cancer Plants containing Antitumor Compounds. In (ed) Etkin, N,L **Plants in indigenous medicine and diet Biobehavioural Approaches.** New York. Redgrave Publishing Company.

DUNN,E.J. 1972-3. Through Bushmanland. Parts 1-2. **Cape Month Mag.** 5: 374-384; 6: 31-42

EBERHARD, A.A., M.L. BORCHERS, F.M. ARCHER. 1991. Energy for development: Participatory research in Namaqualand - **Journal of Energy R & D in Southern Africa.** Vol. 2 (1) : 12-16.

ENGELBRECHT, J.A. 1936. **The Korana.** Cape Town. Maskew Miller.

ENVIRONMENTAL EVALUATION UNIT. 1992. **NM2005 Impact Assessment. Baseline Information Report.** EEU Report No. 5/92/88. Rondebosch.

ERICKSON,R.P.,1981. Studies on the Perception of Taste: Do Primaries Exist?. **Physiology and Behaviour.** Vol. 28:57-62

ETKIN, N.L. (ed). 1987. **Plants in indigenous Medicine and Diet. Biobehavioural Approaches.** New York. Redgrave Publishing Company.

ETKIN, N.L., P.J.ROSS. 1982. Food as medicine and medicine as food. **Soc. Sci. Med.** 16:1559-1573.

ETKIN, NINA L., 1986. Criteria used in the Selection of Medicinal Plants. In **Plants in indigenous medicine and diet. Biobehavioural Approaches.** Etkin, N (ed) . New York. Redgrave Publishing Company.

FISHER, J.W. & STRICKLAND, H.C. 1991. Dwellings and fireplaces: keys to Efe Pygmy campsite structure. In Gamble, C.S. & Biosmier, W.A.: **Ethnoarchaeological Approaches to Mobile Campsites.** International Monographs in Prehistory. Michigan.

FLEURET, A.. 1979. The role of wild foliage plants in the diet. A case study from Lushoto. **Ecology of Food and Nutrition** Vol. 8. 87-93. Tanzania.

FLEURET, A. 1986. Dietary and Therapeutic Uses of Fruit in Three Taita Communities. **Plants in Indigenous Medicine and Diet. Biobehavioural Approaches.** Etkin, N.L.(ed). New York. Redgrave Publishing Company.

FORD, R..I. 1979. Paleoethnobotany in American archaeology. In Schiffer, M. **Advances in archaeological method and theory** (Vol. 2). New York. Academic Press.

FORD, R.I. (ed). 1978. The nature and status of Ethnobotany, Anthropology. **Paper. 67. Mus. Anthropol.** University of Michigan. Ann Arbor.

FOX, F.W. & M.E. NORWOOD-YOUNG. 1982. **Food from the Veld.** Cape Town. SA Institute for Medical Research.

FRITSCH, G 1872. **Die Eingeborenen Sud-Afrika's.** Breslau:Hirt

GAMBLE, C.S. & W.A. BOISMIER (eds). 1991. **Ethnoarchaeological Approaches to Mobile Campsites: International Monographs in Prehistory.** Michigan.

GARB, J.L.& A.J. STUNKARD. 1974. Taste aversions in Man. **American Jnl of Psychiatry** 131 (11): 1204-1208.

GODEE-MOLSBERGEN, E.C. 1921. Reizen in Zuid Afrika in de Hollandsche Tyd. Deel II. The Hague. Martinus Nijhoff.

GODWIN, H. A.G. TANSLEY. 1941. Prehistoric charcoals as evidence of former vegetation, soil and climate. **Journal of Ecology** 29:117-126.

HAACKE W.H.G. 1982. Traditional hut-building technique of the Nama (with some related terminology). **Cimbebasia** 3(2): 77-98.

HAHN, T. 1878. The graves of Heitsi-eibib; A chapter on the Pre-historic Hottentot race. **The Cape Monthly Magazine.** Vol 16 (97): 257-265.

HAHN, T. 1880. **Tsuni-//Goam: the supreme being of the Khoi-Khoi.** Reprint 1971. New York. Books for Libraries Press.

HATLEY, T., J.KAPPELMAN. 1980. Bears, Pigs and Plio-pleistocene Hominids: A case for exploitation of below-ground Food resources. **Human Ecology** Vol. 8 (4): 371-387.

HILL, R.E., F.M. ARCHER, L.E. WEBLEY. 1990. Conflict over Change in Land Tenure in Reserves of Namaqualand, South Africa: A Role for Intergrated Environmental Management **Impact Assessment Bulletin**, Vol 8 Nos 1 and 2 : 197-205.

HODDER, I. 1987. The Meaning of Discard: Ash and domestic space in Baringo. In Kent, S.(ed) **Method and theory for activity are research.** New York. Columbia University Press.

HOERNLE, A.W. 1918. Certain rites of transition and the conception of !nau among the Hottentots. **Harvard African Studies** 26: 65-82.

HOERNLE, A.W. 1922. A Hottentot rain ceremony. **Bantu Studies** 1(2): 20-21.

HOERNLE, A.W. 1923. The expression of the social value of water among the Naman of SouthWest Africa. **South African Journal of Science** 20:514-26.

HOERNLE, A.W. 1923. South West Africa asa primitive culture area. **South African Geographical Journal** 6: 14-28.

HOERNLE, A.W. 1925. The social organisation of the Nama Hottentots of South West africa. **American Anthropologist** 28: 1-24.

HOFF, A. 1984. Die konsep geluk by die Nama. **South African Journal of Ethnology** 7(2): 9-16.

HOFF, J.A.. 1990. **Die Tradisionele Wereldbeskouing van die Khoekhoen.** Unpublished D.phil Thesis: University of Pretoria.

JOHNS, T.A. 1986. Chemical Selection in Andean Domesticated Tubers as a Model for the Acquisition of Emperical Plant Knowledge. **Plants in Indigenous Medicine & Diet. Biobehavioural Approaches.** Nina L. Etkin (ed) Bedford Hills. Redgrave Publishing Company.

JONES, V.H. 1941. The nature and status of ethnobotany. Chronica Botanica 6(10): 219-221.

JURGENS, N. 1993 (in print). Vegetation der Namib. Ein Beitrag zur okologischen Gliedering, Phytochorologie und Florengeschichte einer afrikanischen Trokengebiedsflora. **Mitt. Inst. Allg.Bot.** Hamburg.

JURGENS, N. 1991. A new approach to the Namib Region I. Phytogeographic subdivision.**Vegetatio** 97:21-38.

JURGENS, N. 1994. Document under preparation.

KENT, S. 1987. **Method and Theory for activity area research. An ethnoarchaeological approach.** New York. Columbia University Press.

KENT, S. 1987. Parts as wholes - a critique of theory in archaeology. In Kent, S. (ed.) **Method and Theory for activity area research.** New York. Columbia University Press.

KOLB, P. 1731. **The present state of the Cape of Good Hope.** Trans. by Medley. London. W. Innys.

KROHNE, H. & L. STEYN. 1991. **Land use in Namaqualand.** Cape Town. UCT press.

LAIDLER, P.W. 1928. The magic medicine of the Hottentots. **S. Afr. J. Science.** Vol. 25:433-447.

LE VAILLANT, F. 1790. **Travels into the interior parts of Africa, by way of the Cape of Good Hope in the years 1780, 1781, 1782, 1783, 1785.** London. Robinson.

LEACOCK, E. 1978. Women's Status in Egalitarian Society: Implications for Social Evolution. **Current Anthropology** 19(2)247-255.

LEE, R.B. 1979. **The !Kung San: men, women and work in a foraging society.** Cambridge. Cambridge University Press.

LEWIS, W.H. & M.P.F. ELVIN-LEWIS. 1979 **Systematic botany and medicine**. In Systematic Botany, Plant Utilization and Biosphere Conservation, I Hedberg, ed. Almquist & Wiksell, Uppsala

MARLOTH, R. 1913. **The Flora of South Africa.** London. Wesley Press.

MAZEL, A.D. 1987. **People making history: The last ten thousand years of hunter gatherer communities in the Thukela Basin.** Thesis presented for the degree of Doctor of Philosophy in the Department of Archaeology. University of Cape Town.

MESSER, E.1978. Present and future prospects of Herbal medicine in a Mexican community. In **Nature and status of etnobotany** (ed) R. I. Ford.: 137-161. Michigan.

METELERKAMP, W. & J. SEALY. 1983. Some Edible and Medicinal Plants of the Doorn Karoo. **Veld & Flora** vol. 69:7.

MOFFAT, R.O. 1982. Paterson's Bushmen candles. **Veld and Flora.** Vol. 68:1

MOSSOP, E.E. 1935. **The journal of Hendrik Jacob Wikar (1779), and the journals of Jacobus Coetze Jantz (1760) and Willem van Reenen (1791).** VRS 15. Cape Town. Van Riebeeck Society.

NOY- MEIR , I. 1973. Desert systems: Environment and producers. **Annual review of ecology and systematics** 4:25-52.

OBERMEYER, A.A. 1962. A revision of the SA species of Anthericum, Chorophytum and Trachyandra. **Bothalia** 7(4).

OLLP, J. 1888. Aus dem Sagenschatz der Nama Khoi-khoin. **Mitt. Geogr. Ges.** 6 : 1-47.

PALMER, E. & N. PITMAN. 1961. **Trees of South Africa.** Vol. 1-3. Cape Town. Balkema.

PARKINGTON, J.E. & C. POGGENPOEL. 1968. Excavations at De Hangen. **South African Archaeological Bulletin** 26:3-36.

PATERSON, W. 1790. **Travels in Africa.** 2nd edition. London. J. Johnson.

PEARSALL, D.M. 1990. **Paleoethnobotany: A Handbook of Procedures.** New York.Academic Press.

POPELAK, A. & G. LETTENBAUER. 1967. The Mesembrine Alkaloids. In (ed) R H F Manske, **The Alkaloids: chemistry and physiology.** Vol. 9: 467-482. New York. Academic Press.

PUFF, C.H. 1978. The Genus Galium L. (Rubiaceae) in Southern Africa. **Journal of South African Botany** 44(3).

RIDSDALE, B. 1883. **Scenes and adventures in Great Namaqualand.** London. Woolmer.

ROBERTS, M. 1990. **Indigenous Healing Plants.** Johannesburg. Southern Book Publishers.

ROSS, J.H. 1975. **Flora in Southern Africa.** Vol. 16: Part 1.

RUDNER, I. 1982. Khoisan Pigments and paints and their relationship to rock paintings. **Annals of the South African Museum 87.**

SABLOFF, J.A. L.R.BINFORD, P.A. MCANANY. 1987. Understanding the archeological record. **Antiquity** 61:203-209.

SALISBURY E.J & F.W. JANE. 1940. Charcoals from Maiden Castle and their significance in relation to the vegetation and climatic conditions in prehistoric times. **Journal of Ecology** 28: 310-325.

SANDELOWSKY, B.H. 1974. Archaeological investigations at Mirabib rock Shelter. **South African Archaeological Society Goodwin series** 2:65-72.

SCHAPERA, I. 1930. The Khoisan peoples of South Africa. London. Routledge & Kegan Paul.

SCHELPE, E.A.C.L.E.. 1981. **Namaqualand and Clanwilliam: SA Wildflower Guide.** Cape Town. S.A. Botanical Society.

SCHINZ, H. 1891.**Deutsch-Sudwest Afrika.** Oldenburg. Schulzersche Hofbuchhandlung und Hof-Buchdruckerei.

SCHLEGEL, A. & H. BARRY III. 1986. The Cultural Consequences of Female Contribution to Subsistence. **American Anthropologist** 88:142-150.

SCHOLTZ, A. 1986. Palynological and palaeobotanical studies in the southern Cape. Thesis presented in partial fulfillment of the requirements for the degree of Master of Arts at the University of Stellenbosch.

SCHULTZE, L. 1907. **Aus Namaland und Kalahari.** Jena. Gustav Fischer.

SCOTT, G. 1983. **Preliminary Revision of Cyanella.** Unpublished Honours Thesis: University of Cape Town.

SHARP, J.1984. Rural development schemes and the struggle against impoverishment in the Namaqualand reserves. **Carnegie conference paper 69.** Second Carnegie Inquiry into poverty and development in southern africa . 13-19 April 1984. Cape Town.

SMIT, H. 1992. **Struggles of Namaqualand communities in a harsh environment.** Pretoria. Environmental Law Series I UNISA.

SMITH, A.B. 1983. Prehistoric pastoralism in the prehistoric Cape, South Africa. **World Archaeology** 15:79-89.

SMITH, A.B. 1985. Review of "Khoikhoi and the founding of white South Africa". **Social Dynamics** 11(1): 88-90.

SMITH, A.B. 1986. Comments on "Striated grinding grooves in Central Africa" by R. Derricourt. **South African Archaeological Society Bulletin** 41: 93-94.

SMITH, A.B. & PHEIFFER, R.H. 1992. Robert Jacob Gordon: Notes on the Khoikhoi 1779. **Annals of the South African Culture History Museum** 5:1.

MITH, C.A.. 1966. Common Names of SA Plants. **Botanical Survey Memoir** No.35. Department of Agricultural Technical Services.

STOFFLE, R.W. & EVANS, M.J.1990. Holistic conservation and cultural triage: American Indian perspectives on cultural resources. **Human Organisation** Vol. 49. 2: 91-99.

THEAL, G.M 1916. **History and Ethnography of Africa south of the Zambezi.** Third edition. London. Allan & Unwin.

THISELTON-DREYER, W.T. 1904. **Flora capensis vol.4: section 1. Hydrophyllaceae to Pedalineae.** London. Lovell Reeve & Co. Ltd.

THOM, H.1958. **Journal of Jan Van Riebeeck.** Volume 2. Cape Town. Van Riebeeck Society.

VAHRMEIJER, J. 1981. **Poisonous Plants of SA Africa that cause stock losses.** Cape Town. Tafelberg Publishers.

VAN DEN EYNDEN, V. & P. VERNEMMEN, P. VAN DAMME, . 1992. **The Ethnobotany of the Topnaar.** Gent. Universiteit Gent.

VAN DER WALT, J.J.A. & P.J. VORSTER . 1988. Pelargoniums of Southern Africa: vol.3. Cape Town. National Botanic Gardens.

VAN DER WALT, J.J.A. & P.J. VORSTER. 1981. Pelargoniums of Southern Africa: vol.2. Cape Town. Juta.

VAN DER WALT, J.J.A. 1977. **Pelargoniums of Southern Africa:** vol.1. Cape Town. Purnell.

VAN JAARSVELD, E. 1981. 'n Voorlopige verslag oor die plantegroei in die Richtersveld met spesifieke verwysing na bome en struike. **Trees in Southern Africa 33:3.**

VEDDER, H.1928. **The Native tribes of South West Africa.** London. Frank Cass & Co.

VEDDER,H 1938. **South West Africa in early times.** London:Oxford University Press

VERDOORN, I.C. 1980. Revision of Hermannia subgenus Hermannia in Southern Africa. **Bothalia** 13 ; 1-2.

VINCENT, A. 1984. Plant foods in savanna environments: a preliminary report of tubers eaten by the Hadza of northern Tanzania. **World Archaeology** 17 (2): 3-20.

VISSER, J.H. & MUSSELMAN, L.J. 1986. The Strangest Plant in the World.**Veld & Flora.** Vol. 72:4.

VON BREITENBACH, F. 1990. **National List of Indigenous Trees.** Pretoria. Dendrological Foundation.

VON KOENEN, E. 1977. **Heil und giftpflanzen in Sudwestafrika.** Windhoek. Akademischer Verlag.

WADLEY,L. 1979. Big Elephant Shelter and its role in the Holocene Prehistory of Central South West Africa. **Cimbebasia** (B)3(1):1-76

WADLEY, L. 1984. On the move: A look at prehistoric food scheduling in Central Namibia. **Cimbebasia** (B)4(4):41-50.

WATERHOUSE, G. 1932. **Simon van der Stel's Journal of his expedition to Namaqualand, 1685-1686.** Dublin.Hodges & Figgus.

WATT, J.M. & M.G. BREYER-BRANDWIJK. 1962. **Medicinal and Poisonous Plants of Southern and Eastern Africa.** 2 ed. Edinburgh and London. Livingstone.

WEBLEY, L.E. 1982. Settlement studies among descendants of Nama herders: an ethnoarchaeological approach. **Khoisis** 3:1-26.

WEBLEY, L.E. 1984. **Archaeology and ethnoarchaeology in the Leliefontein Reserve and surrounds, Namaqualand**. Unpublished M.A. thesis: University of Cape Town.

WEBLEY, L.E. 1986. Pastoralist ethnoarchaeology in Namaqualand. In Hall, M & Smith, A.B. (eds) **Prehistoric pastoralism in Southern Africa:** 57-61. South African Archaeolgical Society Goodwin Series vol. 5.

WEBLEY, L.E. 1987. **Ethnoarchaeological research among descendants of Khoikhoi herders in the Steinkopf and Leliefontein Communal Reserves.** Unpublished Reports. HSRC Pretoria.

WEBLEY, L.E. 1990. The use of stone 'scrapers' by semi-sedentary pastoralist groups in Namaqualand, South Africa. **South African Archaeological Bulletin** 45: 28-32.

WEBLEY, L.E. 1992. **The history and archaeology of pastoralist and hunter-gatherer settlement in the North-western Cape, South Africa**. Thesis presented for the degree of Doctor of Philosophy in the Department of Archaeology, University of Cape Town.

WEBLEY, L. 1993. **Prehistoric Land and Resource use in the Richtersveld**. Unpublished working paper for the HNRE of the HSRC. Pretoria. Part of the programme: Interdissiplinêre Navorsingsprogram met betrekking tot die Richtersveld Nasionale Park.

WEBLEY, L.E., F.M. ARCHER, J. BRINK. 1993. Die Toon: a late Holocene site in the Richtersveld National Park, northern Cape. **Koedoe** 36 (2): 1-9.

WHITTAKER, D.E. & F.M. ARCHER. 1984 Access to health care in Nourivier, Namaqualand, South **African Medical Journal.** Vol. 68 : 663 - 668.

WILSON, M.L. 1990. **Strandlopers and Shell middens.** An investigation into the identity, nomenclature and life-style of the indigenous inhabitants of the Southern African coastal region in the

prehistoric and early historical period with a recent example.Thesis presented for the degree of Masters of Arts in the Department of Archaeology, University of Cape Town.
WOODHOUSE, H.C. 1975. Themes in the rock art of Southern Africa. In: Rock art studies in South Africa. **Occ. Pap. S. Afr. Archaeol.** Soc.: 9-25. Wits Centre. Duplicated

APPENDIX I

USEFUL PLANTS OF THE RICHTERSVELD

CONTENTS

Aim of this Appendix 1

The Scope of this Appendix 1

The Plants and their Uses 3

Appendices
A Preliminary Plant Species List of the Richtersveld National Park
Nutrient Analysis Table
Illustration acknowledgements

ACKNOWLEDGEMENTS

- The following people have to be thanked -

People who assisted in the compilation of the material:
Lita Webley
Michéle Botha
Ernst van Jaarsveld
Norbert Jürgens

Typing
Mercia Kuhn, Heather Tichart and Michéle Botha

Layout
Michéle Botha

Artwork
Tony Hül

Identifications
As indicated in the text

The inhabitants of the Richtersveld whose intimate knowledge of their environment is finally being recognised publicly through the creation and development of the unique Richtersveld National Park.

Research and supportive work for this project was done with funds from the Human Needs Research and the Environment Programme of the HSRC; Kirstenbosch Botanic Gardens and Participatory Research CC.

AIM OF THIS REPORT

This report is an appendix to the report: **A Discussion of Customary Plantuse in the Richtersveld** - RINP/ETHNOBOT/PRCC/93/02 (Archer 1993, in prep). The appendix has been created as a separate report for practical purposes - mainly, so that it can be used as a reference work for those interested in customary plantuse.

Discussions on the empirical data - as presented in this report - are given in the separate discussion document which contains information on the setting, methodology and on other interesting aspects of customary plantuse in the Richtersveld.

THE SCOPE OF THE REPORT

Primary information on the useful plants from the Richtersveld have mostly been obtained from the Richtersveld inhabitants and from Ernst van Jaarsveld (a botanist who has worked in the Richtersveld area for more than ten years). Other sources, such as travellers' records and academic theses have been used to expand on the information collected from the Richtersveld and from Van Jaarsveld.

The information from the Richtersveld is complemented by information from other regions where the plants occur and are used. The appendix thus shows a variety of uses for some plants and, in other cases, similar uses. The range and similarity of the uses of plants have important implications for researchers in various fields, including archaeologists who are interested in bio-behavioural aspects of plantuse and ethno-pharmacologists, who are compiling formularies which can complement self-healthcare in countries where the health sector is becoming more dependant on traditional practises (as in South Africa).

The distribution maps for the plants are not available for all the species as the vegetation and distribution of some of the plants is not yet fully understood. The maps used in this report have (mostly) been obtained from Professor Norbert Jürgens from the Botanical Institute at Hamburg, Germany. Professor Jürgens is widely recognised as the expert on the Richtersveld vegetation - which his department has been investigating for more than 20 years - and which he, personally, has specialised in for the last thirteen years. The mapping is work in progress and should be completed by December 1993. Where Jürgens uses dots, it indicates specific sites where he has collected plants which may have a limited distribution in that particular area.

The grid references on the distribution of the plants have been supplied by the National Botanical Institute (NBI), Pretoria. The references correspond to the 1:50 000 maps which are supplied by the Surveys and Land Information Section of the Department of Regional and Land Affairs. The NBI is currently compiling the grid references of all plant specimens which have been collected in Southern Africa. The grid, thus, is representative of the known distribution of herbarium specimens in the country.

Plants have been listed in alphabetical order, by genus. This enables the layman to use the work more effectively. In the tables, only the Richtersveld uses of plants are indicated.

The key to the abbreviations is as follows:

Ea	Edible aboveground
Eu	Edible underground
Ma	Medicinal aboveground
Mu	Medicinal underground
Da	Domestic aboveground
Du	Domestic underground
F	Firewood

The text expands on the information from the Richtersveld.

Accompanying illustrations come from a wide range of traveller's records, published text books on plants as well as some original drawings by Tony Hül. The drawings by Hül are based on the ethnobotanical information generated by this investigation and follow some slides and photographs which were taken during the course of the study.

Appendices are added to this report.

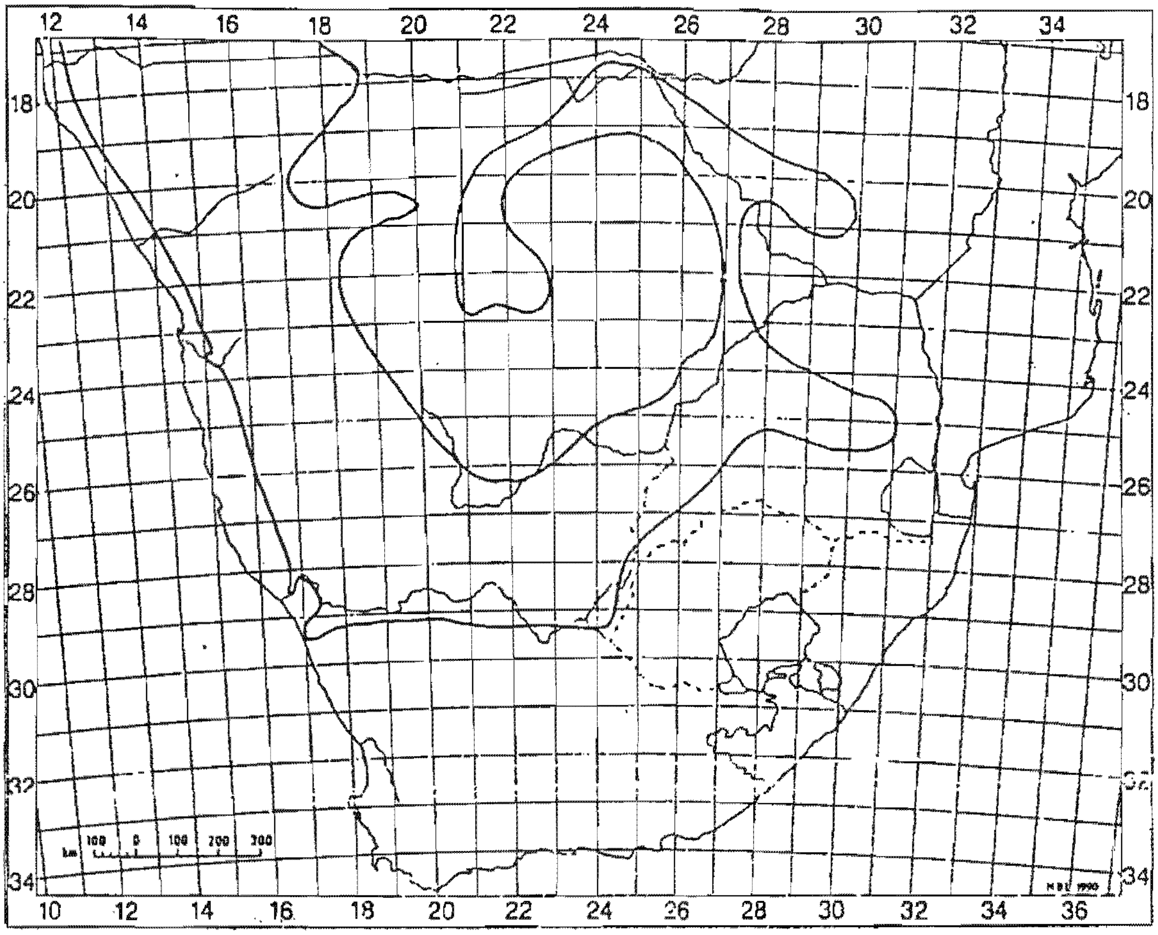
These are:

- A list of the plant species which have been found in the Richtersveld National Park, to date. This list has been compiled by the National Parks Board and is a preliminary work in progress.

- A list of the nutrient analysis of some of the edible plants. The edible plants were analysed by the CSIR at Pretoria.

- A list of the books from which the illustrations in this report have been taken.

Distribution

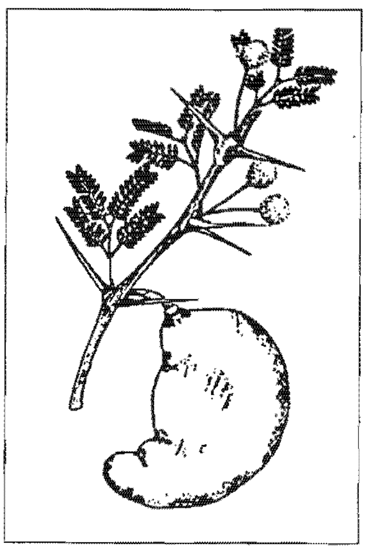


Grid references

1723CD	2124AB	2230AC	2429AA	2620AB	2725BD	2820DB	2917DA
1724DD	2125AC	2314BA	2429CD	2623DA	2725CB	2820DC	2918BB
1817CC	2125AD	2315CA	2517BB	2625DA	2725DA	2823DC	2919AB
1824BC	2216AC	2317CA	2525BD	2626AA	2726AC	2824AD	2920BB
1917DD	2217CA	2326BB	2526DA	2722BA	2817AC	2824BA	2922BA
1923AC	2222BA	2326CB	2528AB	2722DD	2817CC	2824CA	2923BB
2022BD	2225BC	2327DD	2528AD	2723AD	2819BC	2824DB	3218DD
2116DD	2229AC	2415CB	2528CA	2724AA	2819DA	2824DC	
2117AA	2229CC	2426AC	2528CB	2724DA	2819DB	2824DD	
2121DA	2229DC	2428DA	2529AB	2725AB	2820CB	2917CD	

Detail of *A.* ***erioloba*** branchlet with seed pod.

National List of Trees



Acacia erioloba *E Meyer*

MIMOSOIDEAE

COMMON NAMES: **HERBARIUM SPECIMEN:**

Camel Thorn / Kameeldoringboom / Khus / //ganab F Archer 125

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x		x		x		

PART(S) USED:

gum	bark	wood
pods		

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x								x	x	x
				x	x	x	x				
x	x	x	x	x	x	x	x	x	x	x	x

10-2 = gum 5-8 = bark, pods 1-12 = wood

RECOGNISED BY:
Broad boat-shaped grey-white pods, flat rounded crown.

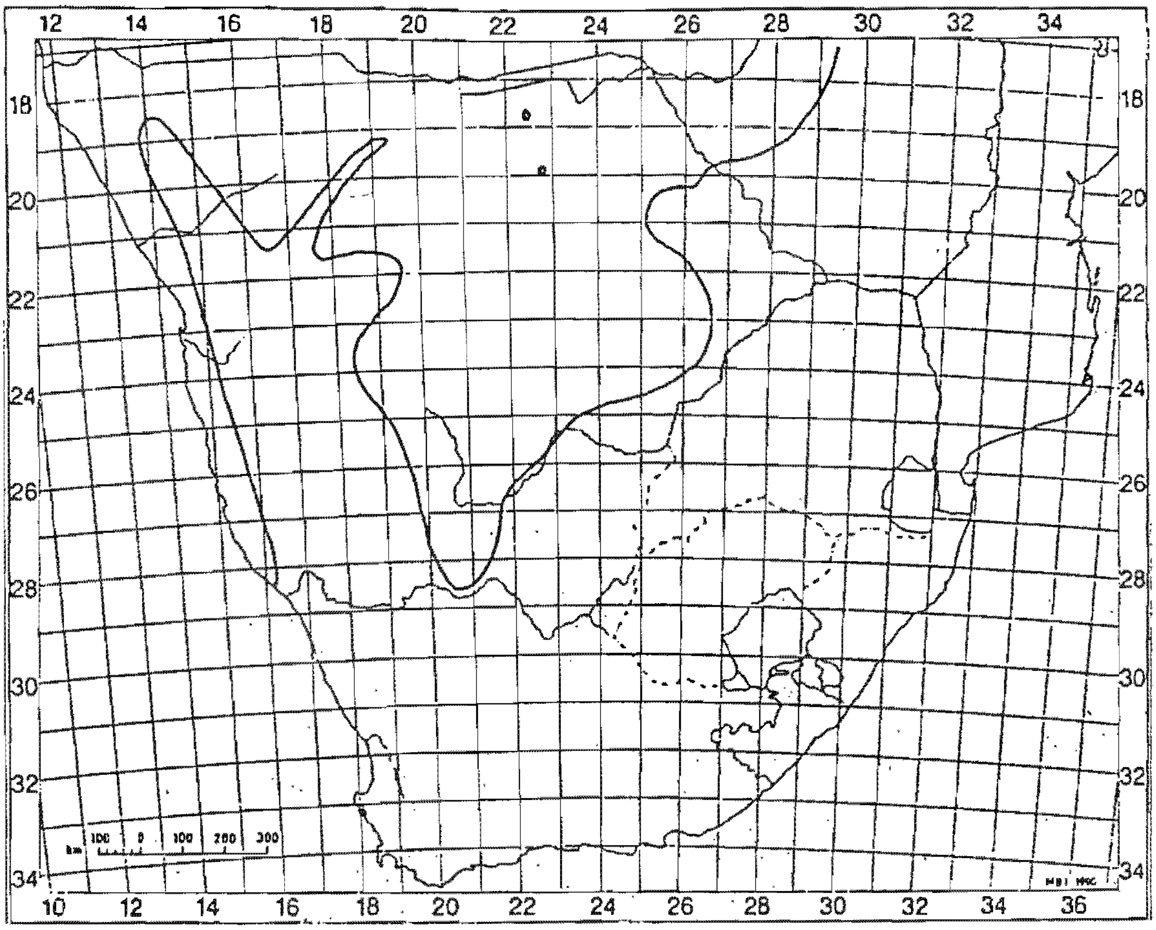
USES & PREPARATION:
Yields a superior gum eaten by peoples and cattle, while the pods form an excellent fodder (Palgrave: 1983). In times of food scarcity, the pulp of the pods is also eaten by people (Van den Eynden: 1992).

In Botswana the bark is burnt and then ground to produce a remedy for headaches, while discharging and infected ears are treated with a powder from the dried and crushed pods (Palgrave: 1983). The gum, exuded from the branches, dissolved in boiling water, is drunk to cure coughs, tuberculosis and colds (Van den Eynden: 1992).

The strong wood has been used for mine shafts and wagon-building (Palgrave: 1983). The wood is too hard for general construction purposes, but is sometimes used for furniture and fences (Van den Eynden: 1992).

DISTRIBUTION:
Northern Cape, western OFS, Transvaal, Botswana, Namibia, Angola, Zimbabwe, Zambia.

Distribution



Grid references

1824AA	2427BA	2528CA	2626DC	2730CB	2830CD	3026CA	3228CA
1917CA	2428AA	2528CB	2627AD	2730DD	2830DC	3029CC	3228CB
1918CA	2428AB	2528CC	2627BB	2731AA	2831AA	3029CD	3318AB
1922DB	2428BC	2528CD	2627CC	2731AC	2831AB	3030AA	3319DD
2017CA	2428CD	2528DA	2627DB	2731BC	2831AC	3030BB	3320CA
2116DD	2428DA	2529AB	2627DD	2731CA	2831AD	3030CA	3321BC
2117AA	2429AA	2529AC	2628AA	2731CB	2831BA	3030CB	3321CB
2215CB	2429CD	2529AD	2628AD	2731DA	2831BB	3030CC	3322AB
2218AD	2430AA	2529BB	2628CB	2731DC	2831CC	3118DA	3322AC
2229AC	2430AB	2529BD	2629DD	2732BC	2831DB	3121DD	3322AD
2229CC	2430CA	2529CB	2631AA	2732CA	2832AA	3122BA	3322BC
2229DD	2430CC	2530AB	2631AC	2732DA	2832AB	3122BC	3322CA
2230CA	2430CD	2530AD	2631BC	2817DA	2832AD	3123CC	3322CC
2230CD	2431AA	2530BC	2631BD	2817DD	2917AA	3125AA	3322DA
2230DC	2517BD	2530BD	2631DC	2820CB	2917CA	3125DD	3322DB
2325BD	2525BD	2530CB	2631DD	2821AD	2918CA	3126AD	3323AD
2326BB	2526BC	2530DB	2632CC	2824BA	2920BB	3127CD	3324CA
2327BB	2526CA	2531AB	2722DD	2824BB	2922DA	3128CA	3324DD
2329BA	2526CB	2531CA	2723AD	2824DA	2924DB	3128CB	3325CC
2329BB	2527AC	2531CC	2724DA	2824DB	2925AB	3129BA	3325DC
2329CD	2527AD	2531DC	2725AC	2826AA	2926AA	3129BC	3326AC
2329DC	2527CA	2618DD	2725BD	2826CC	2929BB	3129DA	3326BA
2330AA	2527CB	2623DB	2725CB	2826CD	2930CB	3130AA	3326BC
2330CA	2527DA	2625CB	2725CC	2826DC	2930CC	3219BA	3326CA
2330CC	2527DB	2625CC	2726AC	2827AC	2930DA	3221BB	3326DB
2330DD	2527DD	2625DA	2726BC	2827AD	2930DD	3222BC	3420AB
2417CD	2528AB	2626AA	2727BD	2827DD	2931BA	3223AA	3421AB
2425CD	2528AD	2626CC	2727CA	2828AB	2931CC	3225AB	3421BD
2427AC	2528BA	2626CD	2727DD	2829DB	3024BB	3226DC	

Acacia karroo *Hayne*

MIMOSOIDEAE

COMMON NAMES:

Soeddoring / Doringboom

HERBARIUM SPECIMEN:

F Archer 24

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x		x	x	x	x	x

PART(S) USED:

gum		bark from branches	bark from roots	young thin branches	bark from roots	

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x									x	x
x	x	x	x	x	x	x	x	x	x	x	x

11-2 = gum   1-12 = other

RECOGNISED BY:
White thorns, yellow flowers, location (in dry riverbeds).

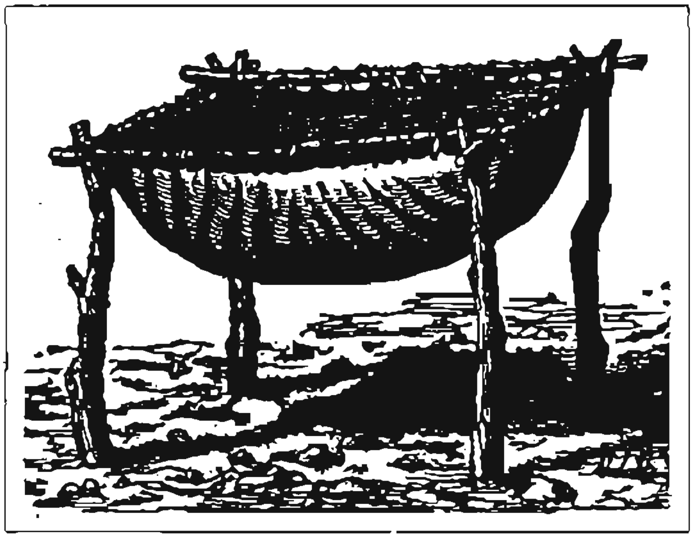
USES & PREPARATION:
When the bark is removed from the branches or trunk of *A.karroo* the tree produces gum from the damaged areas. This is to prevent loss of moisture through evaporation. Naturally, the tree gets damaged in various ways, such as strong wind which breaks off the branches and borer insects which make deep holes through the bark into the trunks and branches. The gum, called hyra by the inhabitants of Namaqualand, is collected throughout the year for various purposes.

During the warmer summer months (Nov-March) the tree produces more gum than in the colder months. As the gum is removed, it is replaced so that there is always some gum covering an "injury" Some trees are known to produce gum more abundantly than others. In the Nourivier a specific tree is known for kilometres around for its abundant supply/production of gum.

Four different types of gum are recognised: a nearly-black gum, only useful for domestic purposes such as to make floors; a dark brown sour tasting one for eating, as well as domestic purposes; a light gold gum, mostly suitable for eating; and a white crystalline gum, favoured foreating because it is so sweet.

If the gum is high up in the tree, it is removed with a stick with a curved end; or, more recently, with a piece of wire with a curved end The gum is usually removed when it has hardened slightly.

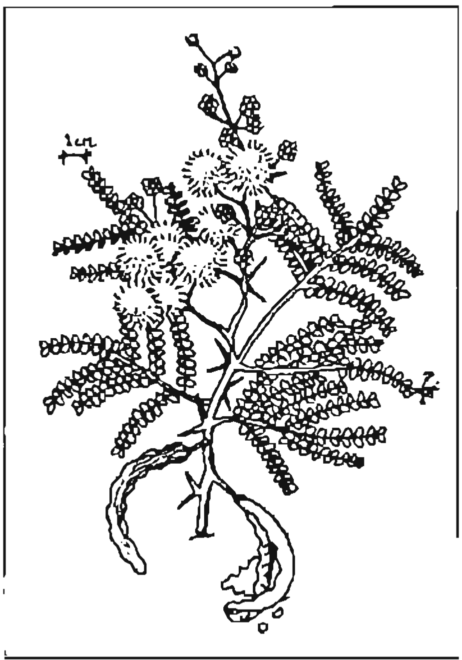
The three edible gums (dark brown, gold, white crystalline) are only collected for eating if they are free from insects. When there are insects in the gum it is still often collected to mix with



A Tanning Vat

A beautiful skin of zebra had been formed into a tanning-vat, supported by four stakes on a frame to which its edges were bound by thongs in such a manner that the middle, hanging down, formed a capacious basin. It was filled with a liquid, in which lay a quantity of the bark of Karroo-thorn, and together with it a number of sheep-skins, first deprived of the hair, were placed to steep. The Acacia-bark possesses a large portion of the tanning principle, and imparts a reddish colour to the leather.

Woodcut Vignettes from "Travels in the Interior of Southern Africa"



Detail of *A. karroo* branchlet with flowers and seed pods
Tony Hül

dung to make a hard floor in the matjies houses.

Edible gums are eaten as is; or the gum is dried, pounded and kept dry in a container for use later. It can be kept for months in its dry pulverised form When needed for eating, it is mixed with water, and consumed. Interviews as well as literature point tothe gums' importance as a foodstuff during summer. Most people considered the gum, with honeyand some berries to have been one of the major food supplies in summer (Archer: 1988). Cornell (1920) writes that the Khoi near Arrisdrift existed on the "milk of their goats, the gum of their thorn trees, the few small fish to be found in the river."

The tree is a favourite of Tlapin children who use the large amount of gum produced during the summer as a sweet (Fox & Norwood Young: 1982).

The seeds and leaves are food for sheep, goats and cattle. The leaves dried, crushed and roasted have been widely used as a coffee substitute (Roberts: 1990).

The fine red strips of bark on roots (and some young branches) are collected, dried and pounded. It is used as an infusion to relieve diarrhoea. This medicine is particularly suitable for babies (Archer:1988). The sweet-scented flowers and buds pounded to a pulp in hot water are used by the Twana, Venda and Zulu as a poultice to draw abscesses ad boils and to sooth sprains (Roberts:1990).

Domestic uses

Young tall branches are bent and dried in a curved position to be used as framework of the huts. The branches of *A. karroo* are only used when more popular species such as *Ziziphus mucronata* and *Rhus pendulina* are not available.

Young branches are curved at the top, and dried and used to catch cattle/stock (hakstok). These crooks are also used in hunting, to pull or push small animals, such as rockrabbits from crevisces. The sticks are also used to remove hyra from the trees

The outside red bark of branches/or roots is moistened and rubbed into leatherwork to dye the leather. This process is known as "om die vel te bas" (to bark the leather). The longer the bark is left on the leather, the deeper red the colour. Sometimes different pieces of leather are left in the bark for different periods and interesting patterns created when the different patches are stitched together (traditionally with sinew) (Archer: 1988). The inner bark, pliable when wet, is an excellent rope and is still used by rural people for tying roof frames (Roberts: 1990).

Earlier, the thorns of the tree were used.

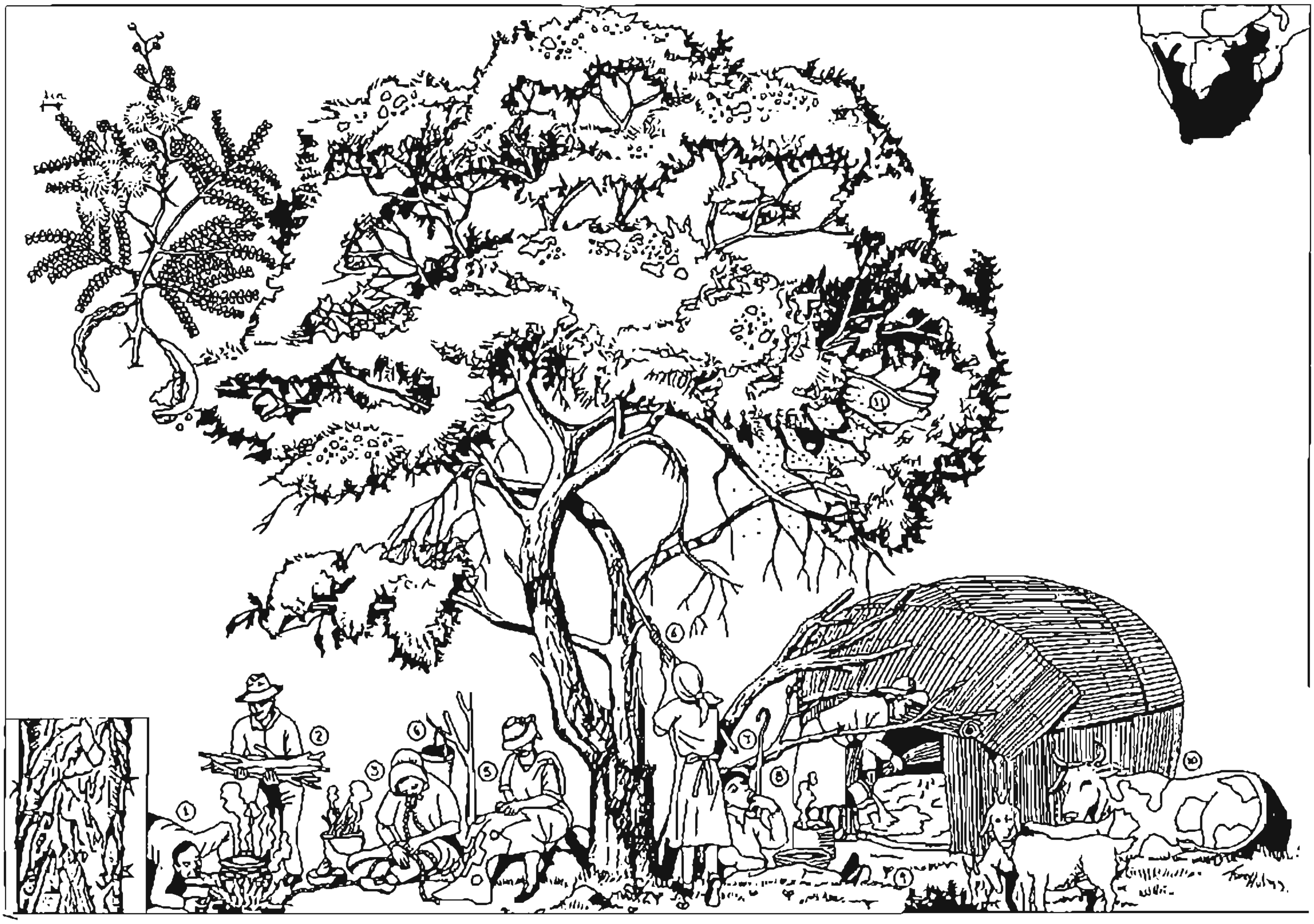
Dirty gum (sandy or full of insects) was collected to use for floors of houses. The gum was collected from the ground where it had dropped; or from the tree, was boiled with water, mixed with dung and spread over the floor with small broom. It forms a hard dark brown shiny floor. Some people preferred not to mix the gum with dung because the floor would be more shiny and harder. To maintain the gloss the floor has to be rubbed with hyra (or the mixture) every two weeks.

Bark on the underground young roots of the tree was traditionally used to make rope. The young roots are first exposed by digging; then the roots are chopped off. The fine red bark is stripped off in as long as possible strips and soaked in water while the rest of the root is shredded into strips. Then the strips are rubbed and washed in water until they become softer. Some of the long strands are then taken to start 'twisting' / (draai) the rope. Two strands are taken and, with a downward stroke on the bare leg, each is wound tightly (separately). With the next upward stroke the two strands are tightly twisted into each other. Different lengths of strips are used together so that a continuous long rope can be formed. After the rope has been completed, it is kept moist (in water) until it is used. Traditionally the rope was used to thread together the reeds which form a mat to cover the wooden framework of the hut. It was also used to tie the mats to the framework, and to tie down other articles. At present rope is not made from bark, but from strands of sacking in which fodder for stock is obtained (Archer:1988).

As a result of the increasing scarcity of hessian fodder sacking, people in Namaqualand cannot make matjieshuts.

DISTRIBUTION:

Acacia karroo is seen as the most widespread *Acacia* in South Africa. It spreads from the Cape to the Kalahari, Transvaal and into the eastern Natal (Palmer & Pitman 1961: 157). It occupies a diverse range of habitats, including dry thornveld, river valley scrub, bushveld, woodland, grassland, the banks of dry watercourses, riverbanks, coastal dunes, and coastal scrub (Ross 1975: 71). In the northwestern-Cape it is mostly an indication of water, usually a dry riverbed where subterranean water can be found by digging.



Acacia karroo

Some of the uses of the tree by people.
Tony Hill

TYPE OCCUR:
Common at dry riverbeds

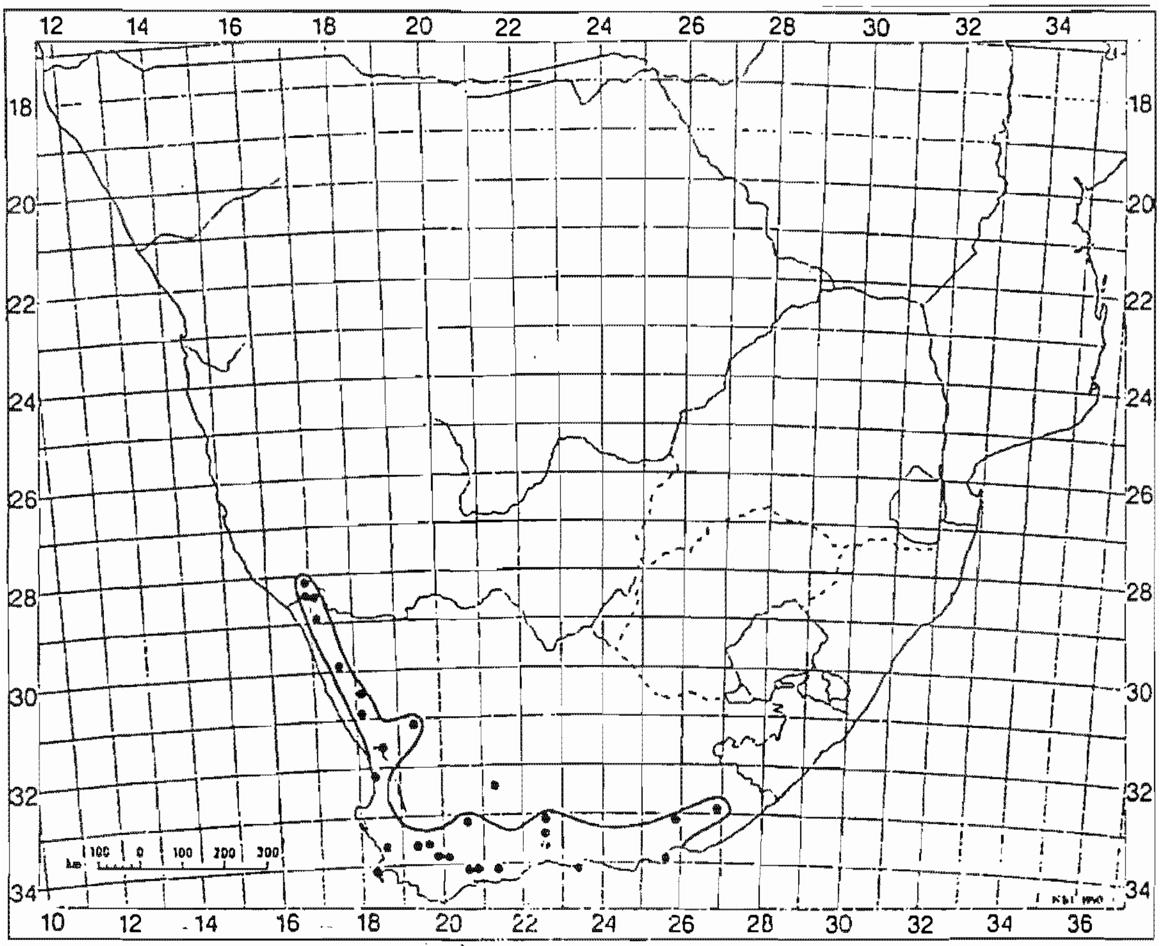
GENERAL:
It is thought that *A. karroo* spread to the north from Worcester and the Western Cape through pastoralist activity. The seeds of *A.karroo* were transported by stock and spread through dung. We do not know for exactly how long A. karroo has been in the vicinity. The pastoralists have been in the area for at least 2 100 years (Webley: 1991) and a population growth expansion mode could have been possible within a hundred years. The tree became very important in the economy of the local people for the following reasons:

- edible gum
- medicinal properties
- domestic value
- gum for floor
- roots for rope
- branches for framework
- bark for dyeing
- firewood
- it indicates water (grows in dry river beds where one can dig for water
- in summer its flowers attract many bees, and it is well known that there is honey in the vicinity of the trees
- it is good grazing for stock, especially the pods
- various parasites grow on it e.g. *Loranthus elegans* and *Viscum capense* etcetera, which are of good use to people.

The accompanying illustration shows some of the uses of the tree by people. This illustration is currently being used in the **Biomass Programme for Namaqualand** as an information tool regarding indigenous trees and bushes. It will form part of a teaching-aid package which is being prepared for teachers.

NUTRIENT ANALYSIS:
Refer to the Appendix.

Distribution



Albuca altissima collected to be eaten
Tony Hül

Grid references

2816BB
2917BA
2917DC
3018CC
3118DA
3119AB
3218AB
3221AD
3226DD
3318DA
3319CB
3319DA
3319DD
3320BA
3320CC
3322BA
3322BC
3322DA
3325BB
3325DC
3418AB
3420BA
3420BB
3421AB
3423AB

Albuca altissima *Dryand.*

HYACANTHACEAEAE

COMMON NAME(S):

Kamiemie / Slymstok

HERBARIUM SPECIMEN:

F Archer s.n.

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

lower stems

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x	x	x		

RECOGNISED BY:
Light green stem, bluish-green leaves and white and green flowers.

USES & PREPARATION:
The lower part of stem is eaten raw.

This plant was used traditionally as a substitute for water as its high moisture content and taste make it an excellent thirst quencher.

Albuca species, in general, are used to ward off evil spirits (Watt & Breyer-Brandwijk: 1962).

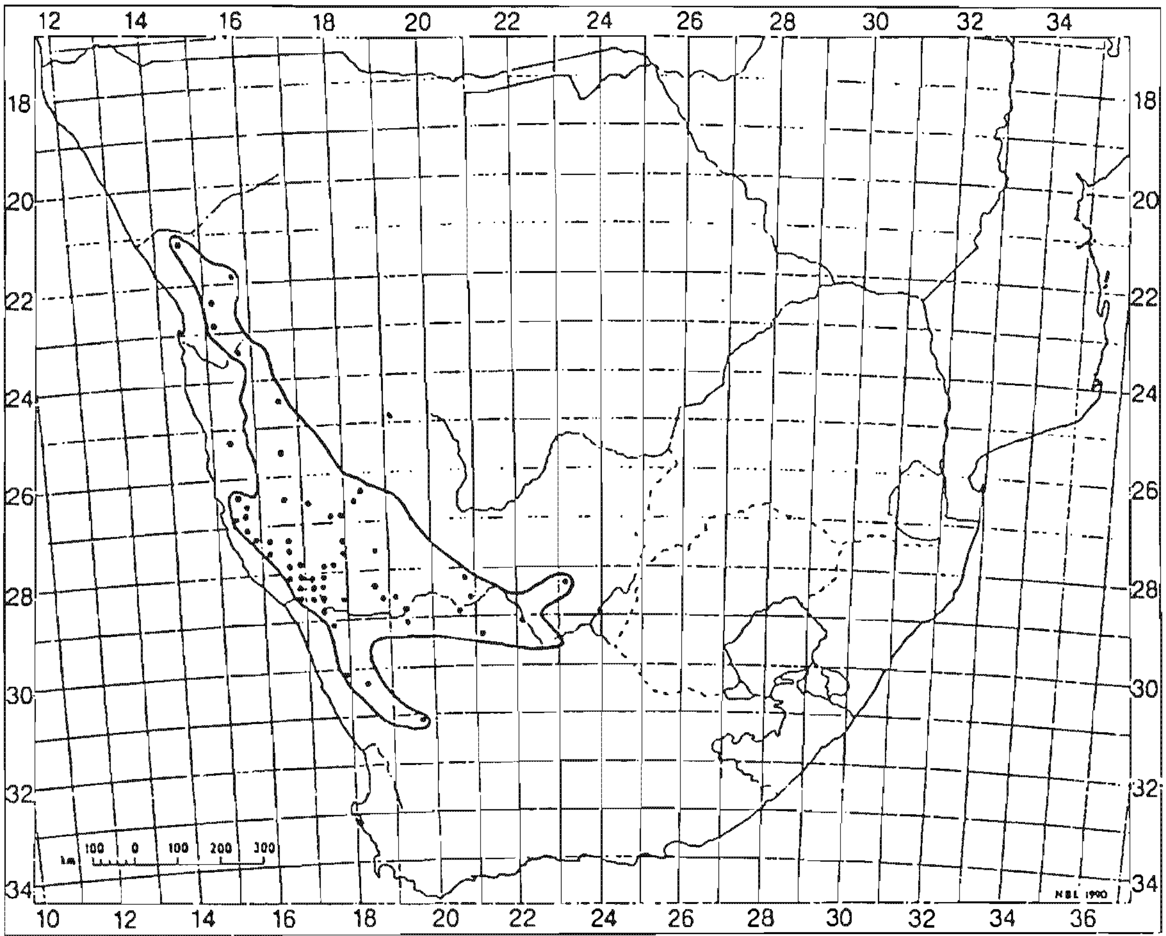
GENERAL:
Very similar to another *Albuca sp.* which is poisonous.

DISTRIBUTION:
Widespread at Piketberg, Clanwilliam, Worcester, Little Karroo and Namaqualand (Bond & Goldblatt 1982:50).

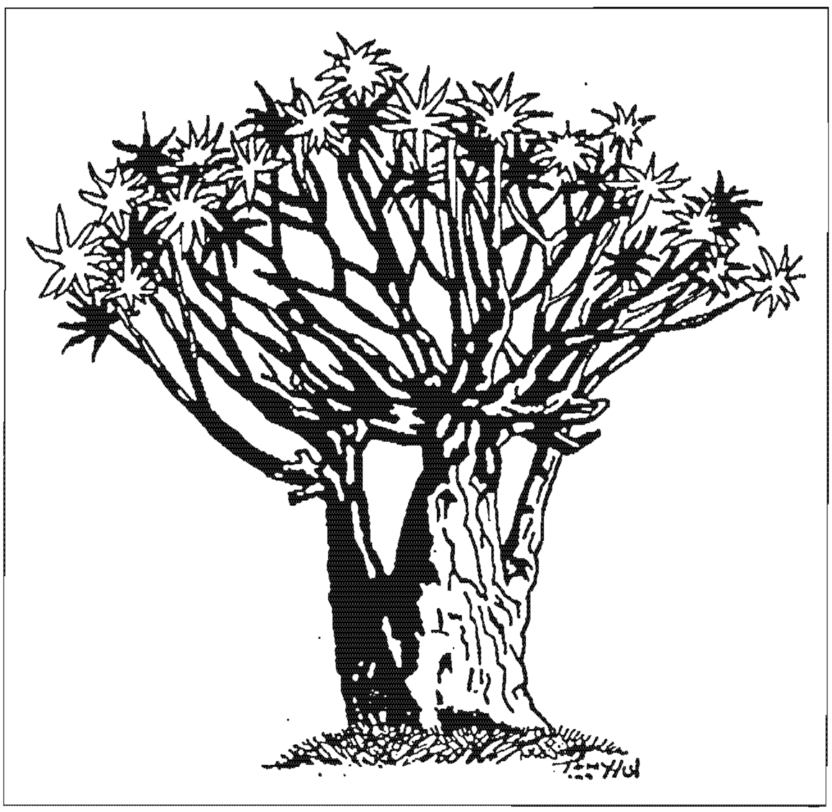
TYPE OCCUR:
Widespread.

NUTRIENT ANALYSIS:
Refer to Table in Appendix.

Distribution



Grid references



Tony Hül

Aloe dichotoma *Mass.*

ASPHODELACEAE

COMMON NAME(S):

Choje / Kokerboom / Quiver Tree

HERBARIUM SPECIMEN:

No specimen

IDENTIFICATION:

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x			x	x		

PART(S) USED:

nectar of flowers			roots	branches		

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Thickset tree with thick main stem touch browinsh bark and rounded crown each branch endin in a dense rosette of grey-green linear lanceolate tough succulent leaves. Flowers yellow, appearing in winter.

USES & PREPARATION:
The nectar from flowers is drunk by children.

The roots are pounded for an infusion.

The branches were hollowed out by the Namaqua and Bushmen and used as quivers for their arrows, the ends covered with leather (C. A. Smith 1966).

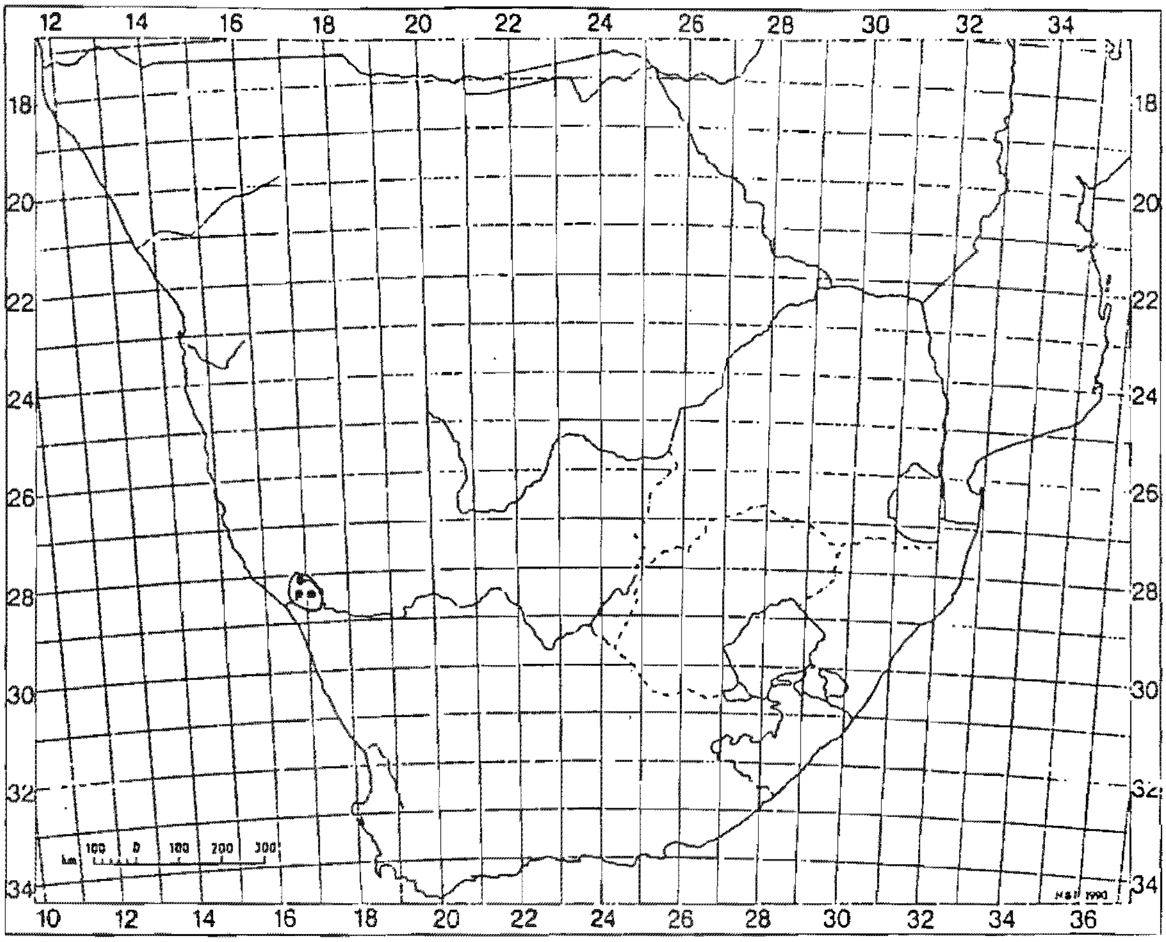
Stems were cut up and used in the construction of houses.

Additionally, primitive fridges were built using the light spongy wood. A water tank was placed on top and the water which dripped through the spongy stems caused cooling.

GENERAL:
Frequently cultivated for ornamental purposes both out of doors or indoors in containers. Easily propagated from seed.

DISTRIBUTION:
Found in Namaqualand from Loeriesfontein northwards to the Orange River on hills, usually on north-facing slopes, and eastwards to the Upington area, as well as in Namibia (Le Roux & Schelpe 1988: 40).

Distribution



Grid references

2816BB	2816BD						

Aloe pearsonnii

ASPHODELACEAE

COMMON NAME(S):

Bitter aalwyn

HERBARIUM SPECIMEN:

No specimen

IDENTIFICATION:

N Jürgens, in the field

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
		x				

PART(S) USED:

leaves

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:
The red-coloured leaves.

USES & PREPARATION:
The leaves of the *Aloe* are crushed and put in water.

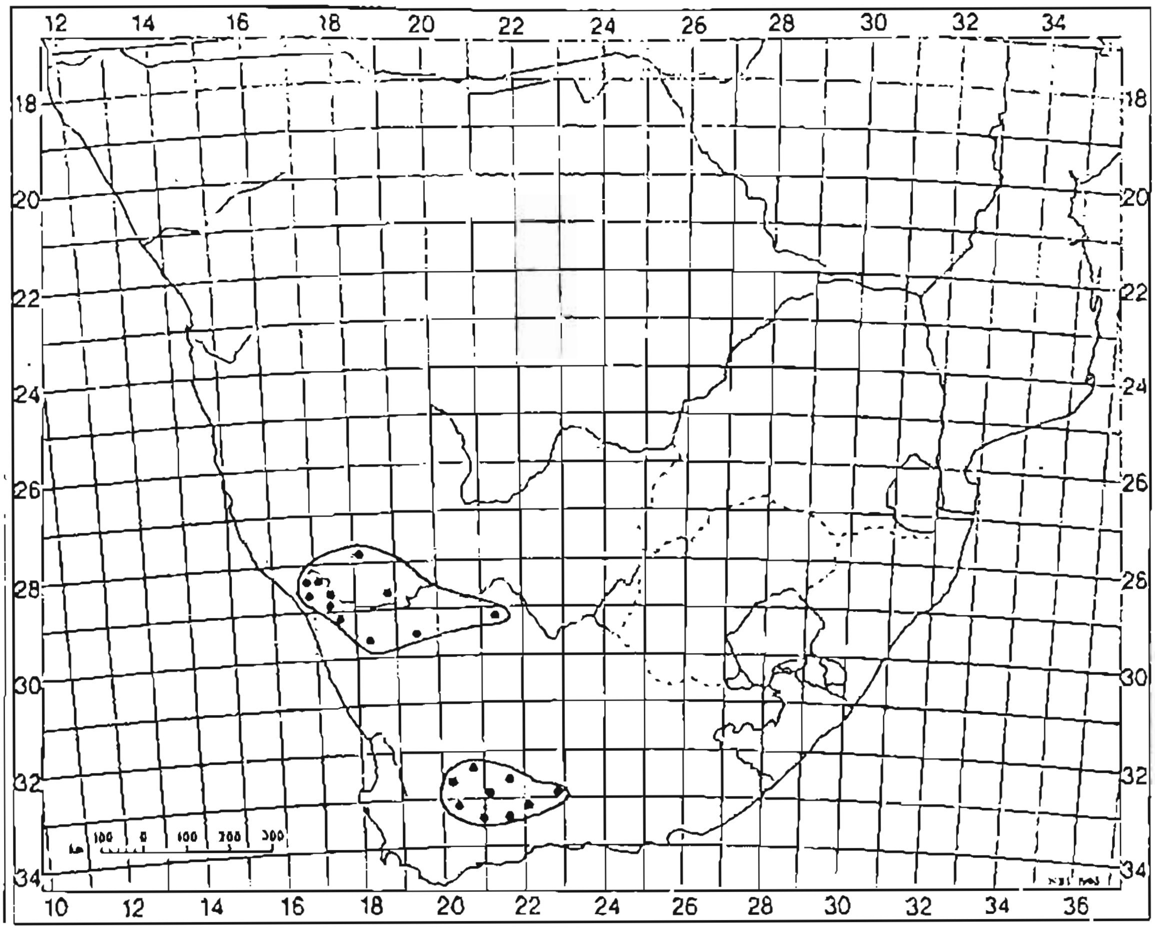
The extract is a remedy for stomach disorders as well as a veterinary medicine.

GENERAL:
According to inhabitants of the northern Richtersveld a different *Aloe sp.* in the southern Richtersveld is used in the same way.

The density of *Aloe pearsonii* has increased much during the last 30 years - especially in the Helskloof area. This increase may be as result of overutilisation of this area - which has a permanent fountain at Paradys.

DISTRIBUTION:
Richtersveld and southern Namibia.

Distribution



Grid references

2718CA	2718CA	2718CA	2718CA	2817CC	2918BB	3320BB	3321AD

Anacampseros papyracea *E. Mey. ex Fenzl* ssp. namensis *Gerbaulet*

PORTULACEAE

COMMON NAMES:

Moerplantjie / Gansmis

HERBARIUM SPECIMEN:

Information supplied by Ernst van Jaarsveld

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x	x					

PART(S) USED:

dried stems	dried roots

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

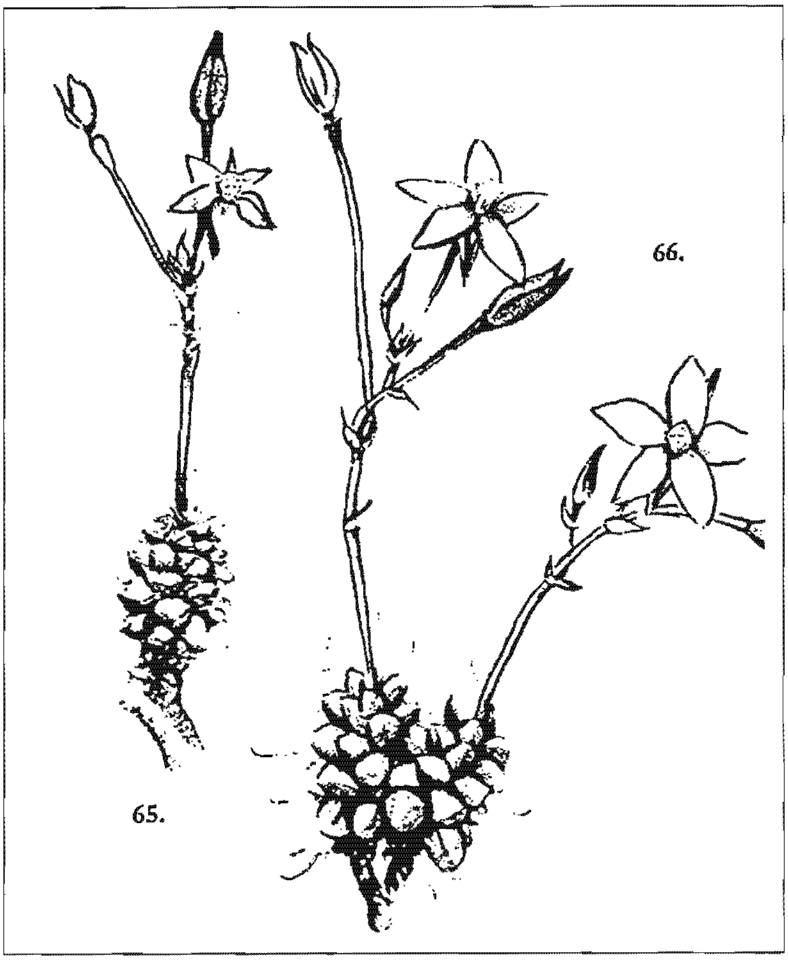
RECOGNISED BY:
Dwarf plant with flat stems and small green leaves, the latter completely covered in grey-white papery scales.

USES & PREPARATION:
The dried pulverized roots and stems are used as a yeast (C.A. Smith:1966).

GENERAL:
Always associated with quartzitic flats and outcrops and difficult to detect. Frequently cultivated for its ornamental appearance. Easily propagated by its tiny seeds.

DISTRIBUTION:
Richtersveld, Bushmanland and Little Karoo.

65. A. subnuda
66. A. filamentosa
Wild Flowers of the Northern Cape



Grid references

1918CA	2826CC	3125CB
2016BB	2827AC	3126DA
2217AD	2827BC	3126DD
2217CC	2827CA	3218BB
2328BB	2828CA	3219AA
2329BD	2828CC	3219AC
2329CD	2917AA	3221BB
2526CA	2917BB	3222DD
2527BA	2917CA	3223BC
2527CD	2917CD	3223CD
2527DD	2917DB	3225AB
2528AD	2917DD	3225BB
2528CA	2918BB	3226DD
2529AD	2919AB	3227DB
2616CB	2922BB	3228CB
2626DC	2922DA	3319CB
2627AA	2925CB	3320AC
2627AD	2926AA	3320BA
2716DB	2926BB	3320BB
2718BC	2927AC	3320CC
2718CA	3025DA	3321AD
2727CA	3026AC	3321CA
2816AD	3026CD	3322AA
2816BD	3027CA	3322BC
2816DA	3030CB	3322CA
2817CC	3118DB	3323BA
2819CA	3119AC	3324AD
2820CB	3119CA	3325AC
2820DC	3120DC	3326AD
2823DC	3125AD	3421AB

Anacampseros sp.

PORTULACACEAE

COMMON NAME(S):

Skilpadvoet

HERBARIUM SPECIMEN:

F Archer 225, 202

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

stems

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:
The grey stems.

USES & PREPARATION:
The stems are eaten raw.

A number of spp. are known to be used by the Africans for making beer. (Fox & Norwood Young: 1982)

A. rhodesica N.E. Br. is used in the treatment of malaria, blackwater fever, blood-poisoning, anthrax and dysentry. (Watt & Breyer-Brandwijk: 1962)

GENERAL:
Anacampseros spp. were on loan in Germany and therefore these specimens could not be identified.

NUTRIENT ANALYSIS:
Refer to Table in Appendix.

Grid references

3118DA	3119AC	3120AC	3226DA	3318CD	3319CB		

People digging for food.

Tony Hül

Annesorrhiza altiscapa *Schltr.*

APIACEAE

COMMON NAME(S):

Bokvingel

HERBARIUM SPECIMEN:

F Archer 364, 369, 184, 389

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
	x		x			

PART(S) USED:

Ea	Eu	Ma	Mu	Da	Du	F
	roots		roots			

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x	x	x	x	x

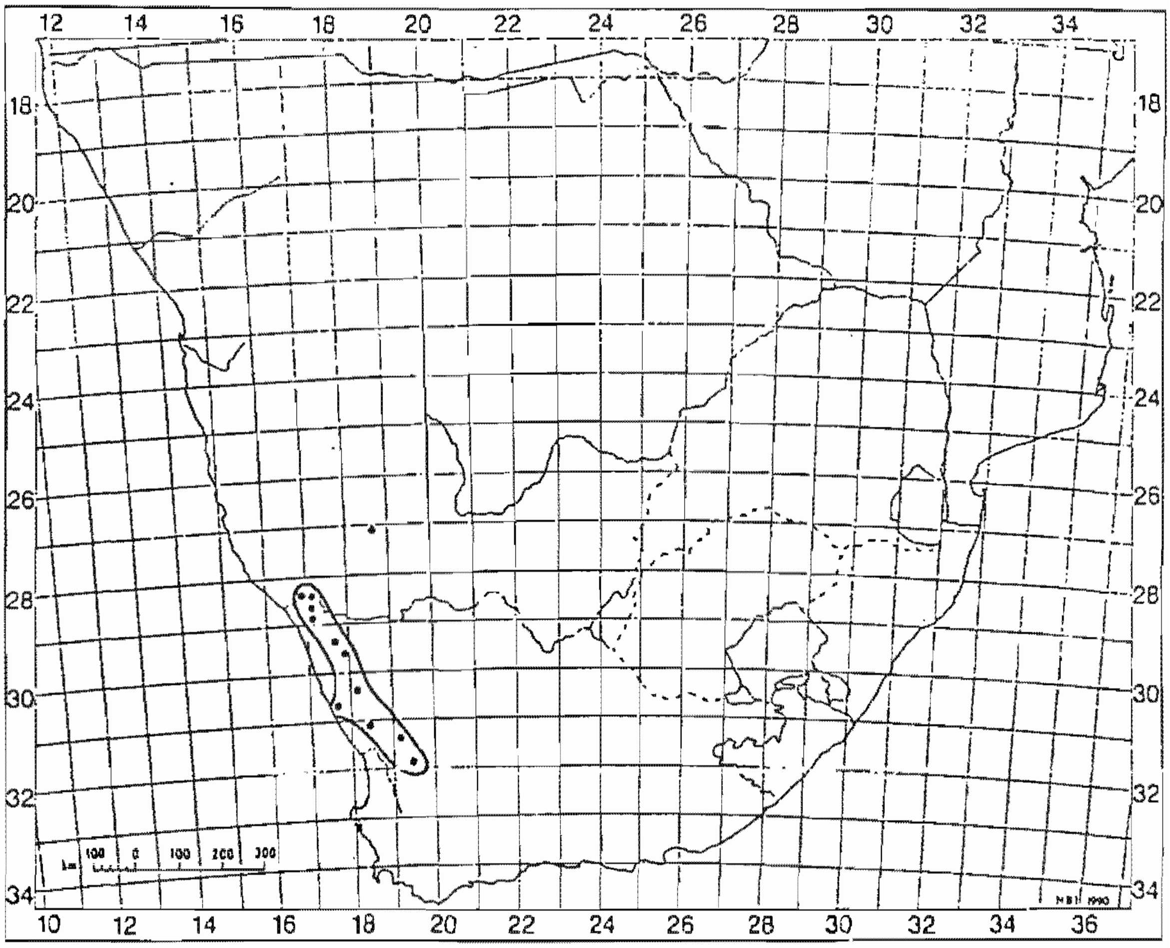
RECOGNISED BY:
Leaves in basal rosette.

USES & PREPARATION:
Roots are pounded and dried. Water is poured on the dried powder and replaced every two days until the fluid is no longer so bitter. Then honey and water are added to make a very potent beer.

All beers are regarded as medicinal - and it is known that the use of beer is especially useful for lactating mothers as it increases milk production.

DISTRIBUTION:
Gifberg in Namaqualand (Bond & Goldblatt 1984:140).

Distribution



Grid references

2718BA	2817AC	2817CC	2917BB	2917DB	3118AB	3119AC
2816BD	2817CA	2818BA	2917BC	3018AC		3119CD

Antizoma miersiana *Harv.*

MENISPERMACEAE

COMMON NAME(S):

Swartstorm

HERBARIUM SPECIMENT:

F Archer

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
			x			

PART(S) USED:

roots

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x	x	x	x	

RECOGNISED BY:
Rigid shrub with glaucous leaves.

USES & PREPARATION:
The roots are boiled and the liquid is then drunk as a remedy for stomach-ache. The roots can also be chewed raw.

According to Hoff (1990) the infusion is rubbed into small cuts made on the skin for treatment of people who had been jinxed through black magic - this reputedly restores well-being and good fortune.

Antizoma capensis was also used as a treatment for syphilis, and possibly *A. miersiana* as well. (E van Jaarsveld: pers comm).

DISTRIBUTION:
Clanwilliam, Karroo, Namaqualand (Bond & Goldblatt 1984).

Grid references

3017AD	3118DA	3119AA	3219AA	3318CD	3418AB	3418BB

Arctotis aspera *L.*

ASTERACEAE

COMMON NAMES:

Griepbos

HERBARIUM SPECIMEN:

F Archer s.n.

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
		x				

PART(S) USED:

leaves

SEASON COLLECTED:

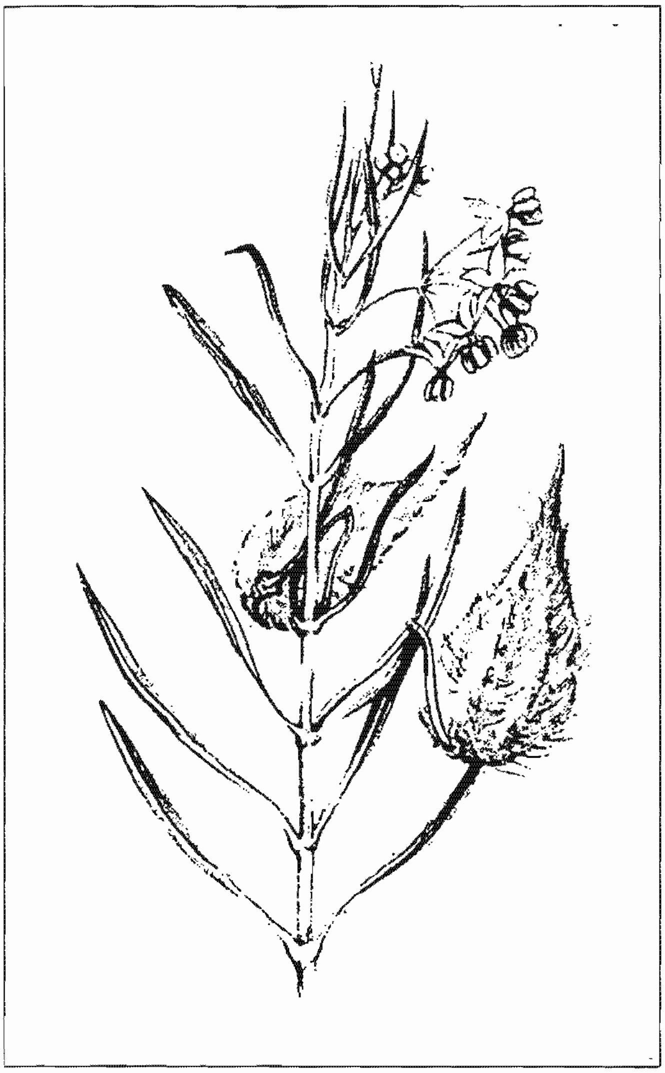
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
				x	x	x	x	x	x	x	

RECOGNISED BY:
Aromatic rough leaves and yellow or white flowers.

USES & PREPARATION:
Infusion, drink as a tea for relief from colds and influenza.

DISTRIBUTION:
Grows on flats and lower slopes in Clanwilliam and Cape Peninsula. Also Namaqualand (Bond & Goldblatt 1984:155).

GENERAL:
This may be an incorrect identification.



Asclepias fruticosa

Wild Flowers of the Northern Cape

Grid references

1923CA	2428CB	2531BD	2628AD	2729BD	2829AA	3026AC	3318BD
2017AC	2428DA	2531CA	2628CB	2729CA	2829AC	3026CD	3319DD
2114DC	2429AA	2531CB	2629CD	2729CB	2829DB	3027CD	3320BA
2115DD	2429BC	2531CC	2631AA	2731AD	2831DC	3027DD	3320CC
2116AA	2429CD	2531CD	2631AB	2731CA	2922DA	31 18DC	3321AD
2116DD	2430BD	2531DC	2631AC	2731CD	2924BD	3119AC	3322BC
2117AA	2430CA	2617DA	2631BD	2732BC	2925CC	3119CC	3322DB
2214CB	2525BD	2620BC	2718DA	2816BB	2926AA	3124DA	3324CD
2216DB	2525DC	2624CD	2723AD	2816BD	2926CD	3125AC	3325DC
2218AD	2526CA	2625CB	2725AC	2824BA	2927BB	3125BA	3326AD
2219BC	2527BA	2625DA	2725BB	2824DB	2927BC	3125BC	3327BB
2229AC	2527DD	2625DB	2725CB	2826AC	2928DB	3126DA	3418AB
2229CC	2528AA	2626AA	2725CC	2826CD	2928DD	3126DD	3418BB
2230CB	2528AD	2626BA	2725DB	2826DC	2929CB	3221BA	3421AA
2230DD	2528CA	2627AD	2726AC	2827DB	3021DD	3221BB	3423AA
2317BA	2528CB	2627BB	2727BD	2828AB	3023AD	3223CB	3423AB
2328CD	2528CC	2627CA	2728BB	2828BC	3023BA	3224BC	3424AB
2329BB	2528CD	2627CB	2728BC	2828CB	3023BC	3225DA	
2329CD	2529AD	2627CC	2728CA	2828CC	3024BB	3226DA	
2330DA	2529CA	2627DD	2728CD	2828DA	3025DA	3226DB	
2427BC	2530DD	2628AA	2728DA	2828DC	3025DB	3318AB	

Asclepias fruticosa *L.*

ASCLEPIADACEAE

COMMON NAMES:

Milkweed/Tontelbos/Melkbos

HERBARIUM SPECIMEN:

F Archer s.n.

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
		x	x	x		

PART(S) USED:

		latex leaves	fresh/dried roots	whole bush, seeds		

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Erect shrub 1 m tall with linear leaves and milky latex.

USES & PREPARATION:
The white milky latex is considered to be an excellent treatment for warts. The Zulu make a tea of the leaves for children with stomache aches and diarrhoea, and the dried and powdered leaf has been used as a snuff for treating tuberculosis. (Roberts:1990)

The powdered leaf has come into common use among Europeans a snuff for the treatment of pulmonary tuberculosis. (Watt & Breyer-Brandwijk:1962) The Sotho and Tswana use the tea as a purgative. In the Orange Free State the fresh or dried roots are made into a tea and used as a remedy for diabetes.

Many tribes use the dried seeds, when they burst open, to make a soft pillow stuffing. (Roberts: 1990)

The bark has been suggested as a possible source of white flax-like fibre and the seed floss as a possible but inferior substitute for kapok.

There are reports that the plant is freely browsed by the goat and the bovine but may produce poisoning if eaten in large quantity (Watt & Breyer-Brandwijk:1962).

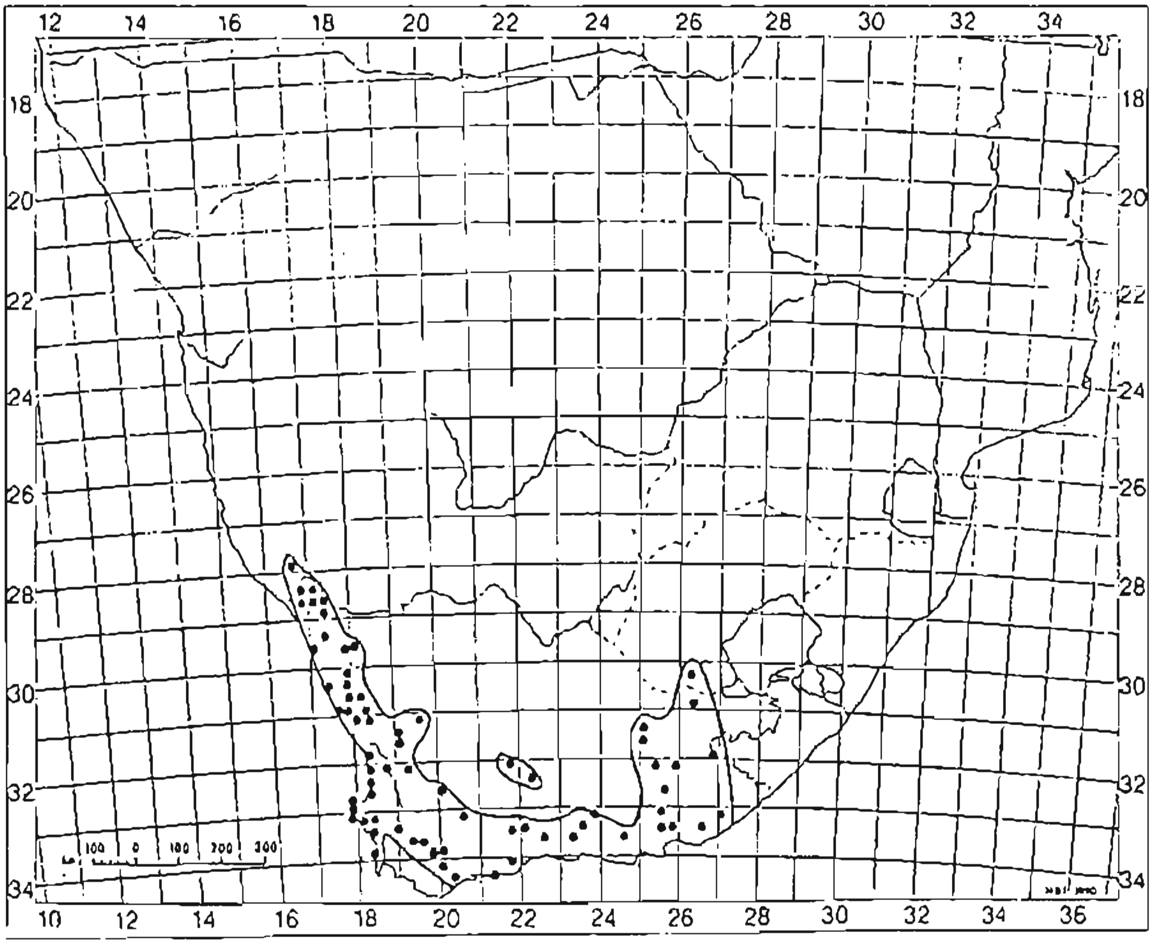
Bushes are placed over the framework of houses for shade.

The dried seeds were used to kindle fires.

GENERAL:
A pioneer, occasionally along roadsides.

DISTRIBUTION:
Found in flat sandy places, often in dry river beds and along roadsides in Namaqualand as well as throughout SA and Namibia (Le Roux & Schelpe 1988: 134).

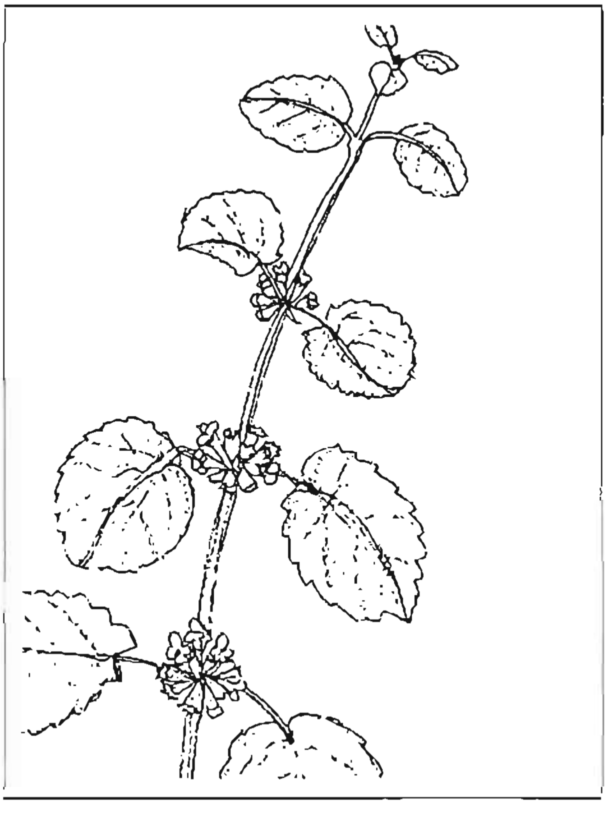
Distribution



Grid references

2716DC	3119AC	3319AC
2816BD	3119BA	3319CB
2816DB	3119CA	3319DA
2817AC	3125AC	3319DD
2817CA	3125CA	3320BA
2817CB	3126DD	3320CC
2917AD	3217DB	3321BD
2917BA	3217DD	3322AC
2917CA	3218AB	3322DA
2917DB	3218AD	3323BB
2918CA	3218BB	3323BC
3017AD	3218CB	3323CB
3017BB	3219AB	3324DA
3017BD	3220CA	3325BA
3017DB	3221BB	3325BC
3017DC	3222AD	3325BD
3017DD	3225AB	3326BC
3018CA	3225BB	3327AA
3018CD	3225DA	3420AA
3026AD	3317BB	3420AD
3026CD	3318AA	3421AD
3118AA	3318AB	3421BB
3118AB	3318AD	
3118CD	3318CD	

Ballotta africana
Indigenous Healing Plants



Ballota africana *(L.) Benth.*

LAMIACEAE

COMMON NAMES:

Kattekruie

HERBARIUM SPECIMEN:

F Archer 458

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
		x				

PART(S) USED:

leaves

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x	x	x		

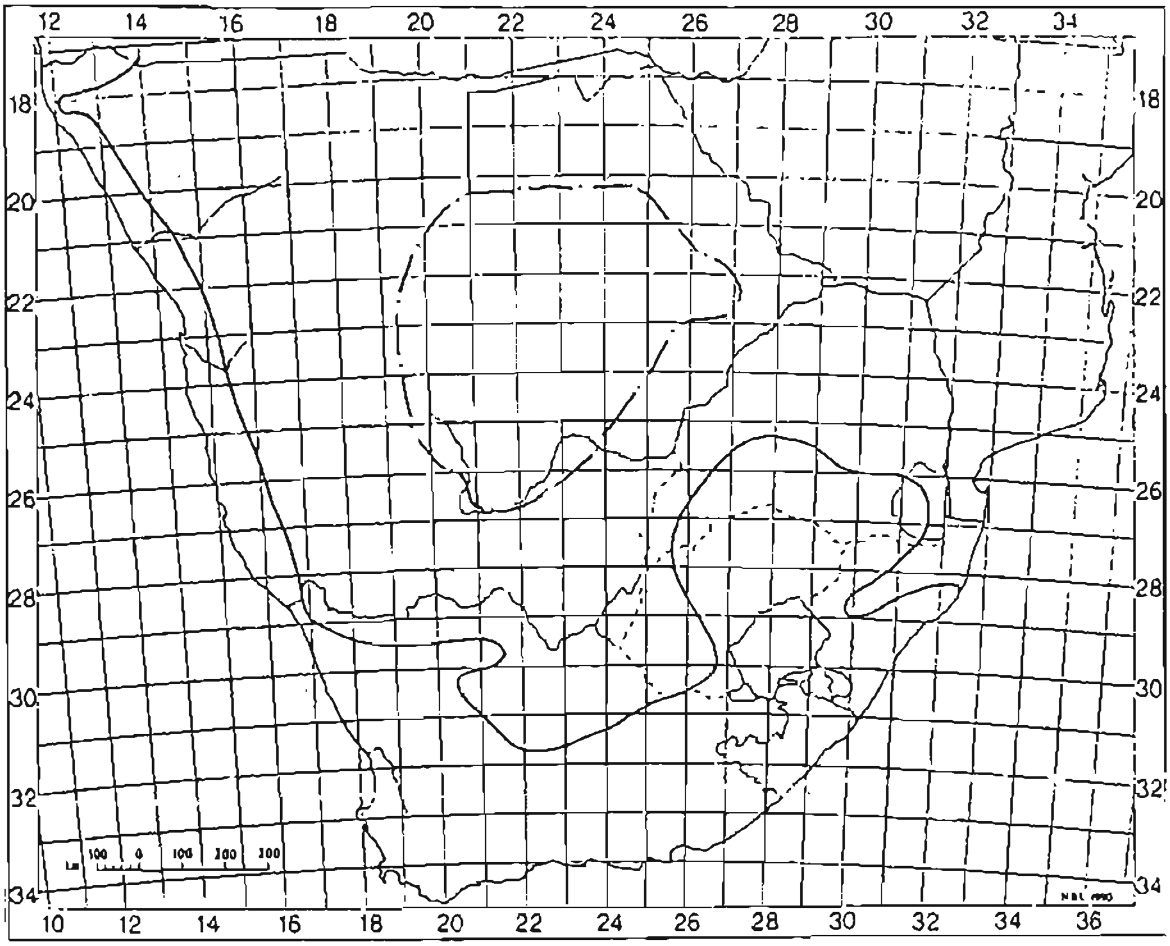
RECOGNISED BY:
A small aromatic shrub with hairy heart-shaped leaves and purple flowers in whorls.

USES & PREPARATION:
An infusion of leaves is drunk as a tea to be used as a remedy against colds and influenza.

An infusion is taken by the European for colds and influenza and is used as a lotion for sores on the head and for thrush. The African uses it for relieving severe colic and as a snake-bite remedy. The Nama apply the steamed leaf as a poultice to the chest for colds and take a decoction of the leaf concurrently. Wicht ( ) records that a weak infusion in brandy is occasionally taken by the European for interal haemorrhoids. The plant is a popular remedy in the Western Province for asthma, bronchitis, influenza, hoarseness, heart troubles, hysteria, sleeplessness and typhoid fever (Roberts: 1990).

DISTRIBUTION:
On rocky flats and lower slopes, widespread from Niewoudtville to the Peninsula and Caledon. Also occurs in Karroo and Namaqualand (Goldblatt 1984:312)

Distribution

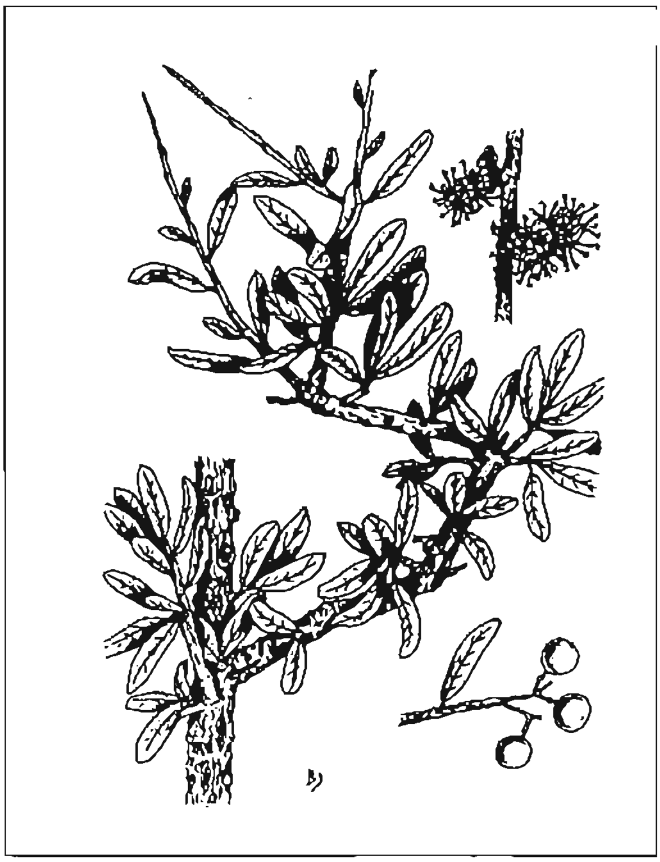


Grid references

| | | | | | | |

Boscia albitrunca.

Food from the Veld



Boscia albitrunca

CAPPARACEAE

COMMON NAMES:

Koramu / t'namee / Shepard's Tree / Witgat

HERBARIUM SPECIMEN:

No specimen

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x	x	x	x	x		

PART(S) USED:

flowers	roots	leaves	roots	wood		

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Rounded shape of the tree with grey-green oblong brittle leaves and white stem.

USES & PREPARATION:
The roots are pounded and burnt and used as a substitute for chicory / coffee.

The Nama often incorporate the tree in the structure of the stockpost. In summer a house will often not be erected - the tree is used as shelter. The umbrella shape of the tree lends itself ideally to this use.

It provides sustenance for both man and animals; the leaves are eaten by game and livestock. The roots are used by people of all races: they are dried, roasted and ground to a chicory substitute, or pounded to obtain a while meal for 'porridge' (Van den Eynden:1992). The root boiled in water and concentrated is said to yield a syrup like "suikerbosstroop" (Watt & Breyer-Brandwijk: 1962). They are also used in the fermentation of beer and milk. The flower buds, when pickled, may substitute for capers.

A decoction of the plant is either drunk to stimulate lactation and releive back pain or dripped into the ears to relieve earaches while a decoction of the roots provides treatment for haemorrhoids (Van den Eynden: 1992).

A cold infusion of the leaves is applied as a lotion to the inflamed eyes of cattle.

The heavy tough wood is suitable for household utensils. The Bushmen tap water stored in the hollow trunks.

These trees are important in the folklore and superstitions of many African peoples. (Palgrave:1977)

By Thlaping law the wood must never be burnt as they think this will result in their cows producing bull calves. (Watt & Breyer-Brandwijk:1962)

DISTRIBUTION:
Widespread in the drier parts of southern Africa.

Grid references

28I7AC	3017DC	3118DA	3119DA	3220CA	3322CB	3418BB
2917BA	3118CA	3119AD	3219AA	3318DC	3418BA	3420AD

Bulbine praemorsa *(Jacq.) Roem. - Schult.*

LILIACEAE

COMMON NAMES:

!hamibieb / Blougif

HERBARIUM SPECIMEN:

F Archer 367

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

leaves

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x				

RECOGNISED BY:
Perennial tuber. Erect, soft green leaves and yellow flowers.

USES & PREPARATION:
Eaten raw.

B. latifolia R. & S. is used by the European, the Xhosa, the Mfengu and the Hottentot in the treatment of diarrhoeas, dysenteries and abdominal complaints in general, as well as internally in the treatment of rheumatism and "blood disorders" (Watt & Breyer-Brandwijk: 1962).

DISTRIBUTION:
Grows in Niewoudtville and the Peninsula and Caledon (Bond & Goldblatt 1984).

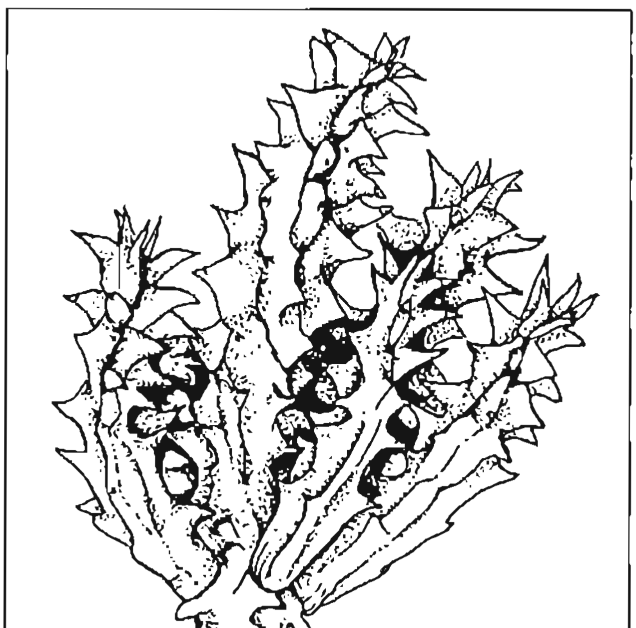
Found in Namaqualand on red, sandy loam soils and also south-eastwards to Worcester and in the Little Karoo (Le Roux & Schelpe 1988).

Grid references

2716DA	2817AC	2818DB	3118DC	3119CD	3218BB	3321DA

Quaqua mammillaris

Veld & Flora vol 69 no 1



Quaqua (Caralluma) mammillaris *(L.) Bruyns*

ASCLEPIADACEAE

COMMON NAMES:

Aroena

HERBARIUM SPECIMEN:

F Archer s.n.

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

fleshy
stems
flowers

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
				x	x	x	x	x	x		

RECOGNISED BY:
Succulent tuberculate stem and clusters of dark flowers. The flowers have an unpleasant smell.

PREPARATION:
The fleshy stems are eaten raw after peeling off the thorny skins. They can taste very bitter, depending on how much rain has fallen, the best time to eat them being immediately after good rains when the stems are full of water. (Metelerkamp & Sealy 1983 : 5)

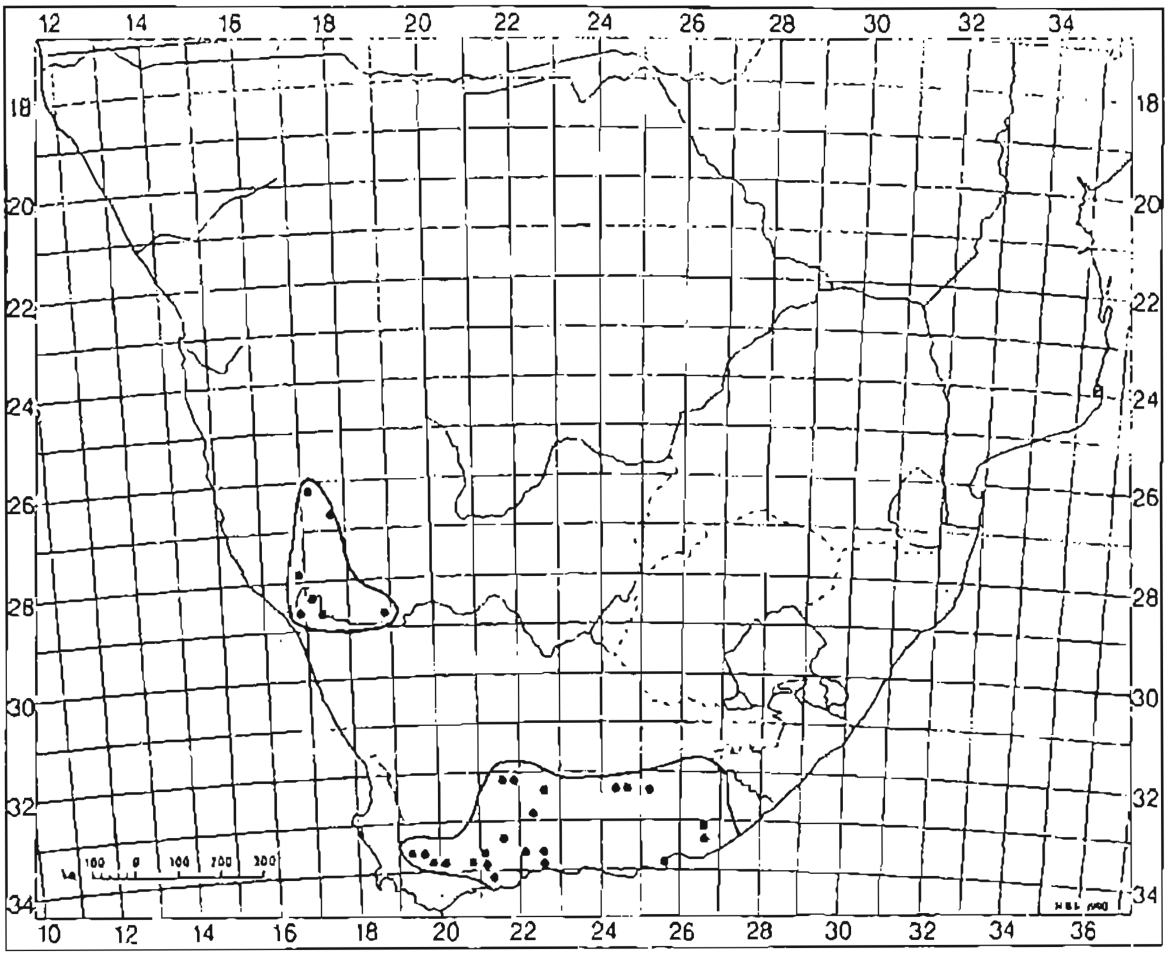
GENERAL:
Eaten often, still collected. This species is one of the most popular 'snacks' from the veld, today.

The longer the wet period and the more the rain, the greater the number of young fleshy stems produced.

DISTRIBUTION:
Clanwilliam, Worcester, Karroo, Namaqualand (Bond & Goldblatt1984:147). Found in granite mountains (Bruyns 1979:11).

NUTRIENT ANALYSIS:
Refer to Table in Appendix.

Distribution

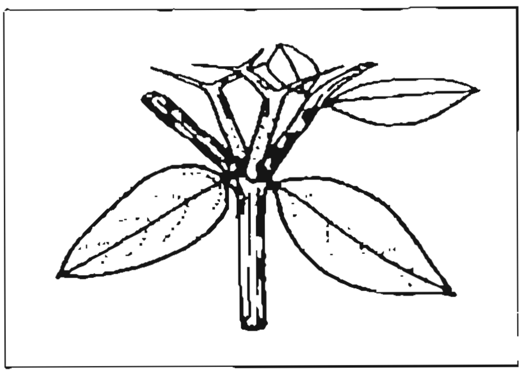


Grid references

26I7AA	2817AC	2818DB	3222BC	3225AC	3320CC	3321CC	3325DC
2716DA	2817AD	3126DC	3222CD	3319CB	3320DD	3322CA	3326BA
2716DC	2817CA	3221BA	3224AD	3319DA	3321BC	3322DA	3326BC
2716DD	2817CB	3221BB	3224BC	3319DD	3321CA	3322DC	3421AB

Detail of leaf and spines of Carissa haematocarpa

Trees of Southern Afria



Carissa haematocarpa *(Eckl.) A.DC.*

APOCYNACEAE

COMMON NAMES:

Karoonoem-noem

HERBARIUM SPECIMEN:

F Archer 456

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

berries
fruits

SEASON COLLECTED:

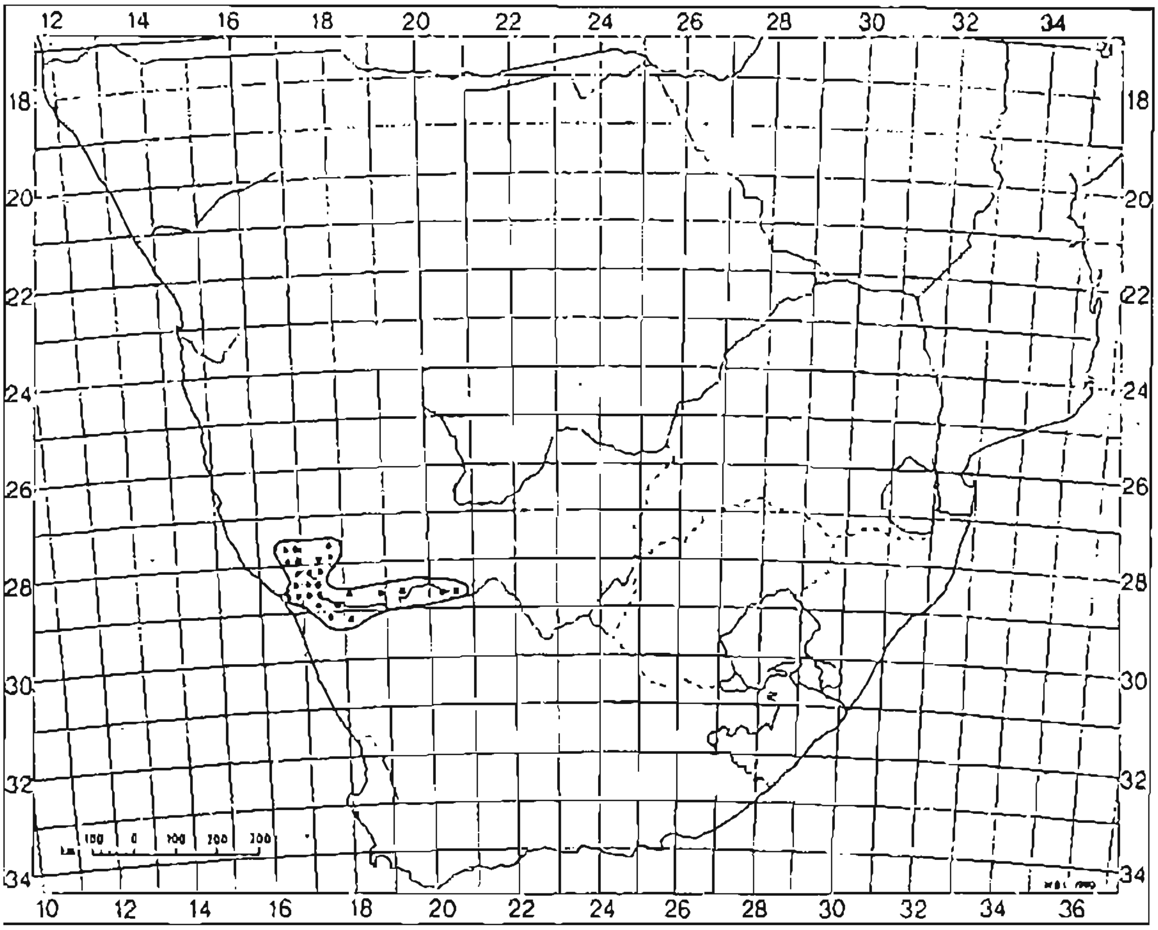
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							x	x	x		

RECOGNISED BY:
Rigid shrub with forked spines and small sweetly scented flowers, small berries.

USES & PREPARATION:
The berries are eaten raw. The berries are also popular with Karoo children (Fox & Norwood Young:1982).

DISTRIBUTION:
Dry karoo bush of the south west Cape and Namibia (Fox & Norwood Young:1982) as well as the Kalahari (Thiselton-Dyer, W.T 1904:498).

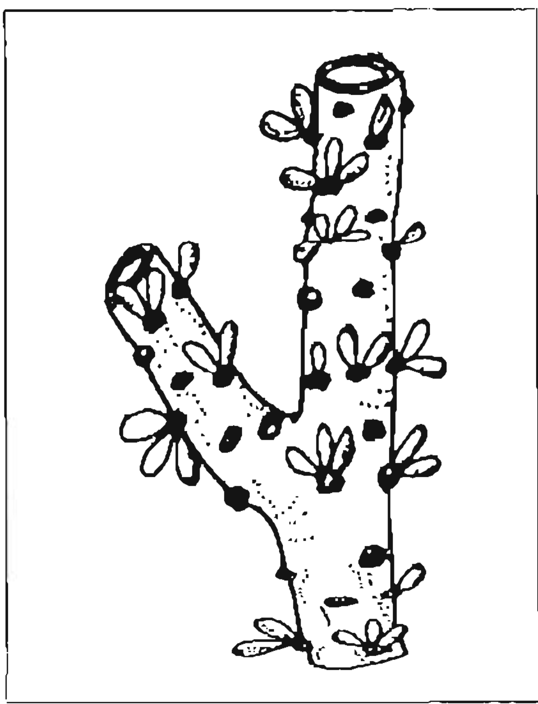
Distribution



Grid references

2615CA	2717DC	2816DA	2817CD	2819CB	2820CB	2820CB
2716DD	2816BD	2816DB	2817DD	2820CB	2820CB	2820DA
2717CD	2816BD	2817CB	2818CA	2820CB	2820CB	2918AA
2717DC	2816BD	2817CB	2818DB	2820CB	2820CB	

Ceraria namaquensis



Ceraria namaquensis *(Sond.) Pearson & Stephens*

PORTULACEAE

COMMON NAMES:

Wolftoon / Hotnotsriem

HERBARIUM SPECIMEN:

Information supplied by Ernst van Jaarsveld

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

bark

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Conspicuous branched shrub up to 2, 5 m. Branches with attractive silvery bark and tiny green leaves. Flowers pink.

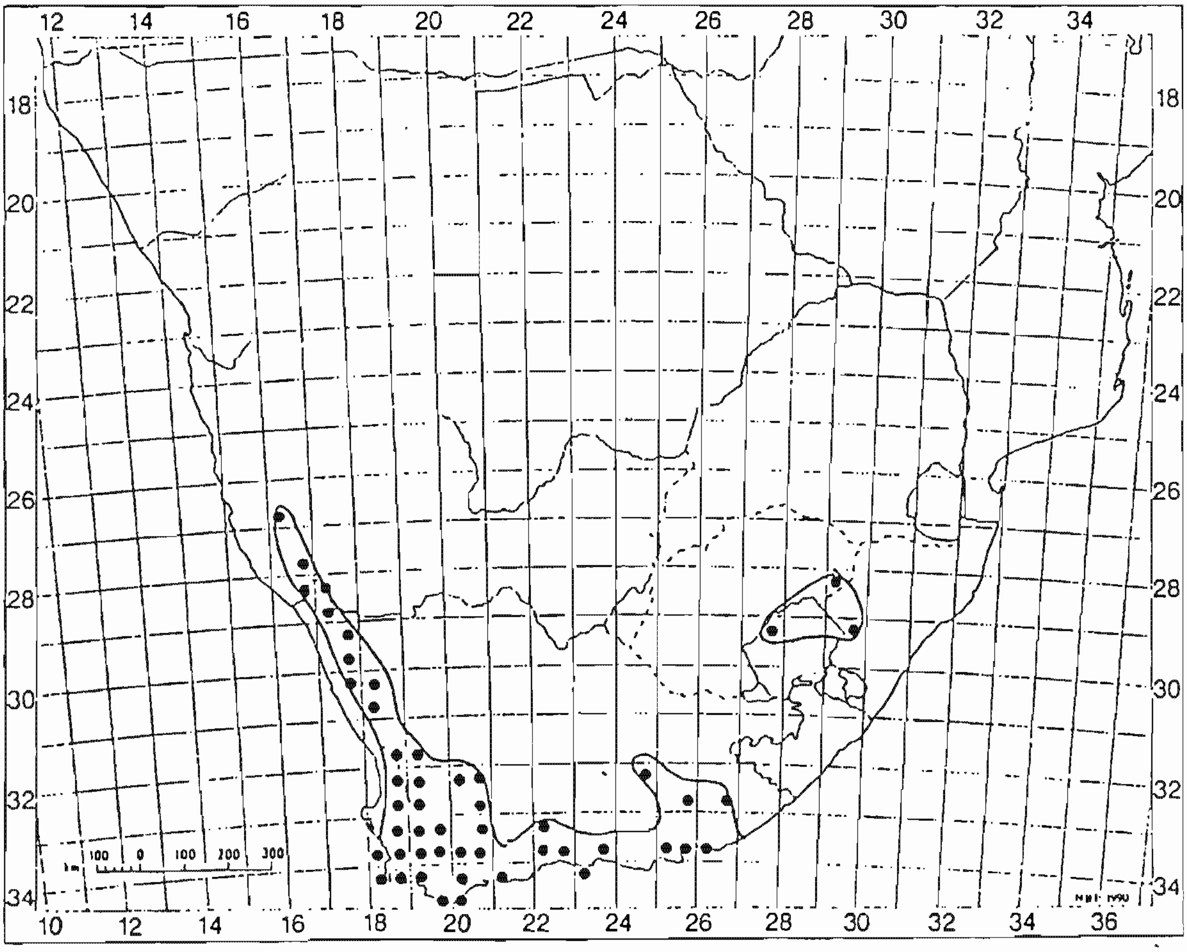
USES & PREPARATION:
Previously prepared sticks were joined by using the stripped bark of the plant to reach inaccessable beehives on cliffs. Used by the Hottentot (C.A. Smith 1966).

The bark is used as cordage or thongs, a custom which gave rise to the name Hotnotsriem (Palgrave: 1983).

GENERAL:
On dry rocky slopes, common on mountain slopes. Occasionally cultivated for its ornamental value. Related to *C. fruticulosa*, a smaller shrubby species also found in the area and a popular grazing item.

DISTRIBUTION:
Richtersveld, Namibia, Bushmanland.

Distribution



Grid references

27I6DC	2817AC	2929BD	3218DB	3319AD	3322CA	3420AD
2716DD	2917BC	3017BB	3218DC	3319BC	3322CD	3421AB
2816BD	2917DB	3018AA	3226DB	3319CB	3326CA	
2817AA	2927BC	3119CA	3318CD	3321DA	3418AB	

Cheilanthes capensis *(Thunb) Swartz*

ADIANTACEAE

COMMON NAMES:

Doerta

HERBARIUM SPECIMEN:

F Archer 386

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

leaves

SEASON COLLECTED:

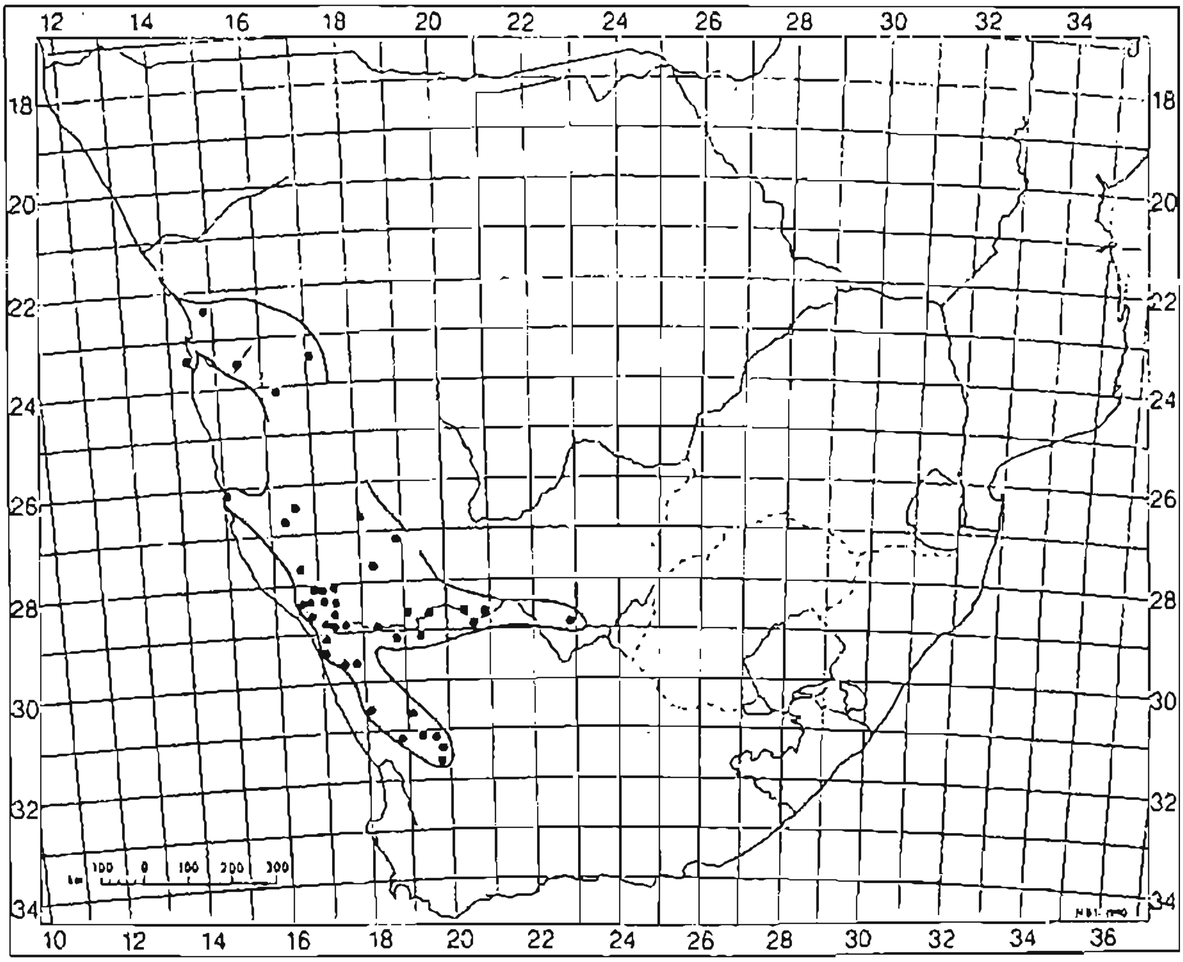
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x	x	x		

RECOGNISED BY:
Erect divided leaves.

USES & PREPARATION:
The leaves are brewed and the liquid is drunk as a tea.

DISTRIBUTION:
Said to be confined to tropical and sub-tropical South Africa (Sim 1915:232)

Distribution



Grid references

2214BD	2616CB	2816DB	2819DA	2917AA	2919AB	3119BA
2317AC	2618CA	2817AA	2820CB	2917AC	3018CA	3119BD
2416AB	2718BB	2817AC	2820DB	2917DA	3019CA	3119DB
2615AA	2718CB	2817CB	2820DC	2917DB	3118BB	3319BB
2616BC	2816BD	2818CD	2822DD	2918BB	3119AB	3418AD

Codon royenni

Namaqualand and Clanwilliam - South African Wild Flower Guide

Codon royenii *L*

HYDROPHYLLACEAE

COMMON NAMES:

ena / Soetdoringbos / Suikerkelk

HERBARIUM SPECIMEN:

F Archer 133

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

flowers

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
				x	x	x	x	x	x	x	

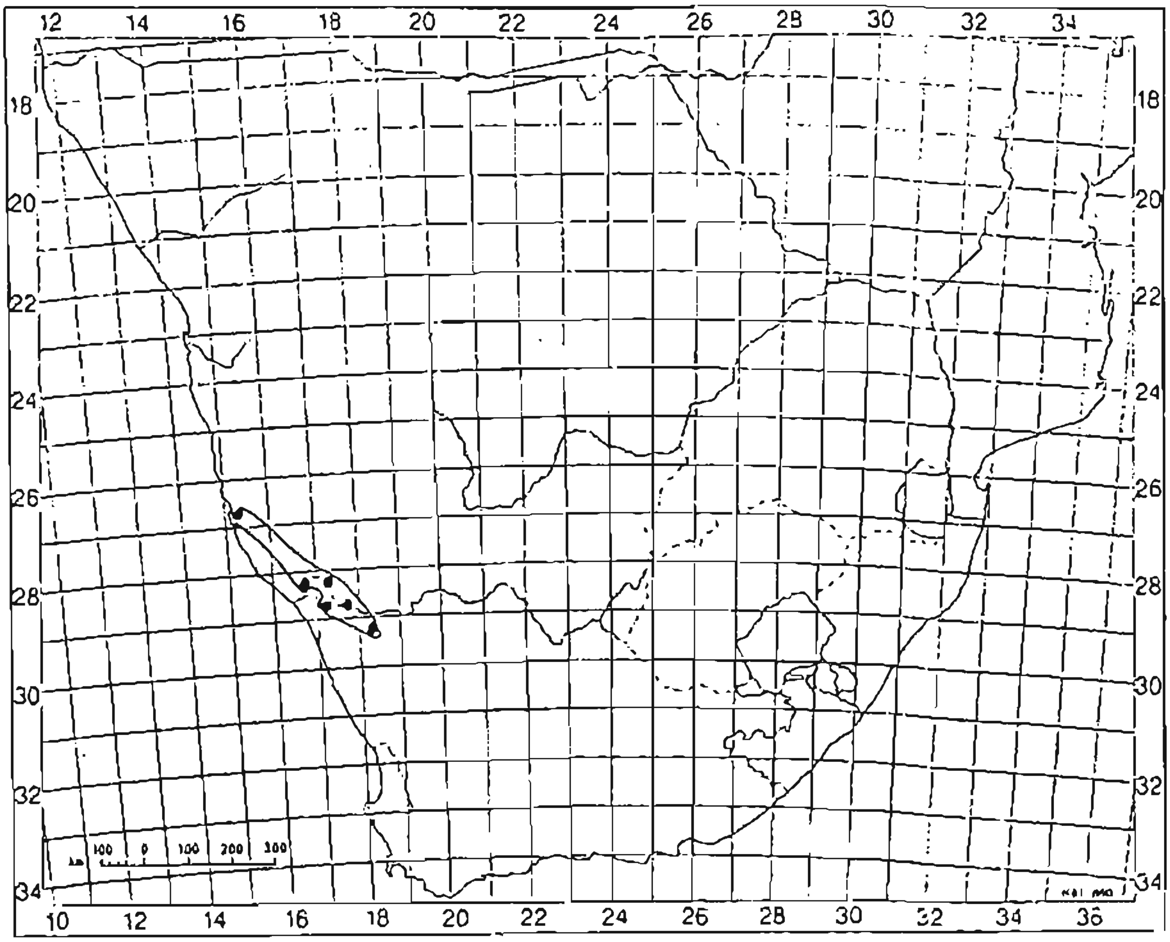
RECOGNISED BY:
Leaves with long white thorns and large whitish flowers.

USES & PREPARATION:
Flowers picked by long stamens and eaten raw. The flowers have a very sweet nectar (Le Roux & Schelpe 1988: 136).

GENERAL:
It is quite an art to harvest this delicacy without breaking off the stems - and without getting pricked by the fine white thorns which grow all over the plant.

DISTRIBUTION:
Grows in the central region around Ceres as well as Namaqualand (Thiselton-Dyer 1904:2).

Distribution

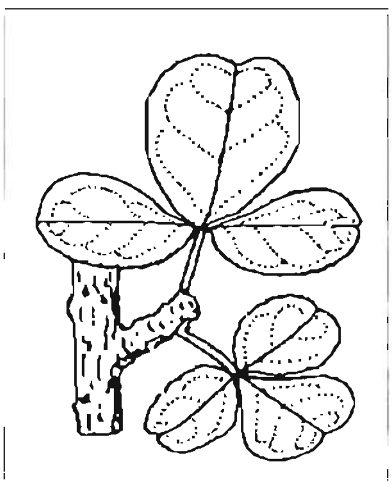


Grid references

2114BA	2615CA	2817AA	2817AD	2817CD	2817DD	2818CC
2615AA	2615CB	2817AC	2817CB	2817DA		2931CC

Detail of leaf of Commiphora capensis

Trees of Southern Africa



Commiphora capensis *(Sond.) Engl.*

BURSERACEAE

COMMON NAMES:

Namaqua commiphora/Namakwakanniedood

HERBARIUM SPECIMEN:

F Archer 64

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

fruits
berries

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x	x	x	x	

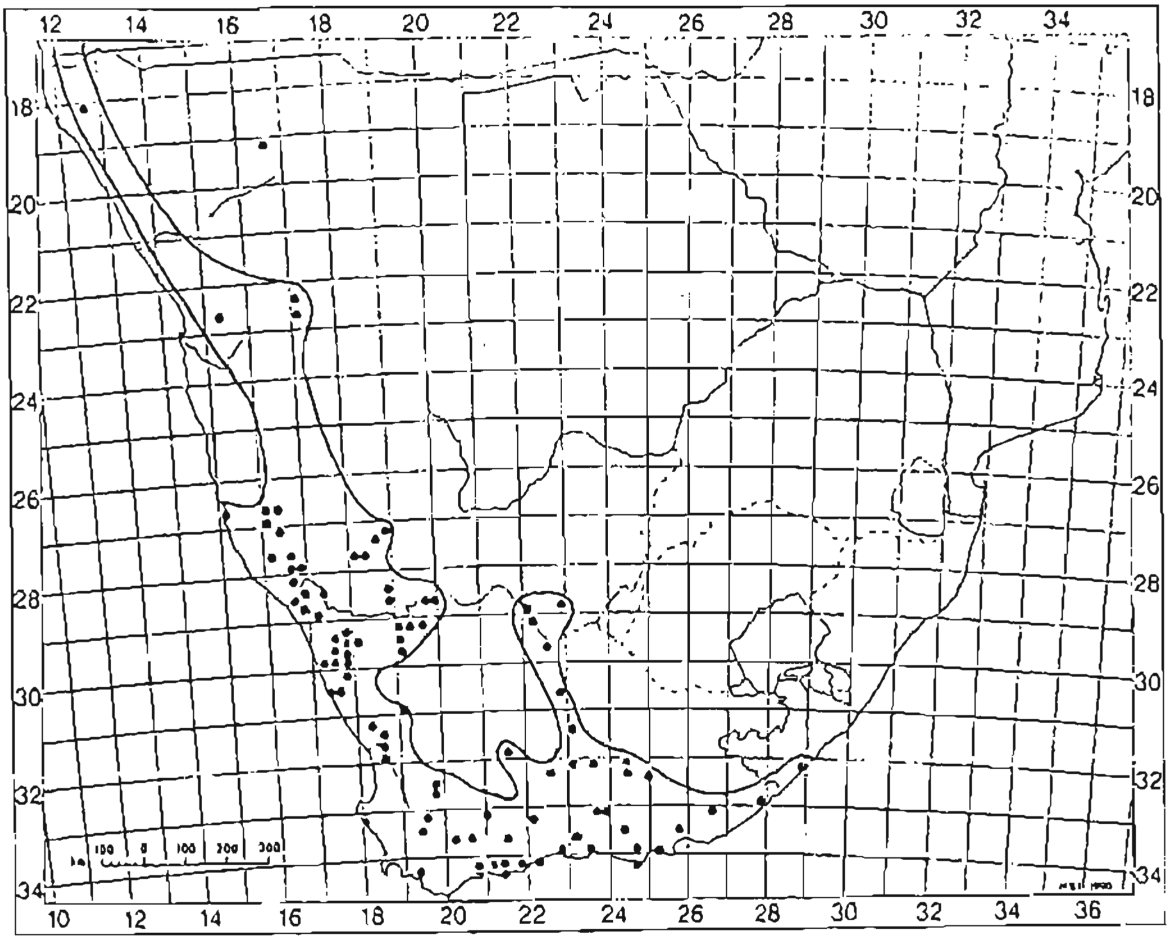
RECOGNISED BY:
Thickset aromatic shrub up to 1m. Succulent stems with trifoliate leaves.

USES & PREPARATION:
Raw.

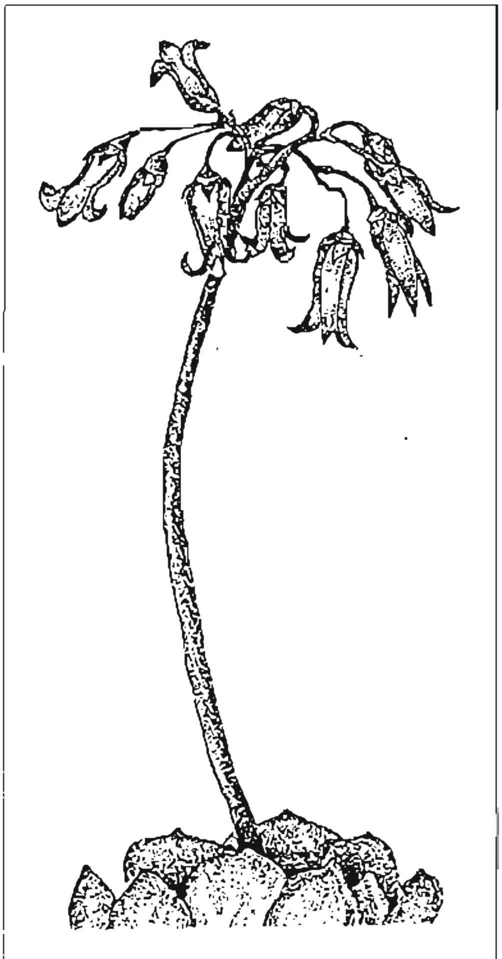
GENERAL:
Two other species are found in the Richtersveld: *C. cervifolia* and *C. namaoensis*, the latter related to the mhyrr of the Bible.

DISTRIBUTION:
Southern Namibia into northern Cape (Palgrave:1983).

Distribution



Cotyledon orbiculata
Heil- und Giftpflanzen in Südwestafrika



Grid references

1917BA	2817CA	3118DC	3320CB
2214CC	2817CB	3119BD	3320CC
2217CA	2817CC	3119CB	3320DA
2217CA	2817CC	3124BC	3321AD
2230CC	2818DB	3124DC	3321AD
2329CD	2821BC	3126DB	3321AD
2525CD	2828AB	3126DD	3321BA
2528CA	2828AB	3126DD	3321CA
2528CA	2828CC	3126DD	3322AD
2528CA	2830CC	3127AC	3322CA
2528CB	2916BA	3130AA	3322CA
2528CB	2917BA	3130AA	3322DA
2530BD	2917BB	3218CD	3322DC
2615CA	2917DB	3220BC	3323AD
2615CA	2917DB	3221BA	3324DD
2616CB	2917DC	3222AD	3325DC
2616CC	2918BB	3222AD	3326BA
2618CA	2919AB	3224BA	3326BC
2632AA	2919CA	3224BC	3326CB
2716DD	2922DA	3226CA	3327BB
2716DD	2925CB	3227DB	3418AD
2718BB	2927AB	3228AD	3418BD
2718CA	2929AC	3318CD	3420AD
2718CA	2929AD	3318CD	3420BB
2718CB	2929BB	3318DC	3421AD
2718CB	2929CC	3319AC	3421AD
2816BD	2930AB	3319DD	3422AA
2816BD	2930BB	3320BA	3422BB
2816BD	3017BB	3320BB	3423AA
2816BD	3017BB	3320BB	3423AA
2816BD	3022DB	3320BB	3423AB
2816DD	3027AC	3320BB	

Cotyledon orbiculata *L.* var. orbiculata

CRASSULACEAE

COMMON NAMES:

Plakkie / Kooltrie / Kouterie / Plakker
Pêpêbos / Beesbuik

HERBARIUM SPECIMEN:

Information supplied by Ernst van Jaarsveld

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
		x		x		

PART(S) USED:

Ea	Eu	Ma	Mu	Da	Du	F
		stem		stem		

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
A conspicuous plant with grey-white soft succulent leaves in opposit pairs and attractive large pendulous reddish flowers. Frequently visited by sunbirds during flowering time.

USES & PREPARATION:
The leaves are cut lengthwise the moist exposed side placed on top of the wart and covered with bandage at night. For absesses the skin of leaves are removed and rubbed in hot ashes and aplied to wound (C.A. Smith 1966).

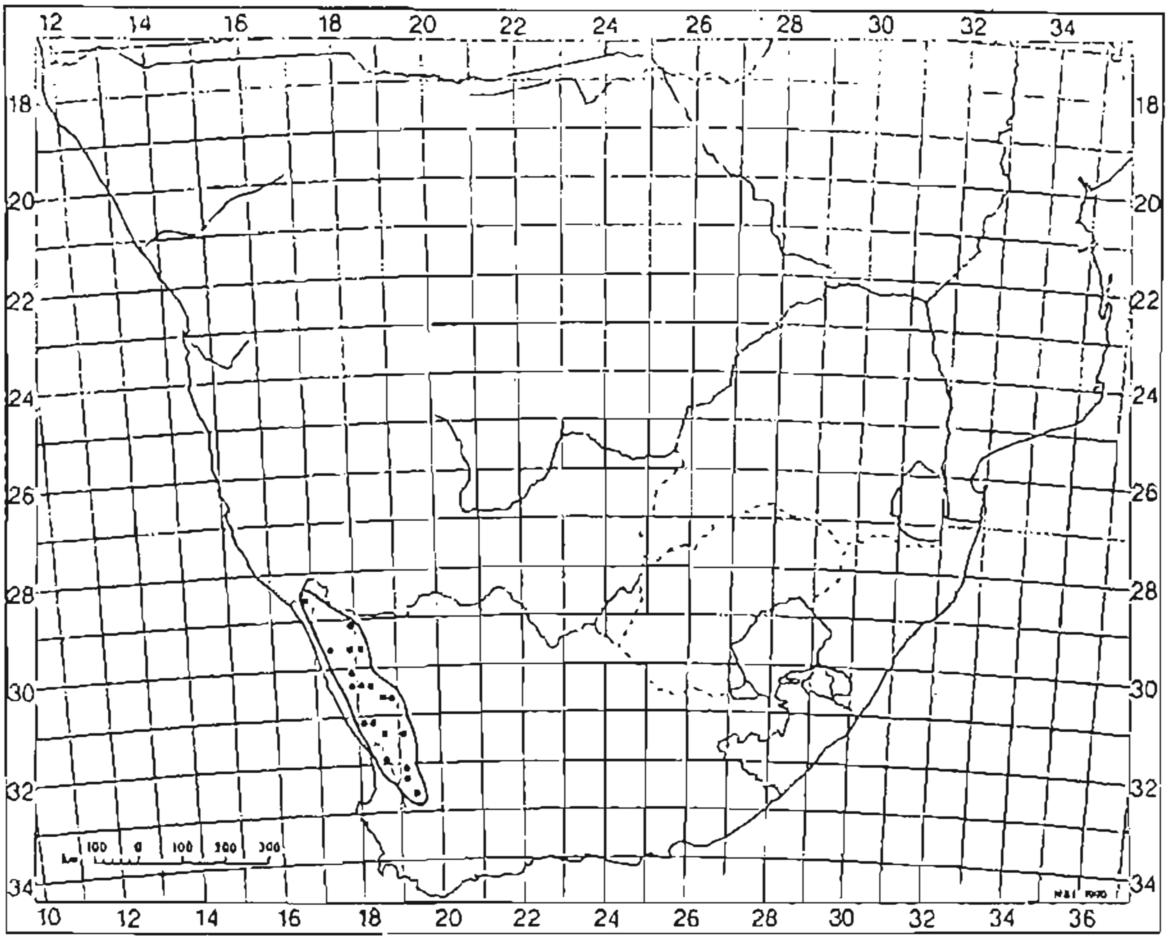
Leaves used as a remedy for warts and absesses by both boer and Hottentot tribes. The leaves are an astringent and sap sometimes used as a gargle for sore throats as well as treatment of epilepsy (C.A. Smith 1966).

The flower stalk was used in hunting, like a flute. It makes a "pêpê" noise which sounds like a young klipspringer. The adult klipspringer then comes to investigate, making an easy target for the hunter (Le Roux & Schelpe 1988: 100).

GENERAL:
Apparently poisonous to some livestock but according to Smith (1966) readily eaten by goates and ostrich, apparantly very poisonous to fowls. A tortoise favourite. Frequently cultivated for its ornamental and medicinal value.

DISTRIBUTION:
Found throughout Namaqualand in rocky places and also throughout the drier parts of the Cape Province as well as in Namibia (Le Roux & Schelpe 1988: 100).

Distribution



Crassula atropurpurea var. watermeyeri *(Haw.) Dietr.*

CRASSULACEAE

COMMON NAMES:

Plakkie

HERBARIUM SPECIMEN:

Information supplied by Ernst van Jaarsveld

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

leaves

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

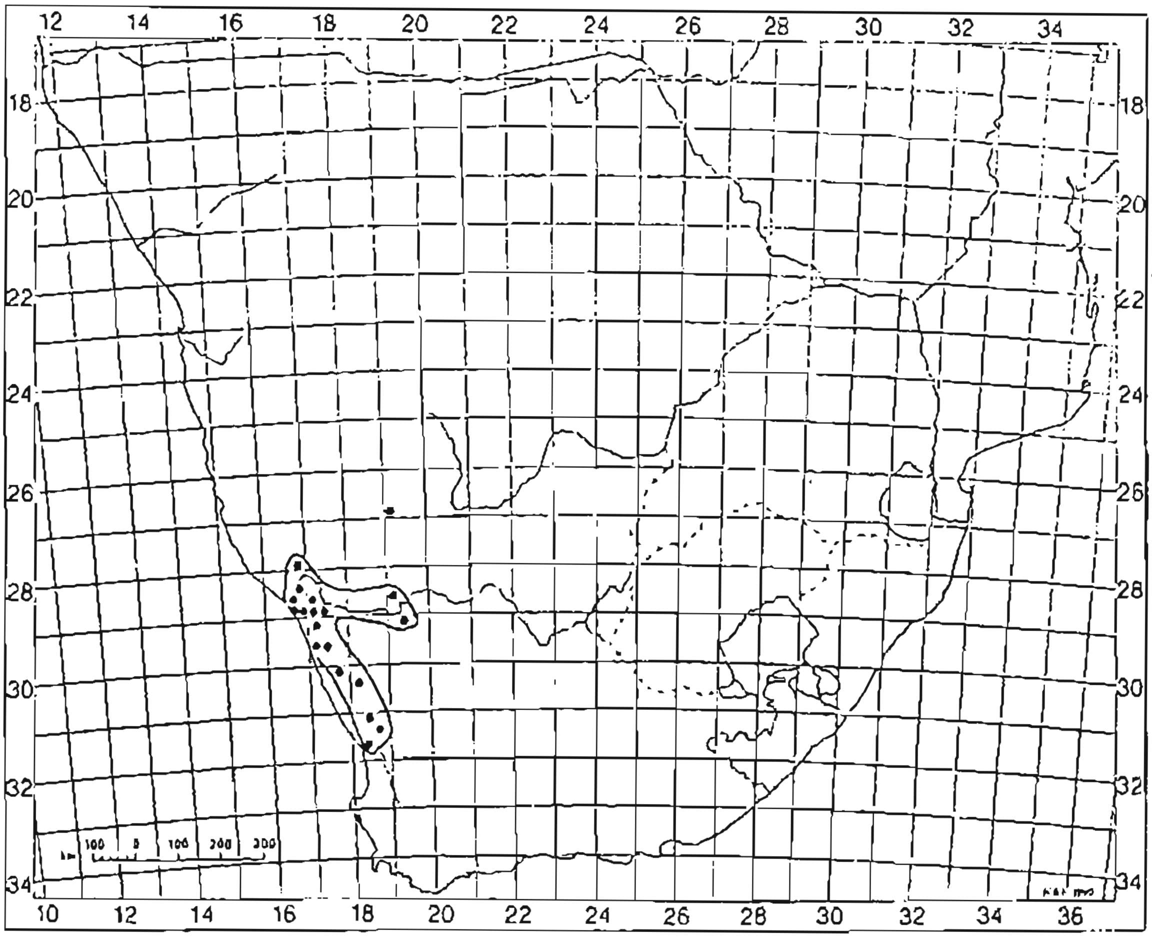
RECOGNISED BY:
Spreading branched succulent with yellowish grey-green hairy leaves and cream flowers.

USES & PREPARATION:
Leaves thrown into milk to fasten souring. Used as a yoghurt in the southern Leliefontein area (Archer, in prep.)

GENERAL:
Ocasionally cultivated. Easily propagated from cuttings.

DISTRIBUTION:
Widely distributed Namaqualand in Succulent Karoo. In the Richtersveld it is confined to the central mountain range.

Distribution



Crassula columnaris *Thunb.* ssp. prolifera *Friedr.*

CRASSULACEAE

COMMON NAMES:

Koesnaaitjie

HERBARIUM SPECIMEN:

Information supplied by Ernst van Jaarsveld

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

plant

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:
Dwarf compact columnar-spherical shape. Leaves tightly imbricate in four rows. Flowers white, sweetly scented.

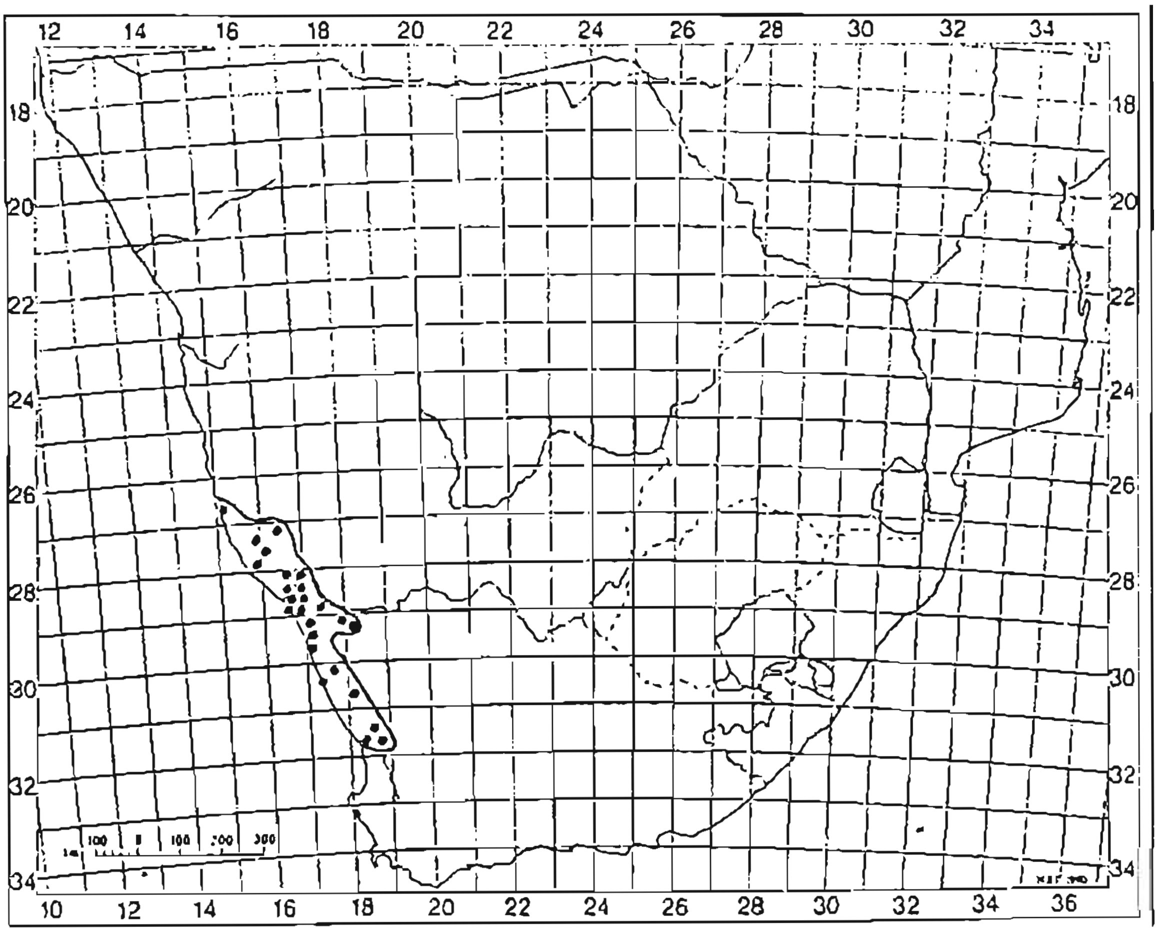
USES & PREPARATION:
Plants said to be eaten raw by natives and children.

GENERAL:
Koes, according to Smith (1966), is the name of the Draaijakkals.

Frequently cultivated. A monocarpic species (dying after flowering and setting seed). Easily propagated from seed or offshoots.

DISTRIBUTION:
Widely distributed in Succulent Karoo from the southern Cape to southern Namibia.

Distribution



Grid references

2715DD	2816BB	2816BD	2817AC	2817DD	2916BD	2917CA	2917DB

Crassula elegans var. elegans

CRASSULACEAE

COMMON NAMES:

Skilpadvoet

HERBARIUM SPECIMEN:

IDENTIFICATION:

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
	x		x			

PART(S) USED:

	roots		roots			

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x								x	x	x

RECOGNISED BY:
Fleshy branches.

USES & PREPARATION:
To make beer, the roots are pounded and left in water. The water is changed at least three times in order to get rid of bitterness (as well as possible detoxification of the mixture.) Then honey (traditionally) or sugar is added. The mixture is allowed to brew for three days.

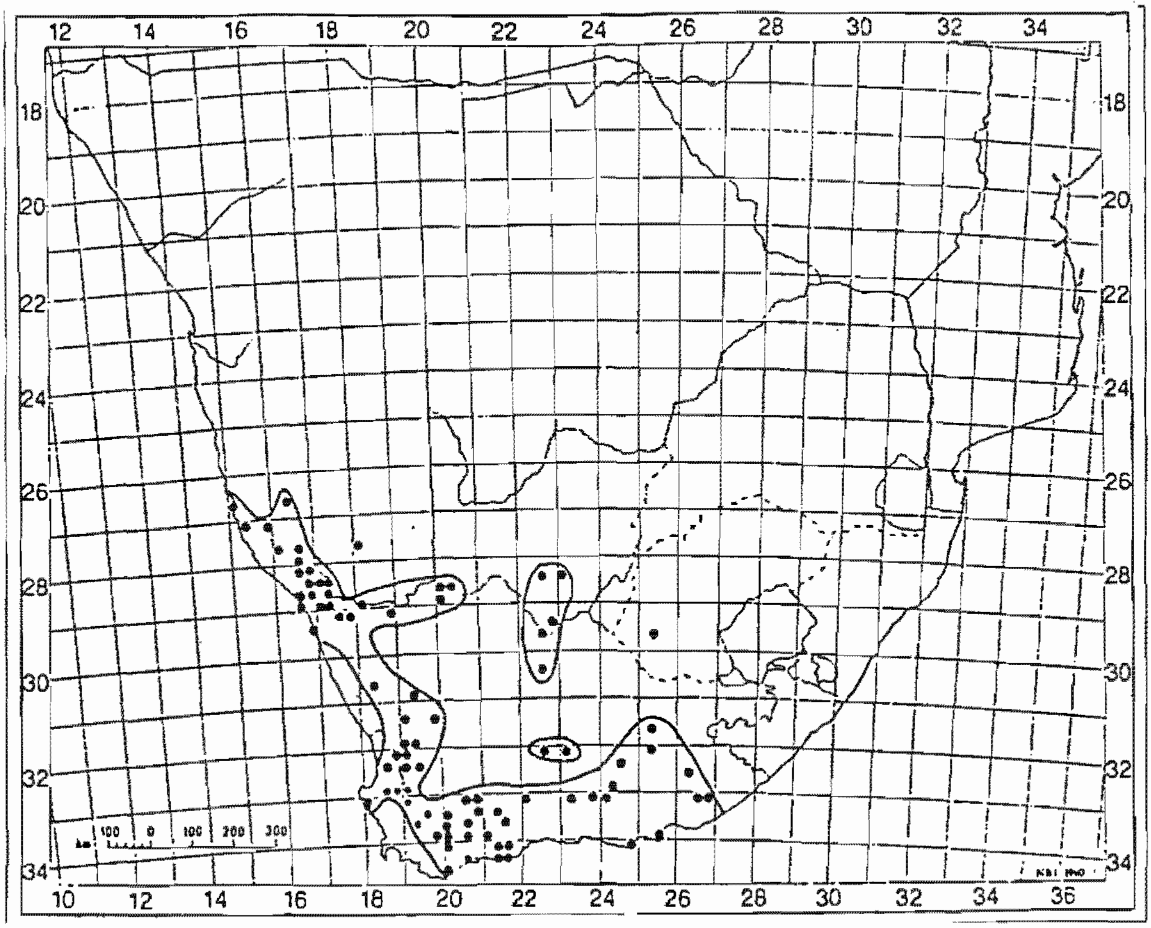
Honey beer is also used for medicinal purposes.

To make a medicine the roots are pounded and mixed as an infusion with *Sutherlandia frutescens.*

GENERAL:
Two other species are found in the Richtersveld: *C. cervifolia* and *C. namaoensis*, the latter related to the mhyrr of the Bible.

DISTRIBUTION:
Southern Namibia into northern Cape (Palgrave:1983).

Distribution



Grid references

1811DD	2816BD	2820DC	3017CB	3218BB	3319CB	3322AB	3418AD
2528CA	2816BD	2823AC	3018AC	3219AA	3319CB	3323AD	3419BA
2615CA	2816BD	2917BA	3025CA	3219DC	3319DB	3325BC	
2615CA	2816BD	2917CD	3025DA	3221BB	3319DD	3325CC	
2616CB	2816DD	2917DB	3026AC	3221BB	3320AD	3325DC	
2715BC	2816DD	2917DB	3117BD	3221DC	3320BA	3325DC	
2716DC	2817AA	2917DC	3118DB	3223CD	3320CA	3325DC	
2716DC	2817AC	2918BB	3119BD	3224AD	3320CC	3325DC	
2716DC	2817CB	2922DA	3119CB	3224BC	3320DC	3326BA	
2716DD	2817CB	2925CB	3124AC	3318CD	3321CA	3326BC	
2716DD	2817CD	2928DB	3125AB	3319CB	3321CA	3418AD	
2718DD	2820DC	2928DB	3218BB	3319CB	3321CC		

Crassula muscosa *L.* var. muscosa.

CRASSULACEAE

COMMON NAMES:

Koorsbossie / Slangbossie / Kleinkoorsbossie / Koordbossie/ Veterbossie / Lizards tail / Little fever bush

HERBARIUM SPECIMEN:

Information supplied by Ernst van Jaarsveld

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
		x				

PART(S) USED:

leaves

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Sparingly to densely branched succulent with leaves densely arranged in opposit pairs. Flowers small and inconspicuous.

USES & PREPARATION:
According to Smith (1966) formerly used by Khoi as a diaphoretic. Also for treatment of any fever. Also a decoction of leaves are taken as stomatich and tonic.

Sometimes also applied as a remedy for piles, influenza and an infusion of roots were used for against malaria.

GENERAL:
A common species easily cultivated soon becoming weedy in succulent collections. The branches are brittle and root when detached.

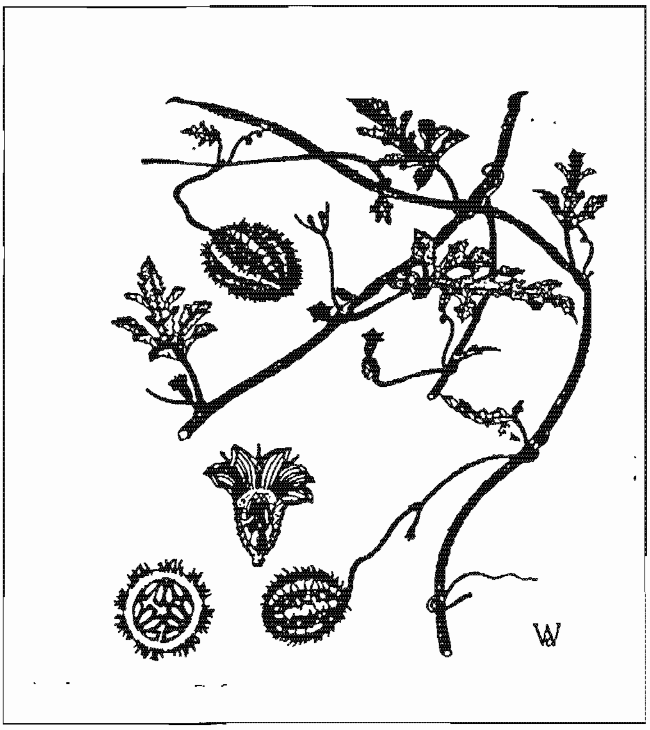
DISTRIBUTION:
Widely distributed throughout the semi arid and arid parts of South Africa occuring on rocky outcrops.

Grid references

2228CD	2530BD	2824DC
2229CC	2530CB	2825CA
2327DA	2531AA	2826BC
2328CD	2531CB	2826CD
2330BD	2531DC	2827DD
2330CC	2620CC	2828AC
2330DB	2623DB	2828BC
2331CC	2624DC	2828BD
2331DC	2625DA	2828CC
2425DA	2626AA	2828DB
2426AA	2627AA	2829AC
2426AC	2627CA	2921AC
2426BB	2627CB	2926AA
2427AC	2628AD	2926BB
2428CD	2629AD	2927BC
2428DA	2629CD	2927BD
2429CD	2724AB	2927CD
2526AB	2725BD	2929AB
2526AD	2725CC	2929BA
2526CA	2725DA	2930CA
2526CC	2727CA	3024BC
2527AD	2729BD	3026DA
2527BA	2730AA	3029BD
2527DC	2730AD	3029CB
2527DD	2731AC	3126DA
2528AD	2731CD	3126DD
2528CA	2817CC	3225DA
2528CB	2823BA	3227CD
2528CC	2823BB	3325BD
2528CD	2823CC	3325CD
2528DB	2824AB	3421AB
2528DC	2824DA	3421AD
2529CB	2824DB	

Cucumis myriocarpus

Food from the Veld



Cucumis myriocarpus *Naud.* ssp.

CUCURBITACEAE

COMMON NAMES:

Bitter apple / Wild cucumber / Boesmankos

HERBARIUM SPECIMEN:

F Archer 226

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

fruit

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
						x	x	x			

RECOGNISED BY:
Trailing stems and divided leaves.

USES & PREPARATION:
Peeled, then eaten raw.

This was pointed out as being "Boesmankos" by the inhabitants of the Richtersveld.

Fox (1982) and Watt & Breyer-Brandwijk (1962) point out that the fruit is poisonous, but that the seed and the rind freed of pulp and juice are not toxic. The Southern Sotho use the fruit pulp as a purgative. It has caused frequent deaths, probably from overdosage. The Southern Sotho ascribe the deaths to the accidental inclusion of the seed in the medicine. (Watt & Breyer-Brandwijk:1962)

The green fruit is said to be less bitter and less toxic than the ripe fruit. In other areas the leaves are boiled and eaten (Fox & Norwood Young: 1982).

DISTRIBUTION:
An indigenous species which occurs in Botswana, Transvaal, O.F.S, Natal, Lesotho and the eastern Cape Province (Fox & Norwood Young:1982).

GENERAL:
Possible incorrect identification. This specimen may be *C. meeusii* or *C. rigidus*.

CUCURBITACEAE

COMMON NAMES:
Stinkkambro

HERBARIUM SPECIMEN:
F Archer 372

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
	x		x			

PART(S) USED:

	tuber		tuber			

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
						x	x	x	x		

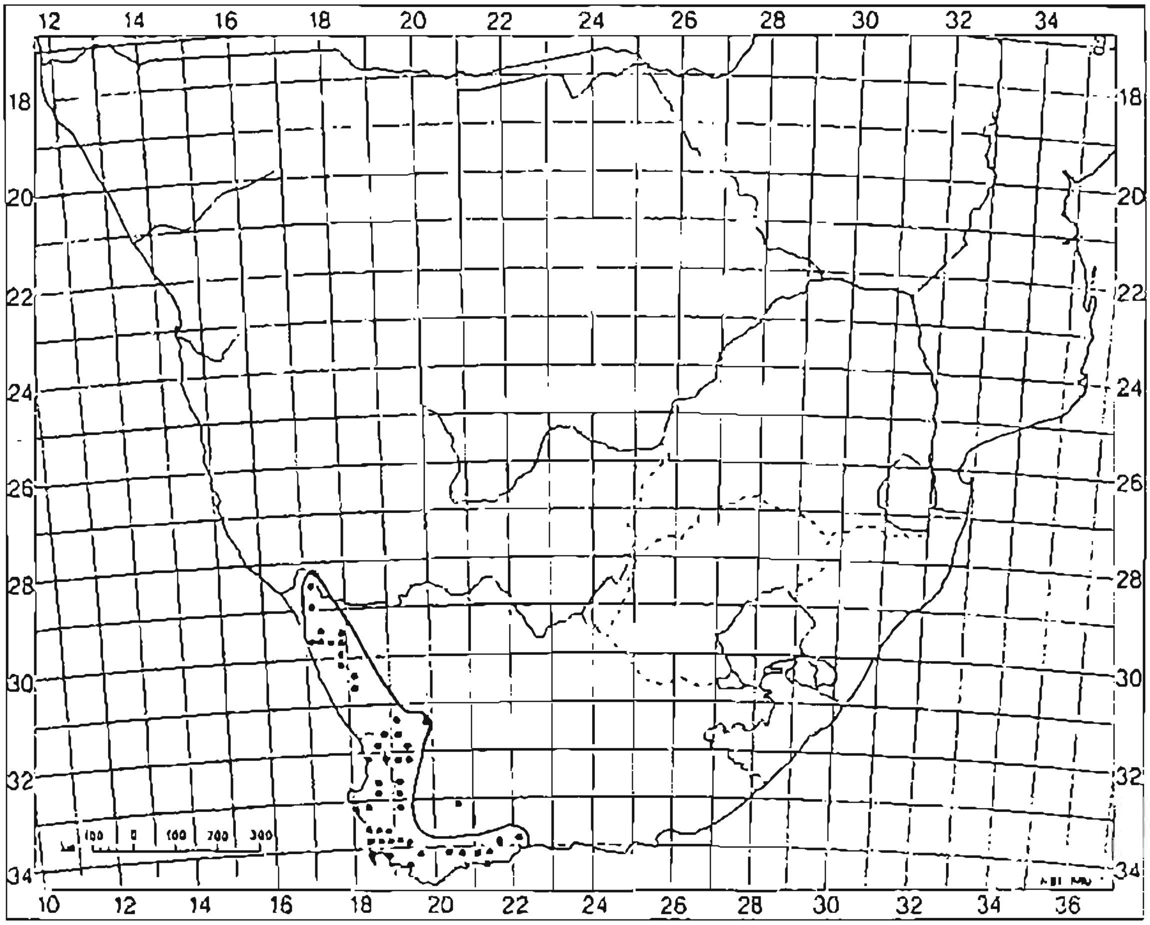
RECOGNISED BY:

USES & PREPARATION:
To make the beer the tuber is pounded, dried and mixed with water. This water is changed every day, over a period of approximately three days - or until the initial bitter taste is eliminated. Honey, sugar and additional water is added, and the mixture left to brew for a few days.

Honey beer is used for medicinal purposes as well.

The occurrence of bitter and poisonous forms of the cultivated species of the Cucurbitaceae has been reported several times in Southern Africa, especially among the marrows, gem squashes and water-melons. The eating of these may result in serious poisoning and even death. Bitterness is also found in the fruit of many of the wild species (Watt & Breyer-Brandwijk:1962).

Distribution

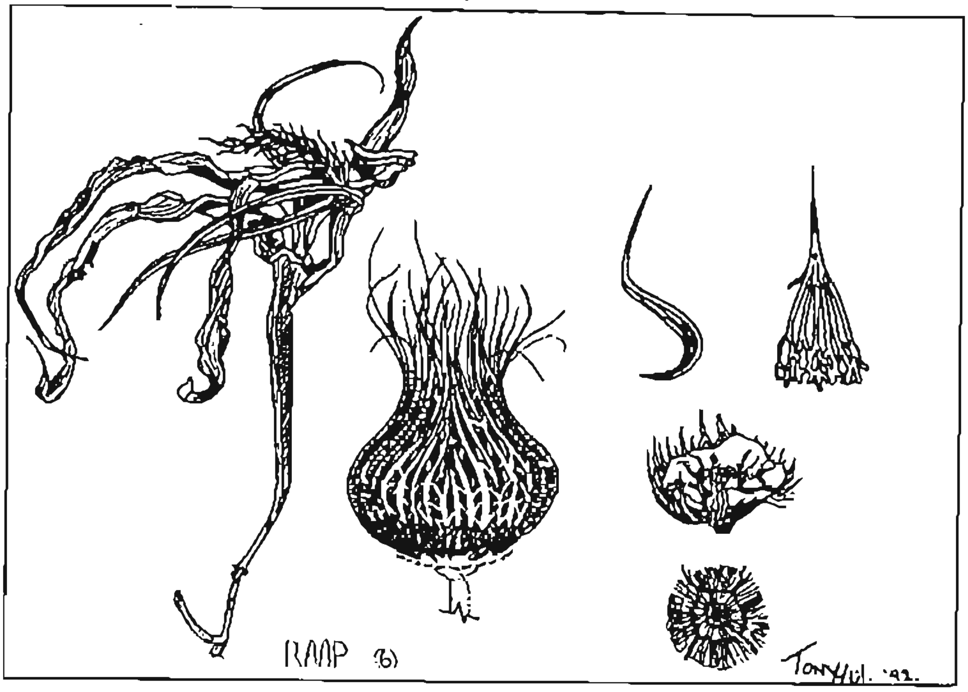


Grid references

2917AD	2917DD	3118DC	3218BB	3219CC	3318DB	3320BA	3420BA
2917BD	2918CB	3119AC	3218DA	3318AB	3318DC	3418AB	3421AA
2917CA	3017BB	3119BD	3218DC	3318BC	3318DD	3418BB	3421AB
2917CB	3018AC	3119CA	3219AA	3318CB	3319AA	3419AD	3421AD
2917DA	3018CA	3119CD	3219AB	3318CD	3319CC	3419BA	
2917DB	3118DB	3218AB	3219CA	3318DA	3319CD	3420AB	

Cyanella hyacinthoides

Tony Hill



Cyanella hyacinthoides *Royen ex L.*

TECOPHILACEAE

COMMON NAMES:

Raap /Wildebeet / Lady's hand

HERBARIUM SPECIMEN:

F Archer 391

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
	x					

PART(S) USED:

tuber

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							x	x	x		

RECOGNISED BY:
Long narrow leaves and branched inflorescence bearing mauve or white flowers.

USES & PREPARATION:
The tuber is roasted in ash, cooked with meat or eaten raw.

Further south, in Leliefontein, this plant was described as the major plant food of the 50's. The plant displays pioneer characteristics and grows abudantly in disturbed soil. Scott (1983) shows that it seeds extremely well under controlled conditions.

!Khu Bushmen eat the tuber whole, lightly roasted in hot ashes and coals, or heated sand; sometimes they are pounded or stamped in a wooden mortar (Fox & Norwood Young:1982 (Maguire:1978)).

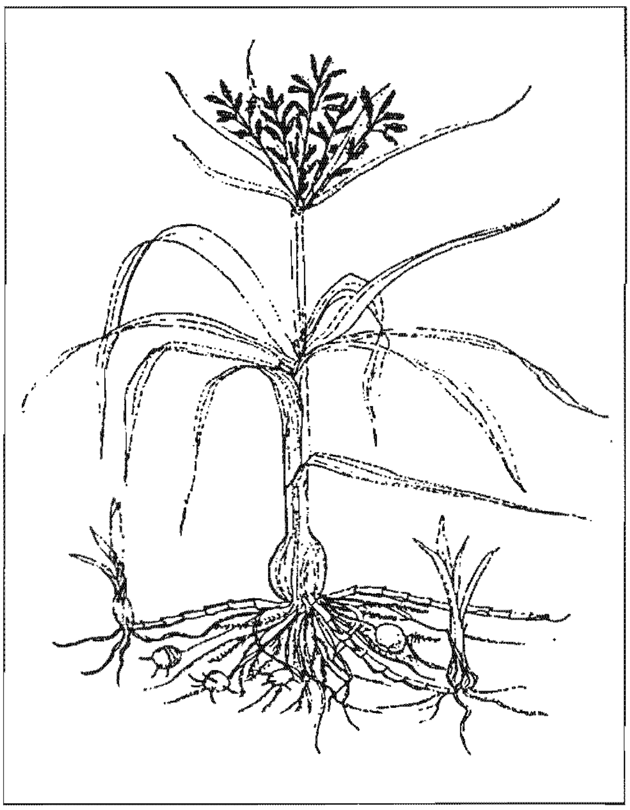
DISTRIBUTION:
Widespread in the Cape Province.

Found throughout Namaqualand, in rocky places (Le Roux & Schelpe 1988 : 52).

NUTRIENT ANALYSIS:
Refer to Table in Appendix.

Cyperus esculentus

Indigenous Healing Plants



Grid references

1821CB	2529AD	2629CD	2930BA
1823DA	2529CB	2629DB	2930CA
1915BB	2530AA	2630AD	2930CB
1920DA	2530AC	2630DC	2930DA
1923AA	2530AD	2631AC	2930DC
2017AC	2530BD	2631CA	2930DD
2117AA	2530CA	2725BD	2931AB
2121DB	2530CB	2725CA	2931CA
2214DA	2530CC	2725DA	2931CC
2219AD	2531AC	2725DB	3026BB
2219BD	2531CA	2726DC	3030CD
2329DD	2531CC	2727CA	3219CC
2330AB	2531DC	2728BB	3226DD
2330CA	2624D	2728CA	3227CB
2428AA	2625BD	2728CD	3228BC
2428BD	2625CB	2728DA	3318DD
2428CD	2625DA	2729BA	3323DC
2428DB	2625DB	2729BB	3418AB
2430AA	2626BA	2729CA	
2430AB	2627AD	2730AC	
2430DA	2627BB	2824BB	
2430DB	2627CA	2827DD	
2526CC	2627CB	2828BC	
2526DA	2627DB	2829AC	
2526DD	2627DD	2829DC	
2527BA	2628AA	2832CC	
2527CB	2628AB	2926AB	
2527DC	2628AD	2927BC	
2527DD	2628CA	2929BA	
2528CA	2628DA	2929BC	
2528CB	2629AB	2929CD	
2528CC	2629AC	2929DC	
2528CD	2629AD	2930AB	

Cyperus esculentus L.

CYPERACEAE

COMMON NAMES:

Wildekalmoei / Nut Grass / Hoenderuintjie

HERBARIUM SPECIMEN:

F Archer 154

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

lower stem

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x	x			

RECOGNISED BY:
Grasslike leaves.

USES & PREPARATION:
Eaten raw or roasted, also roasted and ground by Nama-speaking people.

This may be a species which is still collected and dried to be smoked with "dagga".

The tuber of this sedge is sweet and has nutty flavour and is used as a vegetable in southern Africa (Fox & Norwood Young:1982).

The Zulu chew the root for the relief of indigestion, especially when this condition is accompanied by foul breath.

A Zulu girl, with a view to hastening the inception of menstruation, eats porridge in which a handful of the boiled root has been mashed.

The Chinese have used the plant as a stimulant, stomachic, sedative and tonic.

The underground stem is sold under the name of tiger nut in Gold Coast markets. It is used for chewing, in preparing the white, jelly-like tiger-nut milk and as famine food. (Watt & Breyer-Brandwijk: 1962)

According to Van Koenen (1977) the tuber contains sucrose, starch, fat and a valuable oil. As a source of food it can be eaten raw or roasted. In addition, the roasted tuber can be ground to produce a coffee substitute, which is then taken as a beverage.

DISTRIBUTION:

Grid references

1716CC	2124BA	2525AB	2627AC	2725DB	2827AC	3025BD	3224BA
1813BC	2124BB	2525BD	2627AD	2726AC	2828AB	3025DA	3227AD
1823BC	2216BD	2525CC	2627BD	2726DC	2828CC	3026AC	3228CB
1823DA	2220AC	2526cA	2627CA	2727CA	2832AA	3027CC	3318CD
1824CA	2227DA	2527AC	2627DC	2727DC	2917DA	3118DC	3318DC
1824CB	2229AA	2528AA	2627DD	2728BB	2924BA	3119BD	3319CD
1918CA	2229DD	2528AB	2628AA	2728BC	2924BD	3119CA	3319DA
1921CA	2326BB	2528CA	2628AB	2728CA	2925CB	3121DC	3322AB
1922CD	2329BA	2528CB	2628CB	2728CD	2925CD	3125AC	3322DA
1923AA	2329BB	2528CD	2629AD	2729CA	2926AA	3126DD	3323CA
1923AB	2329CD	2528DB	2629CD	2822CB	2926BD	3129DA	3326BA
1923AC	2329DD	2531AC	2630AC	2823DC	2926CA	3218BD	3326BB
1923CA	2330CA	2617DA	2630AD	2824AD	2926CD	3219CB	3327BB
2017AC	2417BD	2623CD	2631AD	2824BC	2926DC	3219CC	3418AB
2022BA	2417CD	2624DC	2631CA	2825DD	2927BC	3219DC	3420AD
2023BA	2428BD	2625cB	2717CB	2826BC	2930CB	3221BA	
2115DA	2429AA	2625DA	2725AC	2826BD	3019CD	3221BB	
2115DC	2429CD	2626AC	2725CB	2826DB	3023BA	3222BD	
2116DD	2429DD	2627AB	2725CC	2826DC	3023CD	3224AB	

Cyperus longus var. longus L.

CYPERACEAE

COMMON NAMES:

Wildekalmoes

HERBARIUM SPECIMEN:

F Archer 376

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

stem under water

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x				

RECOGNISED BY:
Tufted perennial one meter tall with reddish-brown spikelets.

USES & PREPARATION:
The part of the stem which grows under water is eaten raw.

The tuber is used by the Zulu in preparing an enema for children with stomach troubles. They also blow the powdered tuber into the ears and nose for colds and other troubles in those regions and the tuber may be chewed for the same purpose.

In Europe the plant is valued as a diaphoretic. (Watt & Breyer-Brandwijk: 1962)

DISTRIBUTION:
Occurs on damp flats. Clanwilliam to Peninsula, Worcester, Swellendam, as well as Karoo, Namaqualand and Namibia (Bond & Goldblatt 1984).

Grid references

1712AB	2219BD	2628CB	2728CA	2827AA	2925CB	3024BB	3124DD
1713DA	2314BA	2629BA	2728CD	2827AC	2925DB	3024BC	3125AA
1812BA	2314BD	2629DA	2729CC	2827AD	2926AA	3025DA	3125AC
1815CD	2315CA	2629DD	2816BD	2827CC	2926AC	3026BB	3125BC
1816DD	2416AA	2630AC	2817AC	2827DC	2926BB	3026BC	3126AD
1914AD	2416AB	2717CD	2817CA	2828AB	2926CD	3026cA	3126DD
1915CC	2417CD	2718BC	2817CB	2828AD	2926DC	3026CB	3219AA
1916BA	2526DD	2723AB	2817CD	2828BC	2927BB	3026CD	3221BA
2014BD	2529AD	2723AD	2818CC	2828BD	2927BC	3026DA	3221BB
2114BC	2624DC	2724BA	2819DA	2828CC	2928BB	3026DC	3222BD
2116AC	2625BD	2725AC	2820CB	2828DB	2928CA	3027CC	3319AD
2116DD	2625DA	2725BD	2820DB	2828DD	2928CB	3027CD	3319BD
2117AA	2626AA	2725CB	2823BC	2829AD	2929AB	3027DA	3319DD
2214DA	2626AC	2725CC	2823CA	2829CB	2930AA	3028AD	
2216AA	2627CA	2725DB	2823CC	2829CC	2930CC	3028CD	
2216BA	2627CC	2727CA	2824AD	2829DB	2930DA	3118CB	
2216DB	2627DD	2727DC	2824BB	2830CC	3017AD	3118DA	
2217AD	2628AB	2728BB	2824DD	2917DB	3023BA	3119AB	
2217CB	2628BB	2728BC	2825DD	2922BD	3024BA	3124CA	

Cyperus marginatus *Thunb.*

CYPERACEAE

COMMON NAMES:

/harub / Riet

HERBARIUM SPECIMEN:

F Archer 126,131

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
			x	x		

PART(S) USED:

roots reeds

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Dense erect tuft with chestnut brown spikelets (Bond & Goldblatt: 1984).

USES & PREPARATION:
The reeds are bound together to make brooms, mats and thatch roofs.

The roots are chewed to alleviate stomach-ache.

The stalks are used to thatch roofs and in the past the Topnaar plaited mats (Van den Eynden et al:1992).

DISTRIBUTION:
Clanwilliam, Worcester and Port Elizabeth. Widespread in southern and tropical Africa (Bond & Goldblatt:1984).

Grid references

3118BD	3118DC	3318CD	3424BB			

Cyphia crenata *(Thunb.) Willd.* var. crenata

LOBELIACEAE

COMMON NAME:

!abeb

HERBARIUM SPECIMEN:

F Archer 384

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
	x					

PART(S) USED:

tuber

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x	x			

RECOGNISED BY:
Delicate twining stems and small flowers - not easily recognised.

USES & PREPARATION:
The tuber is peeled and eaten raw.

DISTRIBUTION:
Grows in Clanwilliam, Malmesbury, the Peninsula and Namaqualand (Bond & Goldblatt 1984). Occurs on rocky hillsides in the Richtersveld.

Grid references

3118BB	3119AC	3219AC	3318CD	3319AB	3319CD	3322DA	3419BB
3118DA	3119CD	3219CD	3318DA	3319AC	3320BC	3323BA	3420AB
3118DB	3120BC	3221DC	3318DB	3319BC	3321CA	3418BD	3420BC
3118DC	3125AB	3222AB	3318DC	3319CB	3322BA	3419AA	3421AB
3119AA	3218DC	3318AB	3318DD	3319CC	3322CB	3419AC	3421AD

Cyphia digitata *(Thunb.) Willd.* ssp. digitata

LOBELIACEAE

COMMON NAMES:

Aardboontjie / Melkbouro

HERBARIUM SPECIMEN:

F Archer 347

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
	x					

PART(S) USED:

tuber

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x	x			

RECOGNISED BY:
Delicate twining stems and mauve to white flowers - not easily recognised.

USES & PREPARATION:
The tuber is peeled and eaten raw.

DISTRIBUTION:
Clanwilliam to Peninsula, Swellendam, Worcester, Ladismith as well as in the Karroo and Namaqualand (Bond & Goldblatt 1984:211). Occurs on rocky hillsides.

Grid references

3118DC	3318AD	3318CD	3318DD	3319AD	3418AB	3419BD
3218DC	3318BA	3318DA	3319AA	3319CB	3419AA	3420BA
3318AB	3318BD	3318DB	3319AC	3319CD	3419AB	3421AB

Cyphia phyteum *(L.) Willd.*

LOBELIACEAE

COMMON NAMES:

Bouro

HERBARIUM SPECIMEN:

F Archer 155

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
	x					

PART(S) USED:

tuber roots

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x	x			

RECOGNISED BY:
Herbaceous plant up to 300 mm with lilac flowers

USES & PREPARATION:
The tuber is peeled and eaten raw.

DISTRIBUTION:
Clanwilliam to Peninsula, Worcester and Riversdale (Bond & Goldblatt 1984).

A tuber of a Cyphia sp.
Fiona Archer

Cyphia sp.

LOBELIACEAE

COMMON NAMES:

!abeb

HERBARIUM SPECIMEN:

F Archer 368

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
	x					

PART(S) USED:

tuber

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
						x	x				

RECOGNISED BY:
Trailing, creeping stem.

USES & PREPARATION:
Peeled and then eaten raw.

Grid references

3119BD	3219CC	3318DC	3319DA	3324CB	3419AA	3419DD
3119CA	3318BA	3318DD	3320CD	3324CD	3419AB	3420AB
3218BB	3318CD	3319AC	3321CC	3325BC	3419AD	3421AA
3218DB	3318DA	3319AD	3322BC	3325DA	3419BD	
3219AA	3318DB	3319CC	3322DA	3418BB	3419DA	

Cyphia volubilis *(Burm.f.) Willd.*

LOBELIACEAE

COMMON NAMES:

Aardbouro / Bergbouro / Bouro

HERBARIUM SPECIMEN:

F Archer 124

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
	x					

PART(S) USED:

tuber

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x				

RECOGNISED BY:
Delicate twining stems and mauve flowers.

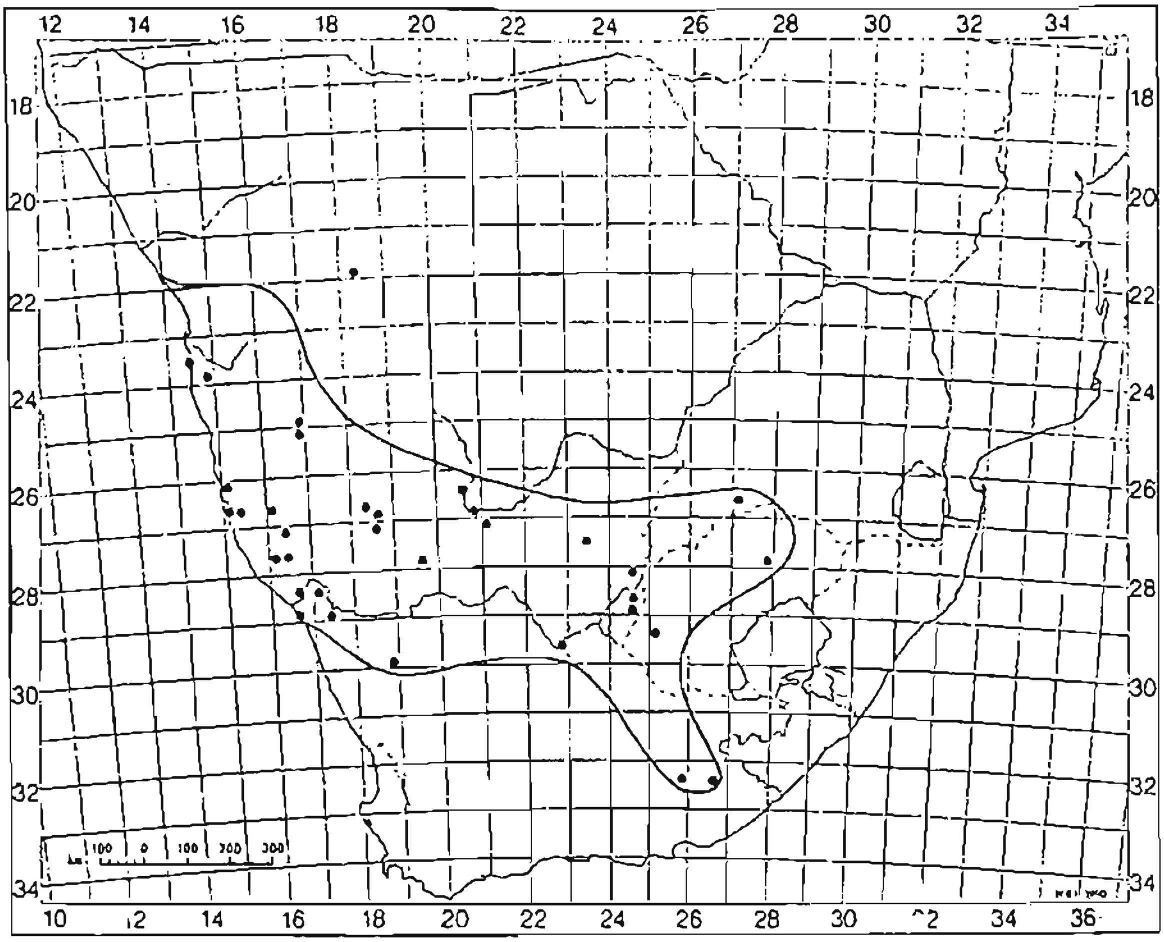
USES & PREPARATION:
Peeled and then eaten raw by the Nama-speaking people.

The tubers are eaten even though they are very watery and rather tasteless (Fox & Norwood Young: 1982).

GENERAL:
Seen as abundant around Kuboes/grows in sandy soil. (Makes it easy to dig out.)

DISTRIBUTION:
Gifberg to Riversdale - Karoo and Namaqualand (Bond & Goldblatt 1984).

Distribution



Grid references

1811DD	2618CB	2721AA	2918DD	3222AD	3219AA	3319DA	3419AB
1811DD	2618DC	2723AD	2922DB	3222AD	3219CC	3320CD	3419AD
2118CD	2620BC	2727DD	2925AC	3319AB	3318BA	3321CC	3419BD
2314AD	2620BC	2816DC	2925AC	3322AB	3318CD	3322BC	3419DA
2314DD	2620DD	2816DC	2925BA	3325BD	3318DA	3322DA	3419DD
2416DD	2620DD	2817AC	3025DB	3326BC	3318DB	3324CB	3420AB
2516BB	2627CA	2824BA	3118DA	3419DA	3318DC	3324CD	3421AA
2615AA	2716CA	2824BA	3119BD	3119BD	3318DD	3325BC	
2615CA	2716CB	2824DA	3120BC	3119CA	3319AC	3325DA	
2615CA	2718BA	2824DC	3121DC	3218BB	3319AD	3418BB	
2616CA	2719DC	2918DD	3221BB	3218DB	3319CC	3419AA	

Deverra denudata *(Viv) Pfisterer & Podlech* ssp. aphylla

(Cham. & Schlechtd.) Pfisterer & Podliech

APIACEAE

COMMON NAMES:

!nuhers / Bloubos / Wildevinkel / Wildeseldery

HERBARIUM SPECIMEN:

F Archer 167

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

whole bush

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Broomlike shrub with yellow flowers.

USES & PREPARATION:
For the construction of cooking and other shelters e.g. to protect lambs against the sun.

DISTRIBUTION:
Karoo, Little Karoo, Namaqualand, Namibia. Confined to dry river beds and sandy water courses.

Grid references

2115BD	2417DB	2618CA	2820AD	2918CB	2925CB	3024AC
2117AA	2420AB	2620AB	2820CB	2919BC	2925DA	3125AC
2214CB	2519AC	2718BB	2820DB	2919DC	3019DC	3220CB
2214DC	2520AA	2718CA	2822DD	2922BD	3019DD	3221BB
2328CB	2616AD	2719AB	2824BA	2922CD	3022AD	3224BC
2416AB	2616CA	2724CD	2824DB	2922DA	3022CD	3224DC
2417BA	2617DA	2817AD	2917DB	2924BA	3023CB	3320BA

Dicoma capensis *Less.*

ASTERACEAE

COMMON NAMES:

Dermbos / Teringbos / Koorsbossie

HERBARIUM SPECIMEN:

F Archer 130, 200

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
		x				

PART(S) USED:

leaves

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

USES & PREPARATION:
Infusion to drink as tea for all ailments, but especially stomach-aches and coughs.

Fox (1982) points out that the leaves are used as spinach in the Cape.

Van Koenen (1977) records that the plant is generally used in a black mixture, against fever.

As a tea, it is used against stomach ailments.

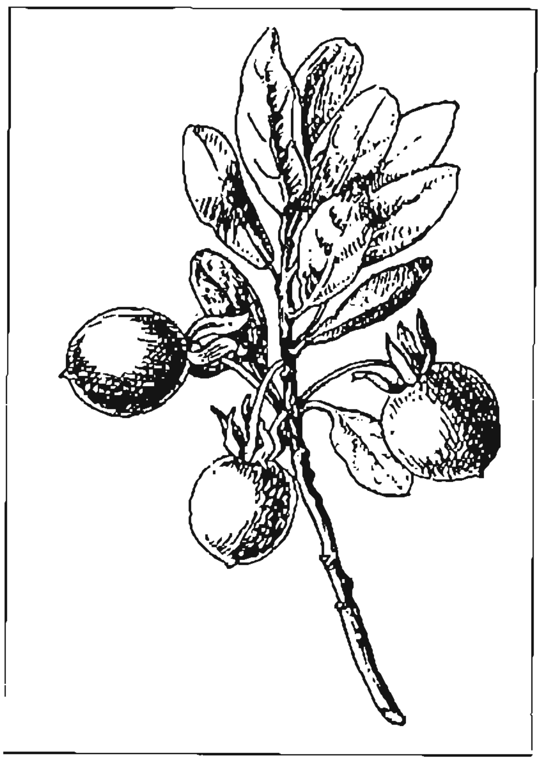
DISTRIBUTION:
Occurs in dry areas and edges of pans in Namibia, Botswana, O F S and the Cape Province. (Fox & Norwood Young:1982)

Grid references

1715DB
1719DD
1724AD
1724CB
1724DC
1819DC
1821AB
1821BD
1823AB
1823BC
1915BA
1917DB
1920AD
1920BC
1920DA
1923CD
2017CA
2017DA
2117AA
2121DB
2216DB
2218AD
2221BD
2228DA
2229AC
2229CC
2229CD
2229DD
2230CC
2316DD
2317BD
2318AC
2319CB
2320DA
2321CD
2328CD
2329CD
2329DD
2330CC
2416AB
2417AB
2417BD
2418AA
2421BB
2425DB
2425DC
2426AD
2426BC
2427AD
2427DB
2427DC
2428BD
2428CB
2428CC
2428CD
2428DB
2429AA
2429AC
2429AD
2429CD
2429DD
2430AD
2430CD
2430DC
2516DC
2517AC
2525AB
2525BA
2525BD
2525CA
2525DC
2526AB
2526CA
2526DA
2527AA
2527BA
2527CA
2527cB
2527CC
2527CD
2527DD
2528AA
2528AB
2528CA
2528CB
2528CC
2528DA
2530BB
2530DA
2531CA
2616AA
2618CA
2623DA
2623DB
2624AC
2624CA
2624CD
2624DC
2625CC
2625DA
2626AA
2626BB
2626BD
2626cD
2718BA
2718BB
2722CC
2723AD
2723CB
2724AB
2724DA
2725AC
2725BD
2725CB
2725CC
2726AA
2726AC
2726AD
2726BA
2726BC
2727CA
2727DC
2729DD
2731BA
2816BB
2816DA
2817AA
2817CB
2817CD
2817DC
2818BC
2818CD
2820CB
2822BD
2822CB
2822DA
2823DC
2824AD
2824CD
2824DA
2824DB
2825AC
2825CA
2825CC
2825DA
2827AC
2827AD
2827CA
2828CC
2828DA
2829CA
2829DD
2830CD
2831AA
2919AB
2921AC
2921CD
2922AB
2922BB
2922DA
2922DB
2925AB
2925AC
2925CB
2925CD
2926AA
2926AB
2926AC
2926CA
2926CD
2927AA
2927AC
2927CD
2927DB
3023BA
3025AC
3025AD
3025CB
3025CC
3025DA
3026AC
3026BB
3026BC
3026BD
3026CA
3026DA
3027AB
3027AC
3027BC
3027CC
3028AD
3028BD
3028CA
3029AD
3030CA
3030CC
3120DC
3121BB
3122BA
3123AA
3124AA
3124DC
3125AC
3125BC
3125CA
3125DC
3126DD
3127AD
3127CB
3127DA
3128BB
3129CA
3221BB
3222BC
3222DB
3223DD
3224BC
3225AA
3225BA
3225DA
3226DA
3226DB
3226DD
3227AA
3227AC
3227CA
3227CB
3227CD
3228AD
3319AB
3320AD
3320BA
3320BB
3321AD
3321BD
3321DB
3322AB
3322CA
3322DA
3324CA
3325BA
3325BC
3326AA
3326AB
3326AC
3326BD
3326CD
3418AD
3423AA

Diospyros lycioides

Food from the Veld



Diospyros lycioides *Desf.*

EBENACEAE

COMMON NAMES:

Swartbos / Bloubos / Snotbessie

HERBARIUM SPECIMEN:

F Archer 210

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
			x	x		x

PART(S) USED:

roots bark

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Dense shrub up to 3m with small oblong oval leaves and white to yellow sweetly scented flowers and red fruits.

USES & PREPARATION:
The roots are chewed by the Nama-speaking people as a remedy against stomach ache.

Used for cleaning teeth. The roots are chewed after a meal, turning the mouth red, and their frayed ends are used as toothbrushes (Palgrave:1983).

DISTRIBUTION:
Occurs in the dry parts of southern and tropical Africa (Bond & Goldblatt 1984).

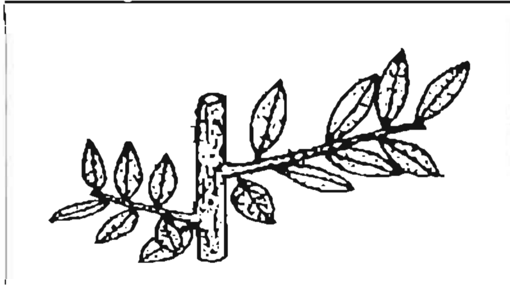
In the Richtersveld, usually along the Orange River and permanent water holes.

Grid references

2615CB	2716DC	2817AD	2917DB	3119AC	3218BB	3321BD
2616BA	2816BD	2817CB	2918BB	3119BB	3224AD	3322AC
2616CA	2816DB	2817CC	3118BC	3119CA	3224BC	
2616CB	2817AC	2818CA	3118DD	3119CD	3319CB	

Leaf detail of Diospyros ramulosa

Trees of Southern Africa



Diospyros ramulosa *(E.Mey. ex A.DC) de Winter*

EBENACEAE

COMMON NAMES:

!Kanobie / Namaqua fire-sticks

HERBARIUM SPECIMEN:

F Archer 145 ,165, 232

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						x

PART(S) USED:

fruit

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							x	x	x		

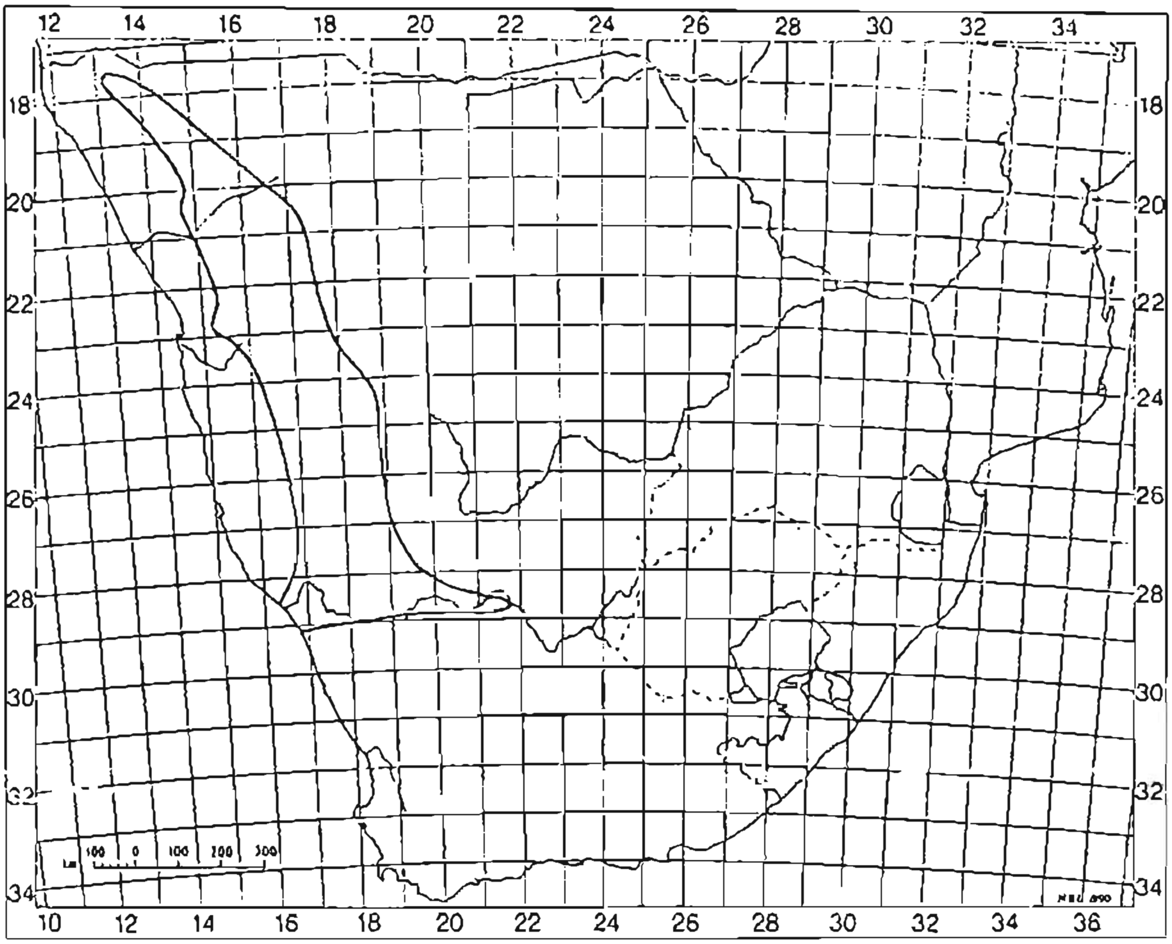
RECOGNISED BY:
Densely branched shrub up to 1.5 m with small elliptical leaves, greenish white to cream flowers and orange-red fruits, thinly hairy.

USES & PREPARATION:
The fruit is eaten raw. A very palatable plant and the big red fuit is a delicacy for man and animal (Le Roux & Schelpe 1988).

GENERAL:
Strong competition from baboons and birds.

DISTRIBUTION:
Grows in arid areas in Namaqualand and Namibia (Bond & Goldblatt 1984) occurring on rocky outcrops.

Distribution

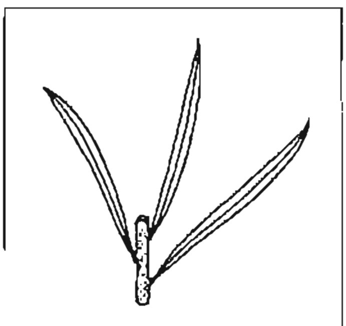


Grid references

1713AC	2014AD	2215CA	2317AC	2716DA	2817CD	2819BD	2916BD
1812BA	2014CB	2314AB	2617DD	2816BD	2817DA	2820CB	2919AA
1913BB	2115DC	2315CA	2618CA	2816DA	2818DB	2820DC	
2013BB	2214CB	2315CB	2716BD	2817AC	2819BB	2824BA	

Leaf detail of Euclea pseudebenus

Trees of Southern Africa



Euclea pseudebenus *E. Mey. ex A.DC.*

EBENACEAE

COMMON NAMES:

Swart ebbehout / Embolo / Ebony tree

HERBARIUM SPECIMEN :

F Archer 16

IDENTIFICATION:
Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x				x		x

PART(S) USED:

fruit			roots	green branches		

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x										x
x	x	x	x	x	x	x	x	x	x	x	x

12-2 = fruit 1-12 = wood

RECOGNISED BY:
Location and hanging branches.

USES & PREPARATION:
The fruit is eaten raw by Nama-speaking people even though Fox & Norwood-Young (1982) describe is as "slightly astringent and not very palatable."

The green branches are sometimes used as a framework for huts, as well as for clubs and "crooksticks".

The wood is considered by many as the most popular firewood and people collect wagon and truck loads full from the Orange River.

The leaves are eaten by cattle and the berries fed to chickens.

The roots are chewed to clean the teeth (Van den Eynden:1992).

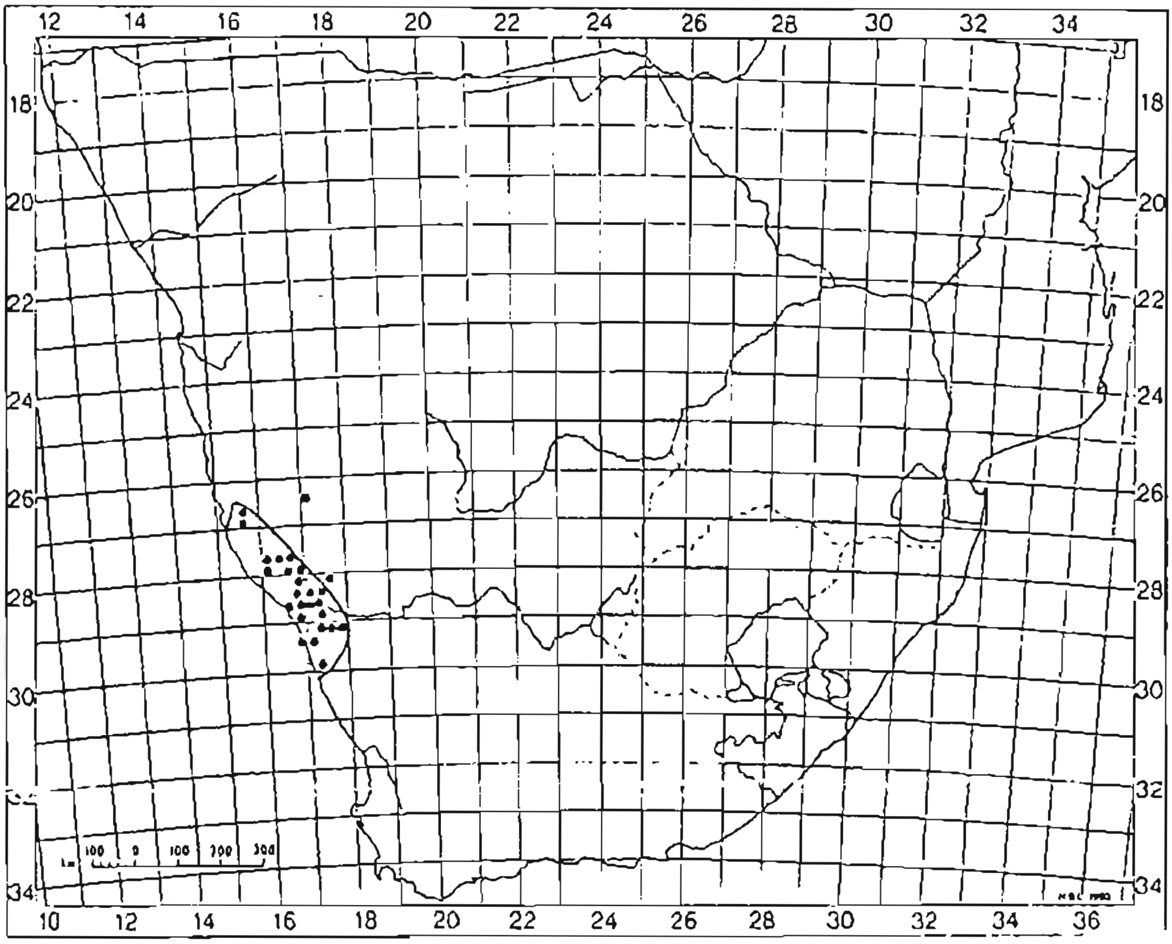
The wood is used as fuel and for the construction of houses and kraals (Van den Eynden et al:1992). The heart-wood is quite black and fine-grained, being well suited for carved ornaments and inlaid woodwork (Watt & Breyer-Brandwijk:1962).

GENERAL
This is a protected species - one may not legally collect the wood. If a proposed irrigation scheme for the Orange River goes ahead then this species is under threat.

DISTRIBUTION:
Limited to the wester part of Africa from Namaqualand northwards to Namibia and Angola to West Tropical Africa. It inhabits places of extreme dryness; and occurs further inland on both sides of the Orange River than further north (Dyer, Codd & Rycroft 1963).

NUTRIENT ANALYSIS:
Refer to Table in Appendix.

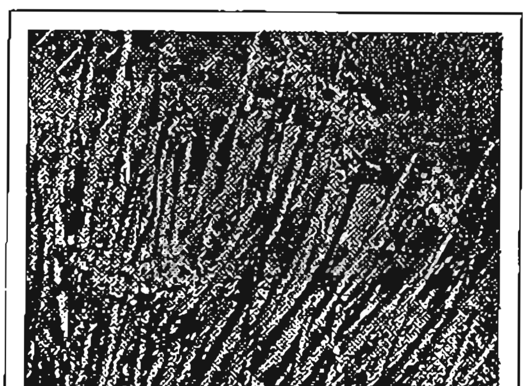
Distribution



Grid references

2816BB	2816BD	2816DD	2817CB	2817CD	2916BA	2917BA	3318CD

Euphorbia dregeana
Namaqualand and Clanwilliam



Euphorbia dregeana *E. Mey. ex Boiss.*

EUPHORBIACEAE

COMMON NAMES:

n/on / dikloot-melkbos / dikboud-melkbos

HERBARIUM SPECIMEN:

F Archer 201, 230

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

resin

SEASON COLLECTED:

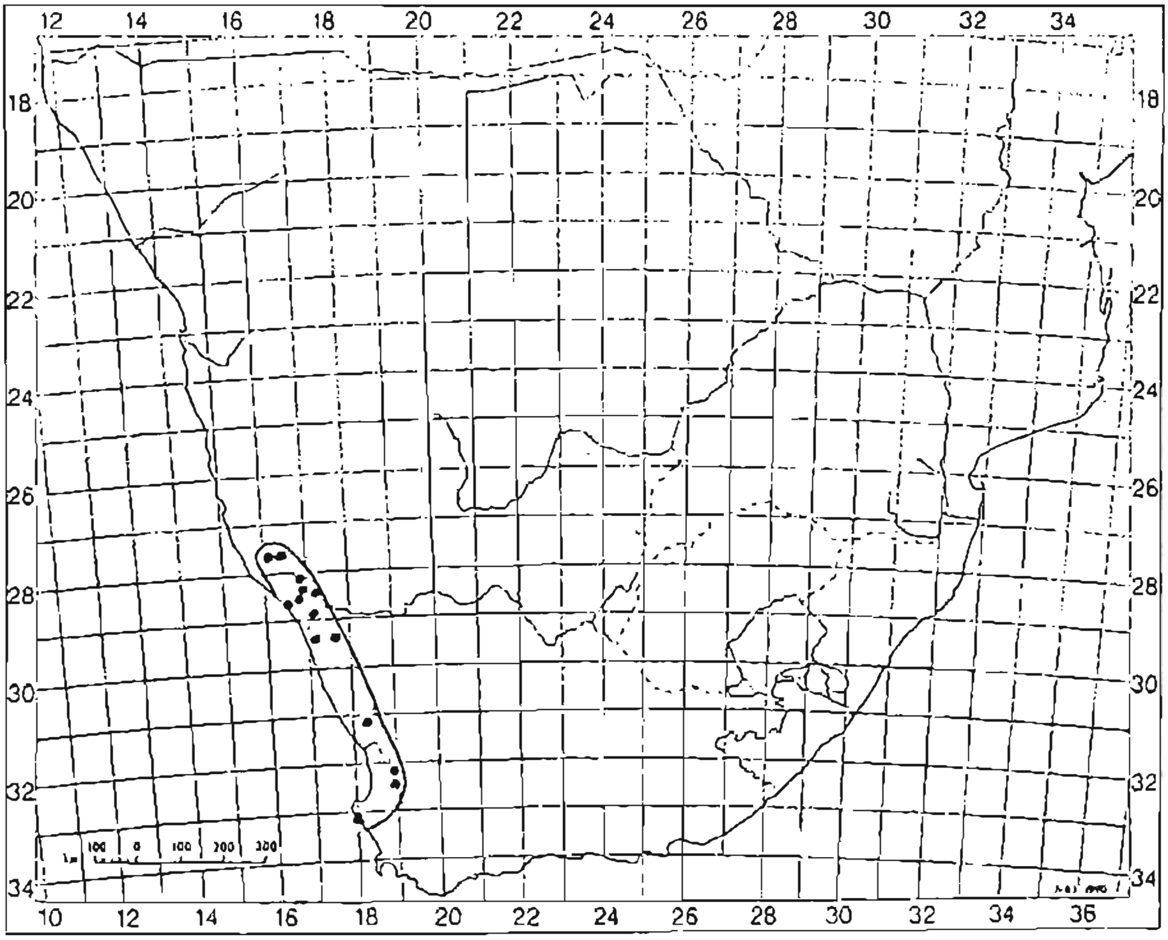
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Bright lime-green, thick branches, cylindrically-shaped, with yellow flower heads growing in loose groups at the ends of the branches (Le Roux & Schelpe 1988).

USES & PREPARATION:
The resin is collected, stirred until it thickens, then left on branches to catch birds.

DISTRIBUTION:
In Namaqualand, Bushmanland and Namibia (White, Dyer & Sloane 1941).

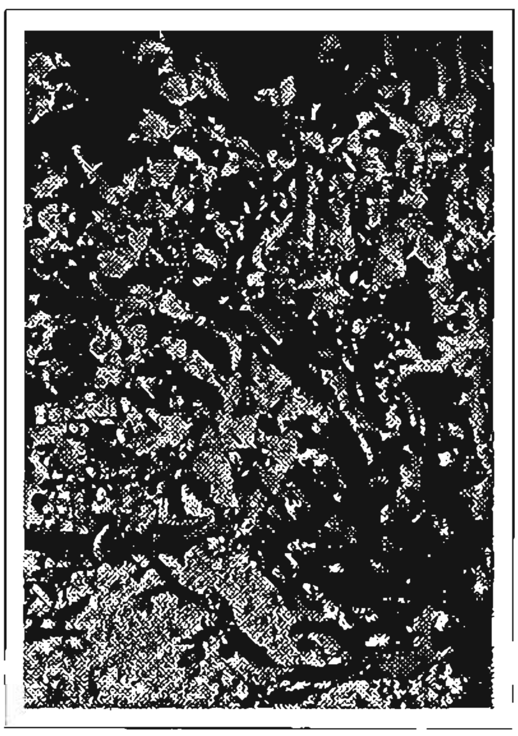
Distribution



Grid references

Euphorbia hamata

Namaqualand and Clanwilliam



Euphorbia hamata

EUPHORBIACEAE

COMMON NAMES:

Olifantsmelkbos / Beesmelkbos

HERBARIUM SPECIMEN:

N Jürgens

IDENTIFICATION:

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

Ea	Eu	Ma	Mu	Da	Du	F
				leaves; plant		

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:
Spreading succulent tuberculate branches, single flower heads at the ends of the branches.

USES & PREPARATION:
Good fodder plant, taken along when trekking through arid parts (C A Smith: 1966).

DISTRIBUTION:
Found in Namaqualand and also known southwards to Hoedjes Bay and in Namibia (Le Roux & Schelpe 1988).

Grid references

2817AC	2819BB						

Euphorbia hottentota *Marloth*

EUPHORBIACEAE

COMMON NAMES:

amaxoeis

HERBARIUM SPECIMEN:

N Jürgens

IDENTIFICATION:

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

				stems and latex		

SEASON COLLECTED:

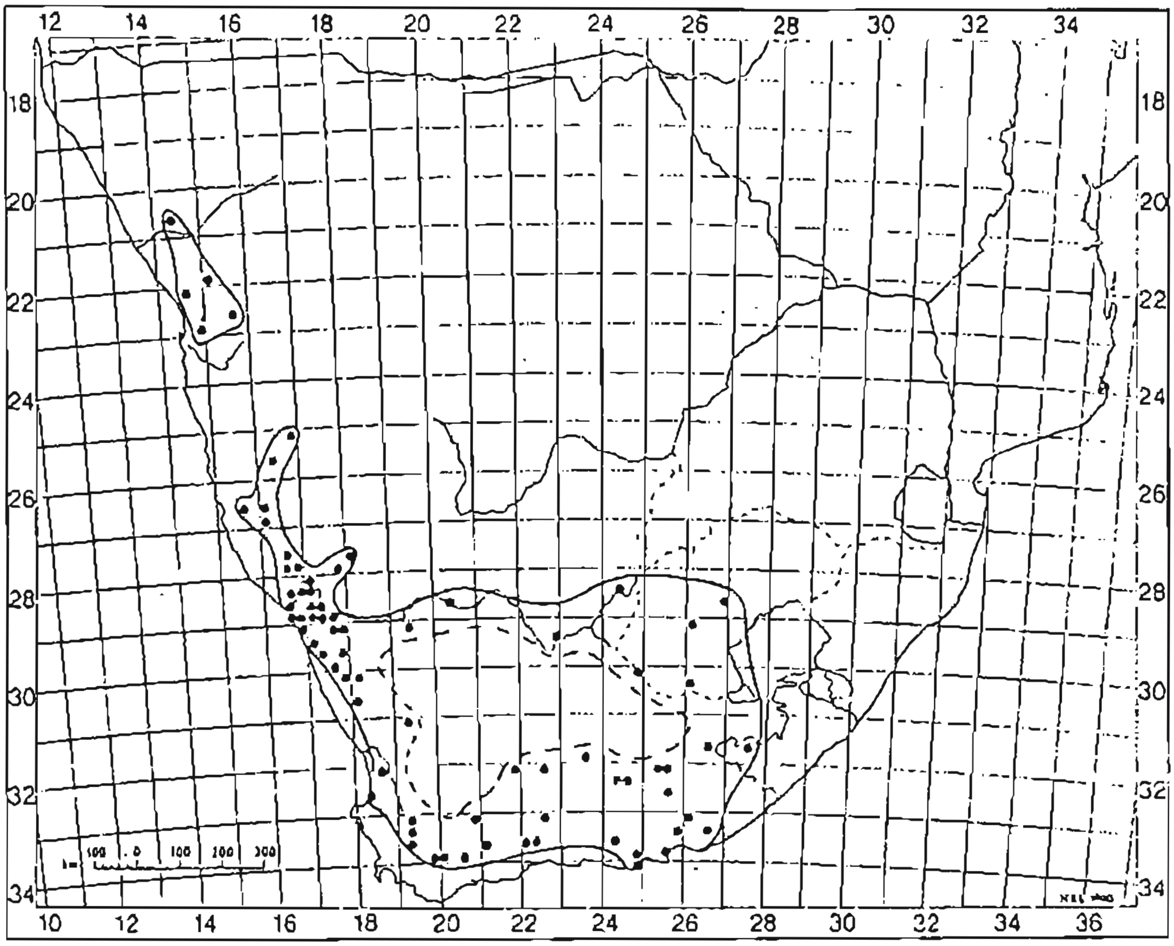
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Thick finger-like stems.

USES & PREPARATION:
The branches were picked and then thrown into waterhole to paralyze fish. Game was apparently also caught in this way.

GENERAL:
May be a relic from hotter times (Jürgens, pers comm).

Distribution

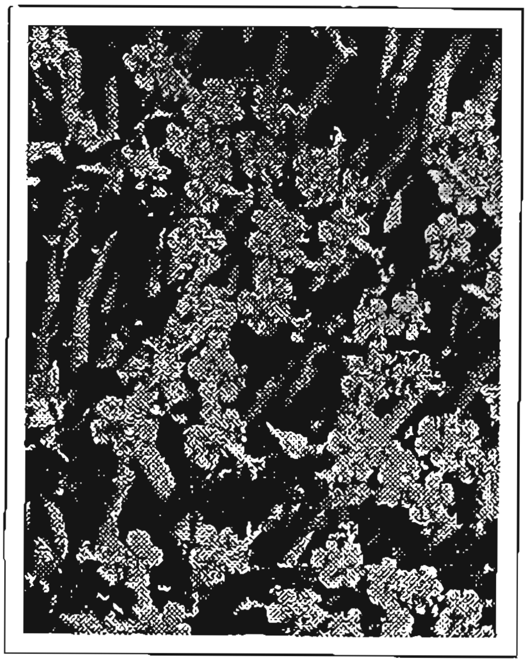


Grid references

2718CA	2817DC	2917DC	3018CA	3218BA	3225AB	3319CB	3324DD
2723AD	2820CB	2919AB	3024BB	3218CB	3225BA	3319DD	3325BD
2816BD	2824AD	2922BD	3026AC	3221BB	3225DA	3320CC	3325DC
2817AA	2826DB	2926AA	3119AB	3222BA	3317BB	3320DC	3326AA
2817AC	2917BB	2930BA	3123DC	3222BC	3318AA	3321CA	3326BC
2817CB	2917CB	3017BB	3126DA	3224AD	3319AB	3322CB	3421BD
2817CD	2917DB	3018AA	3127DA	3224BC	3319AD	3324CB	3424BB

Euphorbia mauretanica

Namaqualand and Clanwilliam



Euphorbia mauretanica *L.*

EUPHORBIACEAE

COMMON NAMES:

Gifmelkbos

HERBARIUM SPECIMEN:

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

juice

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:
Lime-green colour, multi-stemmed, with the yellow flower heads in groups at the branch ends.

USES & PREPARATION:
Branches were picked and thrown into waterholes to paralyze fish. Game was apparently also caught in this way.

The inspissated juice was used by the Bushmen in making arrow poison. There is no record of its being toxic and it may be that it was used purely for its cohesive properties. The plant yield is 1.19% of rubber. In times of drought the plant is eaten by wild animals. There is some discrepancy regarding the toxicity of the resin. (Watt & Breyer-Brandwijk: 19620.

According to Le Roux & Schelpe (1988) the plant is reputed to be poisonous and only steenbuck and klipspringer are known to eat it.

DISTRIBUTION:
Found throughout Namaqualand and also common in other dry parts of the Cape Province, Natal and Namibia (Le Roux & Schelpe 1988).

Euphorbia sp.

EUPHORBIACEAE

COMMON NAMES:

Soetmelkbos

HERBARIUM SPECIMEN:

F Archer 179, 230

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

resin

SEASON COLLECTED:

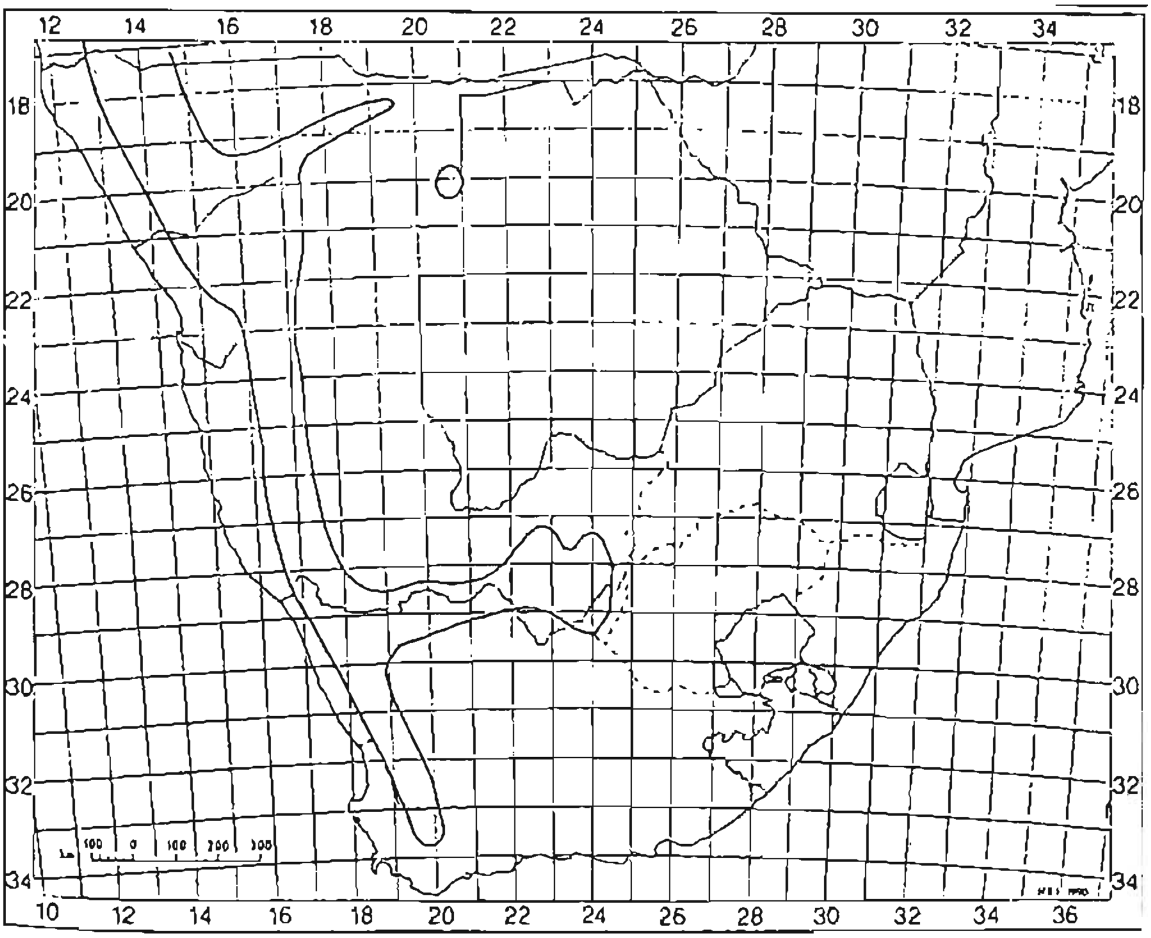
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Light green branches.

USES & PREPARATION:
The branches are broken and the resin which forms becomes sticky and is chewed as if it were chewing gum. Good for thirst.

The latex of a considerable number of species is used as an ingredient in arrow poison. Its function is twofold: as a cohesive and in order to produce irritation at the site of the arrow wound, so as to favour absorption of the poison (Watt & Breyer-Brandwijk: 1962).

Distribution



Grid references

1712BC	1918AC	2216BD	2528CA	2818DC	2824BA	2922AD	3119DD
1713DA	1918CA	2217CA	2615CA	2819CB	2824CA	2922BB	32189
1813BC	1920DB	2217CC	2619CC	2820AD	2917AA	2922DA	3218BB
1916BD	1921CA	2314BD	2622CA	2820CB	2917DB	2923AB	3219AC
1917BA	2014BB	2315AC	2628AA	2820DC	2917DC	3017BD	3219DC
1917CA	2017AC	2315CB	2717CD	2822BA	2917DD	3118AD	3319AA
1917CB	2021AB	2316BB	2722CC	2822CC	2918BB	3118BD	3319DD
1917DA	2115BB	2317AC	2816BD	2822DA	2919AA	3118DA	3321DC
1917DB	2115DC	2416AA	2817AC	2823DB	2922AA	3119BD	
1917DD	2115DD	2416AB	2818CD	2823DC	2922AB	3119CC	

Leaf and fruit detail of Ficus cordata

National List of Indigenous Trees

Ficus cordata *Thunb.*

MORACEAE

COMMON NAMES:

!oci / Namaqua fig

HERBARIUM SPECIMEN:

F Archer 168, 309

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						x

PART(S) USED:

fruits

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
						Ea					

RECOGNISED BY:
The milky latex when the branches are injured. It is the largest indigenous tree of Namaqualand. The leaves alternate with heart shaped basel.

USES & PREPARATION:
There are 24 species of *Ficus* indigenous to SA and the fruit of most of them is edible although not so palatable as *F. carica*. The monkey and some species of bird delight in eating them. The fruit is often infested with insects to a degree which makes it disagreeable to the human palate.

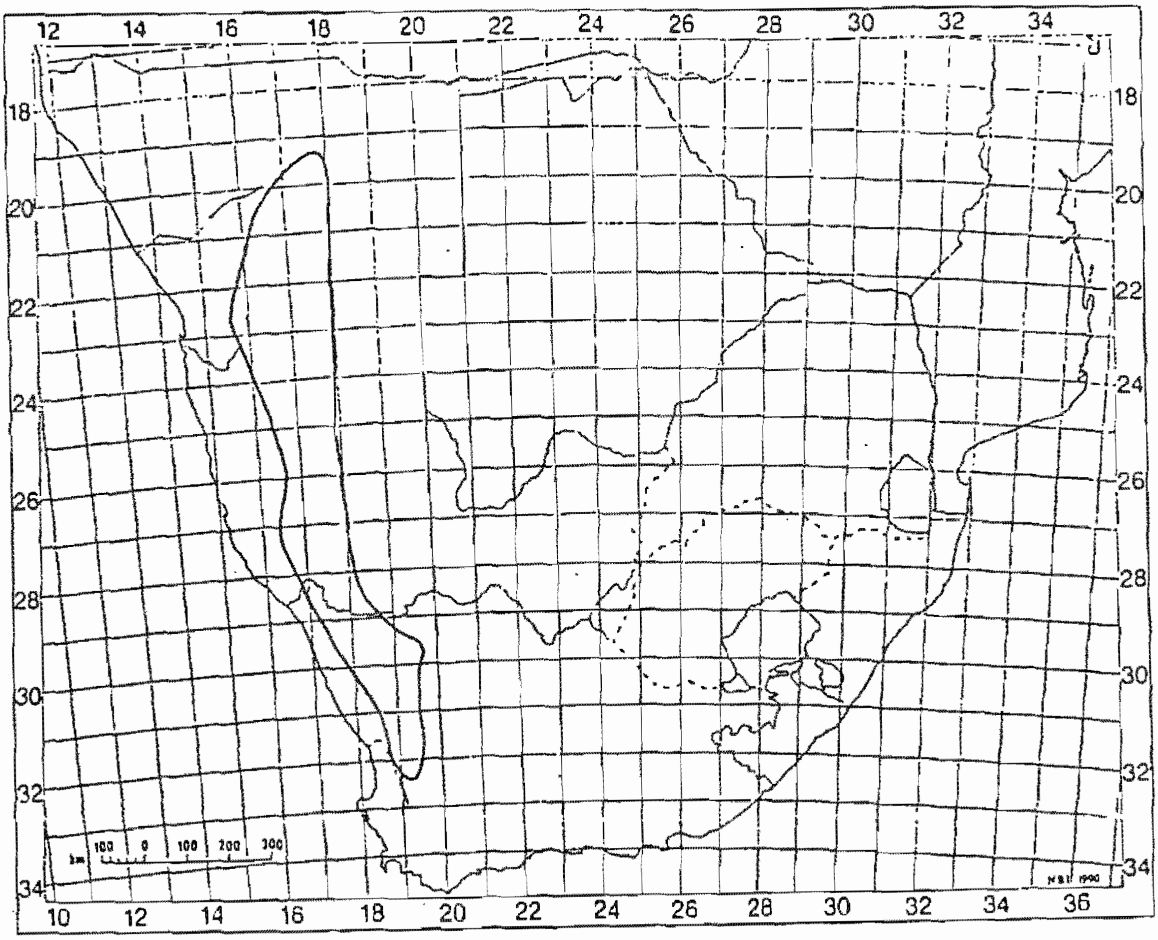
F. cordata has been specifically recorded as being eaten or as being edible.

Since ancient times the latex of various species has been used in folk medicine and the benefit has been ascribed to its anthelmintic (anti-worm) action (Watt & Breyer-Brandwijk:1962).

DISTRIBUTION:

Widely distributed throughout the winter rainfall Karoo regions and always associated with rocks. At Gifberg, Clanwilliam, Ladismith and in the northern Cape, Namaqualand and Namibia (Bond & Goldblatt 1984).

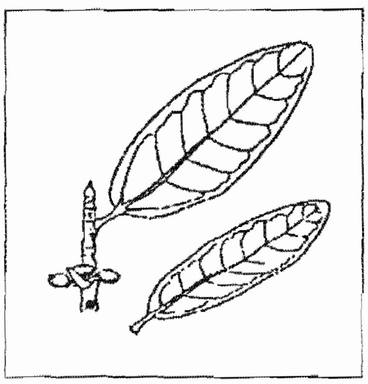
Distribution



Grid references

2016DA 2115DA	2115DC 2116DD	2216DA 2416AB	2717CA 2817AD	2817CA 2817CC	2917AA 2917CD	2917DB	2917DC 2919AA

Leaf detail of Ficus ilicina
National List of Indigenous Trees



Ficus ilicina *(Sond.) Miq.*

MORACEAE

COMMON NAMES:

Natarra / Wilde vy / Laurel fig

HERBARIUM SPECIMEN:

F Archer 169

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

fruits

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:

USES & PREPARATION:
The fruit is eaten raw as a source of food.

GENERAL:
Can be confused with *F.cordata* although it is generally smaller.

DISTRIBUTION:
Succulent Karoo, Namaqualand, Namibia. Aways associated with rocky outcrops and boulders (E van Jaarsveld: pers comm).

In Clanwilliam, Namaqualand and Namibia (Bond & Goldblatt, 1984).

Distribution

Grid references

Fockea gracilis *R.A. Dyer*

ASCLEPIADACEAE

COMMON NAMES:

Kamro

HERBARIUM SPECIMEN:

F Archer s.n.

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
	x					

PART(S) USED:

tuber

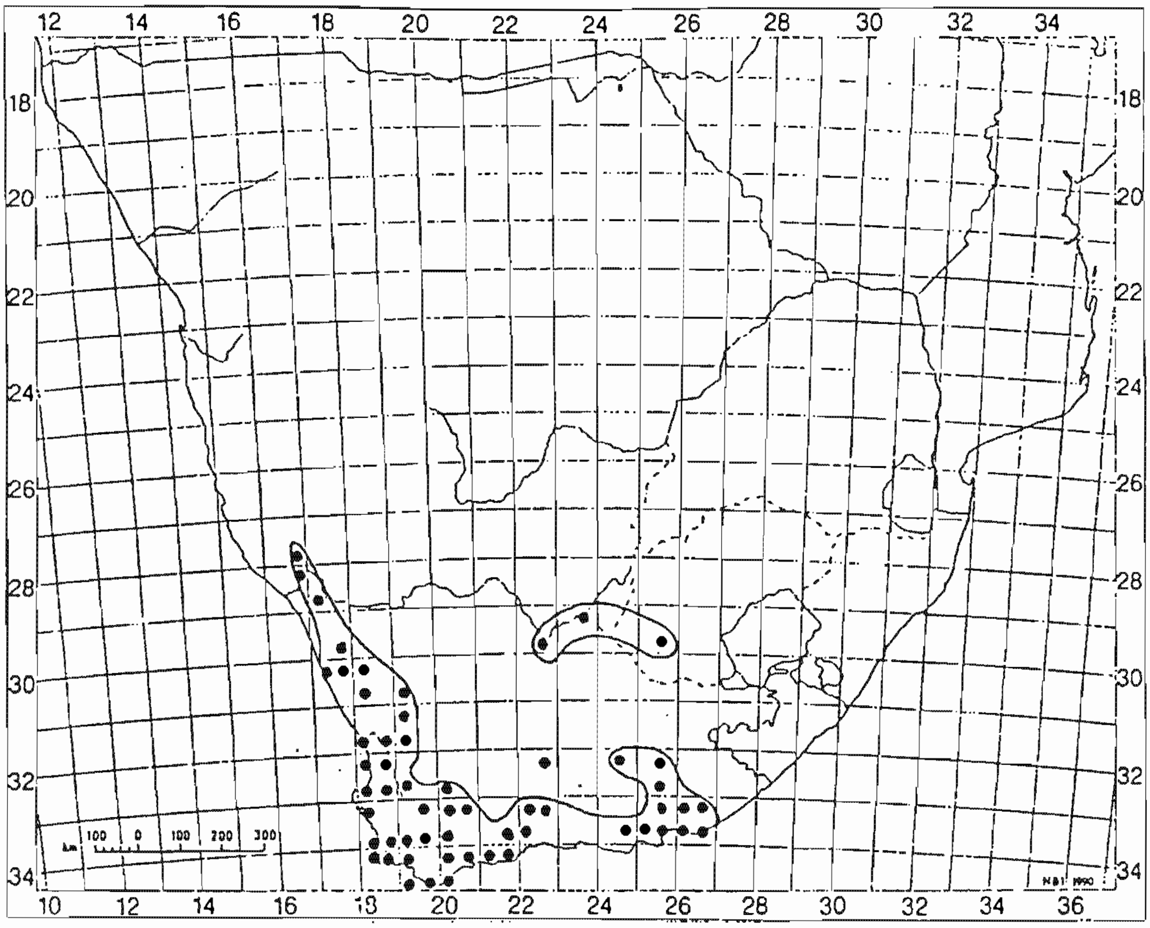
SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							x	x	x		

RECOGNISED BY
Thin, trailing creeping stems.

USES &PREPARATION:
The skin is peeled off; and the flesh eaten raw.

Distribution



Grid references

2817CA	3017BB	3218CB	3226AD	3319CD	3322DA	3418AB
2827CC	3018AC	3218CC	3318AB	3319DD	3326AD	3418BA
2917DA	3119AC	3223AA	3318AD	3320BA	3326BA	3418BD
2917DB	3119CA	3223CD	3318DA	3320CC	3326BC	3421AD
3017AD	3124DD	3225BA	3319CB	3322AC	3326DB	3421BC

Galium tomentosum *Thunb.*

RUBIACEAE

COMMON NAMES:

Voëltjies-nes / Rooistorm

HERBARIUM SPECIMEN:

F Archer 156

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
			x			

PART(S) USED:

root

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x	x			

RECOGNISED BY:
By sticky trailing stems.

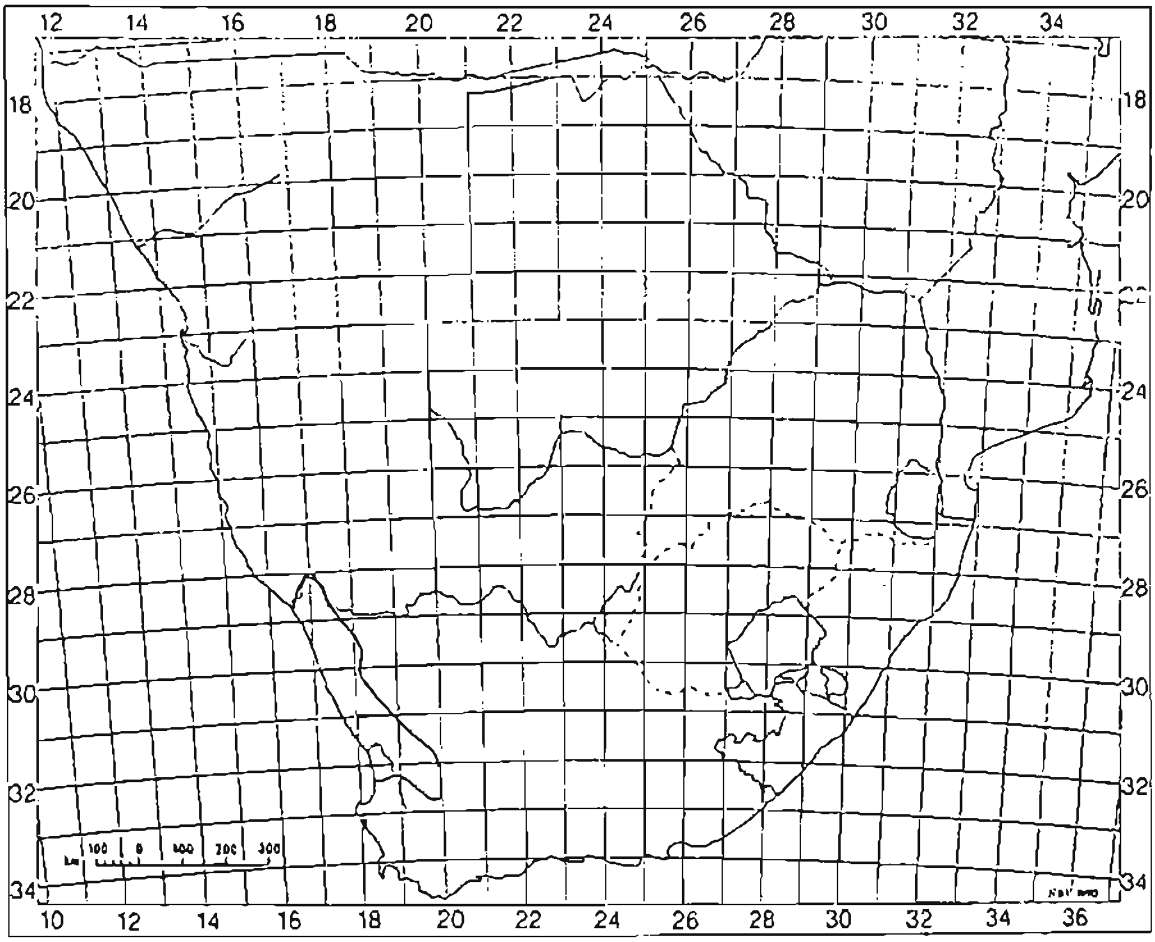
USES & PREPARATION:
The root is chewed raw as a remedy against stomach ache.

GENERAL:
This plant, known colloquially as voëltjies-nes, grows in drainage lines, scrambling among trees and shrubs, clinging with finely hooked and barbed leaves. Males plants of this species produce clusters of pollenbearing flowers on short stalks. The flower-stalks of female plants are white and fluffy. Once the seeds have been fertilized, these flower-stalks extend until they hang from the plant like hanks of wool, each strand of wool with a round, black seed. Sunbirds weave these strands into the framework of their nests.

G. tomentosum has very specialised habitat requirements for a karoo plant. It survives only in moist, shady sites and requires taller woody plants in which to climb. They are entirely dependent on birds for transport to suitable new habitats (Dean & Milton 1991: 82).

DISTRIBUTION:
From the southern Namib through Namaqualand to the South West Cape; in the Little, Great and Upper Karoo and eastwards to the Eastern Cape Province (Puff 1978). Scrambles in dense scrub of dry, sun-exposed slopes in Namaqualand.

Distribution



Gasteria pillansii *Kensit (Naud.) Hook. f.*

ASPHODELACEAE

COMMON NAMES:

Beestong / Boesmanrys / Hottentot's rice (rys)

HERBARIUM SPECIMEN:

Information supplied by Ernst van Jaarsveld

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

flowers
buds

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x				

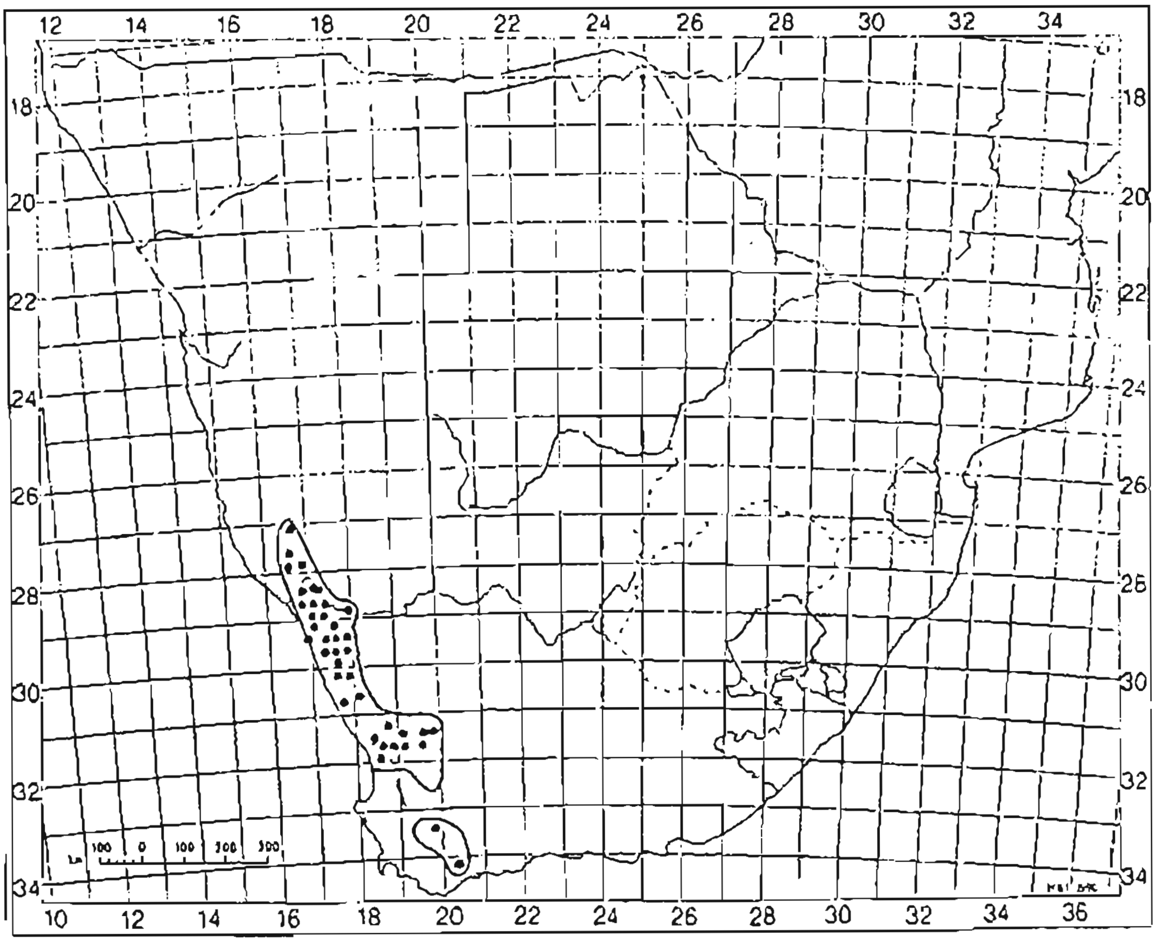
RECOGNISED BY:
Distichous mottled lorate leaves with a tuberculate margin. Flowers appear during mid-summer, tubular, reddish.

USES & PREPARATION:
The flowers and buds eaten raw or in stew. Accoring to Smith (1966) the Hottentots boiled the young buds of *G. brachyphylla* as a rice, hence the vernacular name.

GENERAL:
Gasteria species of the Little Karoo still used by farmers, and it was a common practice in the past. *Gasterias* are frequently grazed by animals such as tortoises, donkeys and goats (Smith 1966).

DISTRIBUTION:
Southern Cape to Namaqualand. Frequent in Strandveld near the coast.

Distribution

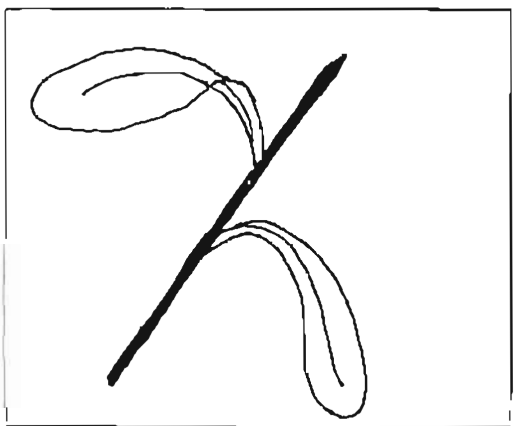


Grid references

2816BD	2817CB	2917AA	2917BD	3017BA	3118DB	3119BD	3319DD
2816DB	2817CD	2917AD	2917DA	3017BB	3118DC	3119CA	3420AB
2817AC	2817DD	2917BA	2917DB	3018CA	3119AC	3119DA	
2817CA	2916BD	2917BC	2917DC	3118DA	3119BC	3319CB	

Leaf detail of Gorteria diffusa

Namaqualand and Clanwilliam



Gorteria diffusa *Thunb.*

ASTERACEAE

COMMON NAMES:

Beetle Daisy / Kewerblom

HERBARIUM SPECIMEN:

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
		x				

PART(S) USED:

flowers
leaves

SEASON COLLECTED:

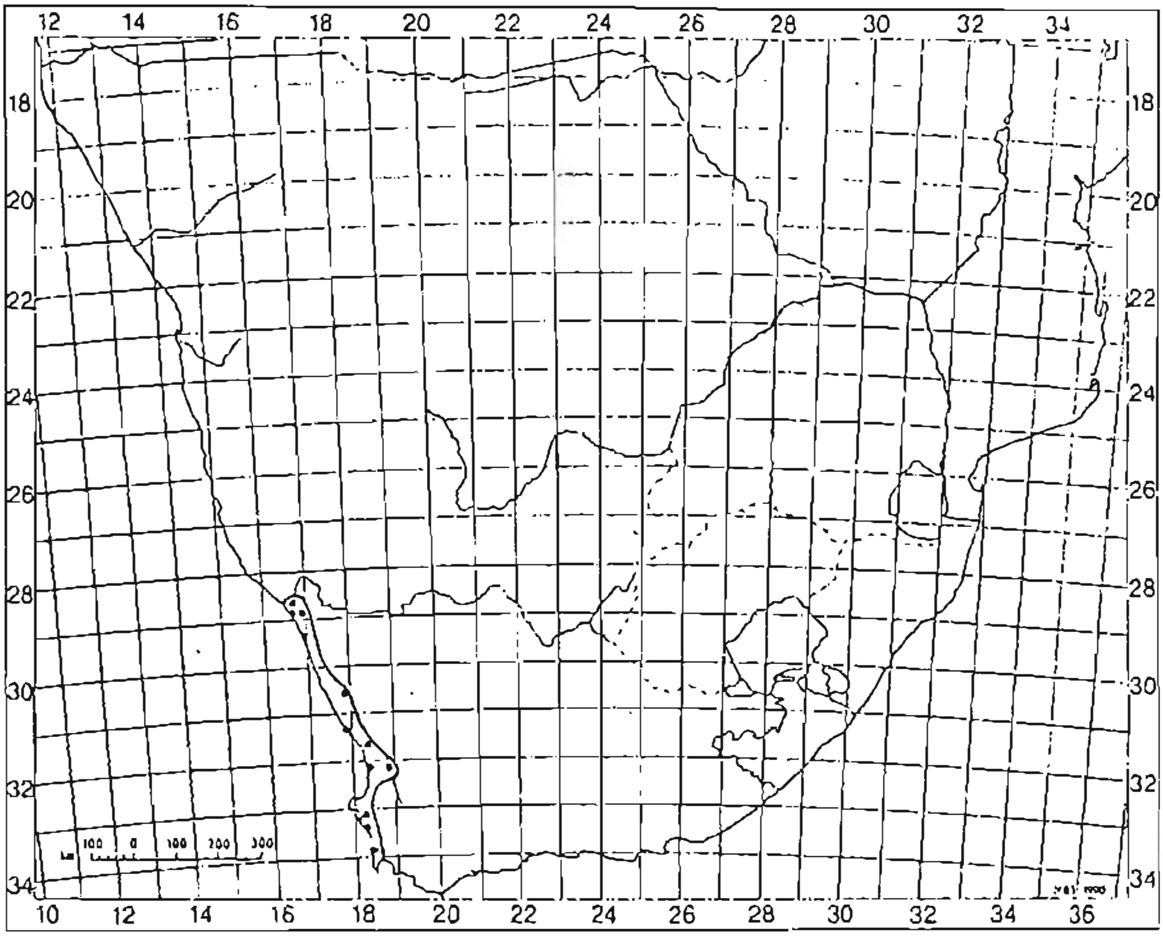
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x	x			

RECOGNISED BY:
Prostrate growth, narrow leaves, many flowers with dark spots at their base, resembling beetles.

USES & PREPARATION:
Make an infusion of the flowers and leaves as a remedy against influenza.

DISTRIBUTION:
Succulent Karoo region of Namaqualand and SW Cape.

Distribution

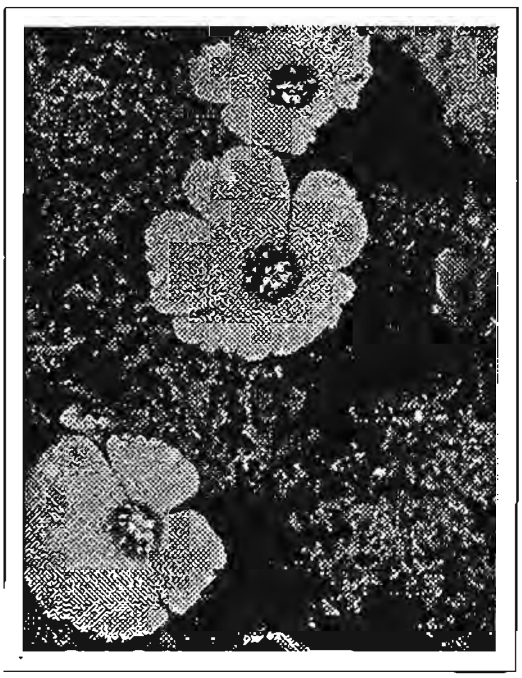


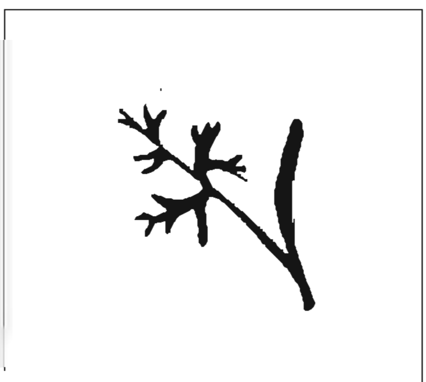
Grid references

2816DD	2916BB	3117BD	3218AB	3318AB	3318CD		
2817AC	2916BD	3118CB	3218BB	3318AD	3324CB		

Flowers and leaf detail of Grielum grandiflorum

Namaqualand and Clanwilliam





Grielum grandiflorum *(L.) Druce*

ROSACEAE

COMMON NAMES:

Platdoring / Piet Snot

HERBARIUM SPECIMEN:

F Archer

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
	x					

PART(S) USED:

root

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x								x	x	x	x

RECOGNISED BY:
Prostrate herb with creeping stems. The leaves are covered in silver hairs, while the flowers are yellow.

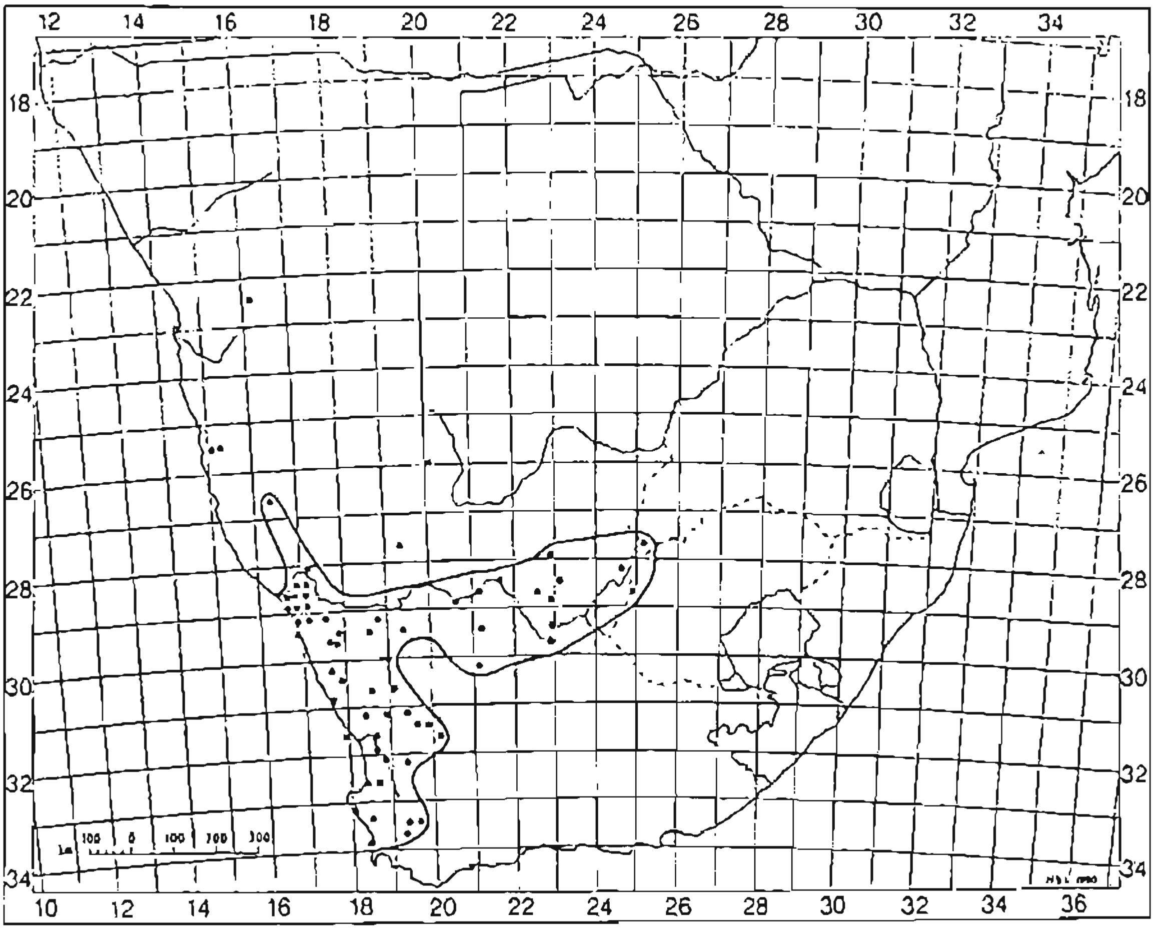
USES & PREPARATION:
Peeled and eaten raw or dry and pounded and used as flour to make porridge with milk. Can also be used with water to bake bread.

Traditionally seen by some informants as a very important part of the late autumn-summer diet, when it can be recognised by the dry trailing leaves.

It was stored for months before being used.

DISTRIBUTION:
Clanwilliam to the Peninsula in sandy flats or dunes (Bond & Goldblatt 1984:390).

Distribution

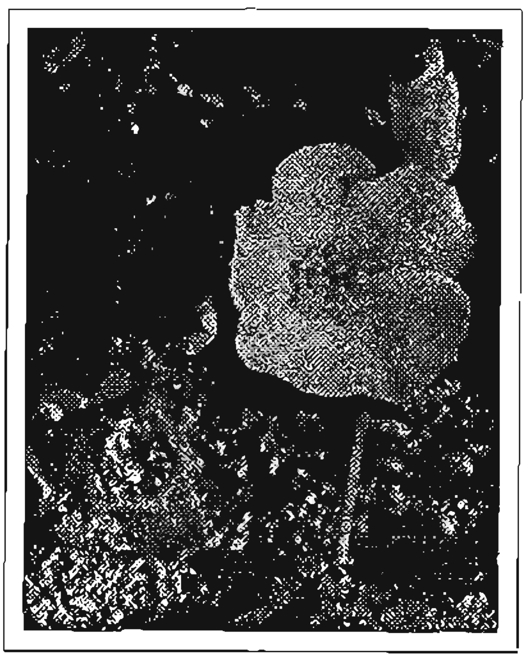


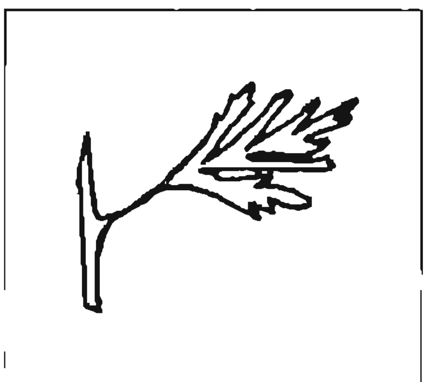
Grid references

2616CB	2821BC	2917BD	2921AC	3017DC	3118DA	3218BB	3319AD
2718CA	2821CA	2917DA	2922DB	3018DA	3118DC	3218CB	3319BC
2816BD	2822DA	2917DB	3017BA	3021AA	3119AB	3218DA	3319CB
2816DC	2824DB	2918BB	3017BB	31 17DB	3119BC	3219AB	3418AD
2816DD	2916BD	2918BC	3017BD	3118AB	3119BD	3318AD	
2817AC	2917BA	2919AD	3017DB	3118BB	3120CA	3318CD	

Flowers and leaf detail of Grielum humifusum

Namaqualand and Clanwilliam





Grielum humifusum *Thunb.*

ROSACEAE

COMMON NAMES:

Pietsnot / !oeibie / duikerwortel

HERBARIUM SPECIMEN:

F Archer s.n.

IDENTIFICATION:

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
	x					

PART(S) USED:

root

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x								x	x	x	x

RECOGNISED BY:
Yellow flowers, and in summer by dry trailing leaves.

USES & PREPARATION:
Peeled and eaten raw or dry and pounded and used as flour to make porridge with milk. Can also be used with water to bake bread.

Traditionally seen by some informants as a very important part of the late autumn-summer diet, when it can be recognised by the dry trailing leaves.

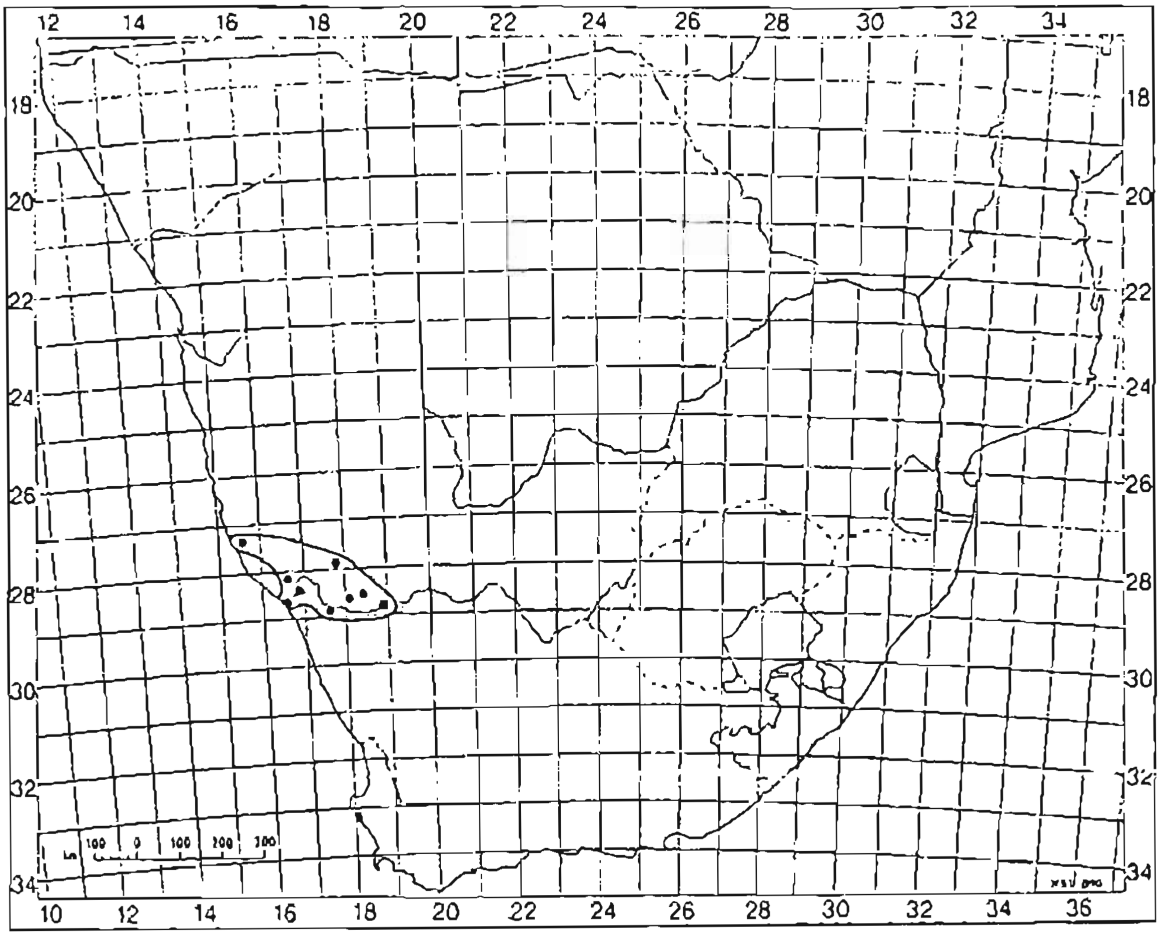
It was stored for months before being used.

The fleshy roots are slimy when eaten although they are a delicacy to the duiker (Le Roux & Schelpe 1988).

DISTRIBUTION:
Throughout Namaqualand and the Clanwilliam area in flat sandy places and also in other drier parts of the Western Cape Province (Le Roux & Schelpe 1988).

NUTRIENT ANALYSIS:
Refer to Table in Appendix.

Distribution



Grid references

2716DD	2816BA	2816BD	2816DA	2817DC	2818CA	2818DD

Hermannia macra *Schltr.*

STERCULIACEAE

COMMON NAMES:

Broodbos

HERBARIUM SPECIMEN:

F Archer 209, 362

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

leaves

SEASON COLLECTED:

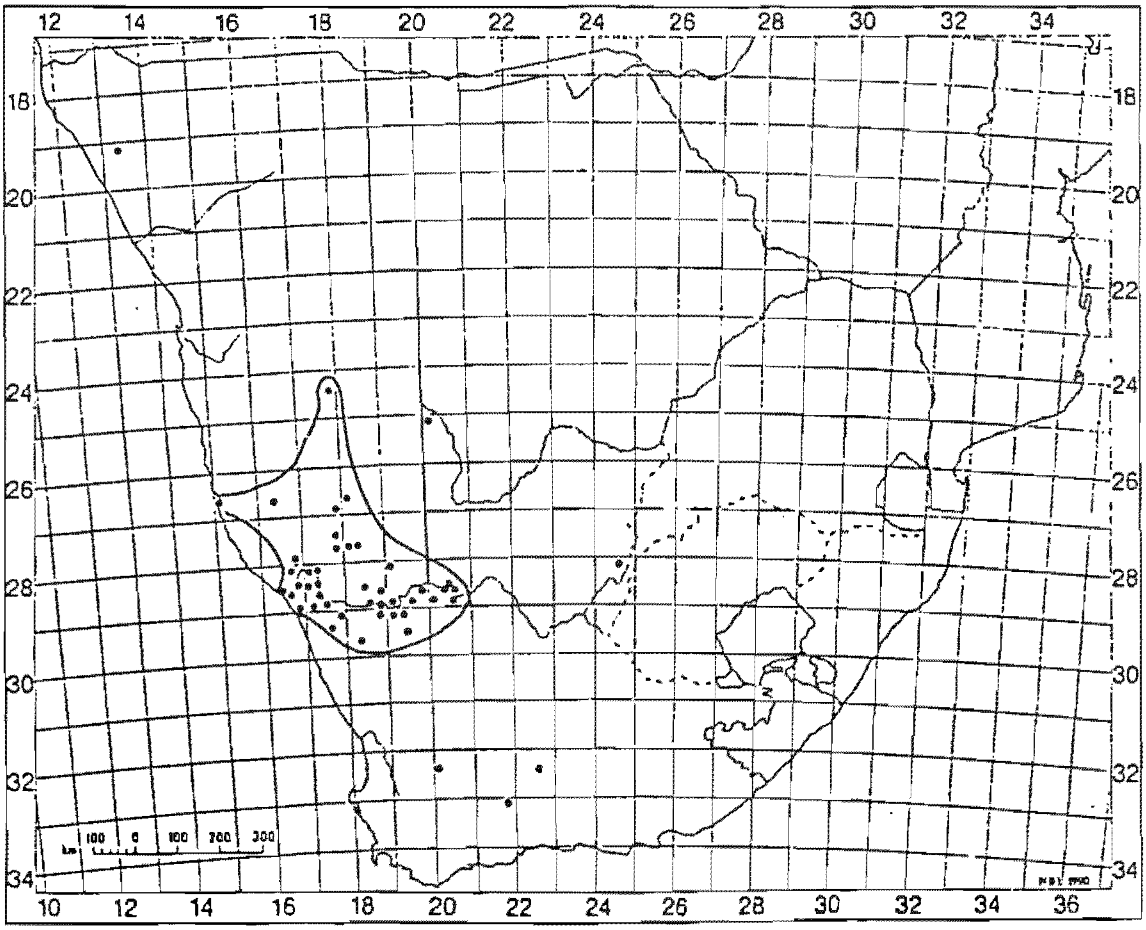
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
						x	x	x	x		

RECOGNISED BY:
Dark green leaves.

USES & PREPARATION:
Leaves are eaten raw.

DISTRIBUTION:
Namaqualand and Namibia in the Warmbaths and Luderitz districts. Occurs in sandy flats and dry river beds (Verdoorn 1980).

Distribution



Grid references

2520AA	2717BD	2816DA	2817DC	2819CC	2820DC	2919AA
2615CA	2717DB	2816DB	2818CD	2819DB	2824BA	2919AB
2616CB	2718CA	2817AB	2818DB	2819DC	2917BB	2919AD
2617DD	2718CB	2817AC	2818DC	2820CB	2917BC	3220AC
2618CA	2816BA	2817AD	2818DD	2820CC	2918BB	3222BC
2716DD	2816BD	2817CB	2819AA	2820DA	2918CB	3321BB

Hermannia stricta *(E.Mey. ex Turcz.) Harv.*

STERCULIACEAE

COMMON NAMES:

Desert Rose / Jakkalsbos

HERBARIUM SPECIMEN:

F Archer 177

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
		x				

PART(S) USED:

leaves

SEASON COLLECTED:

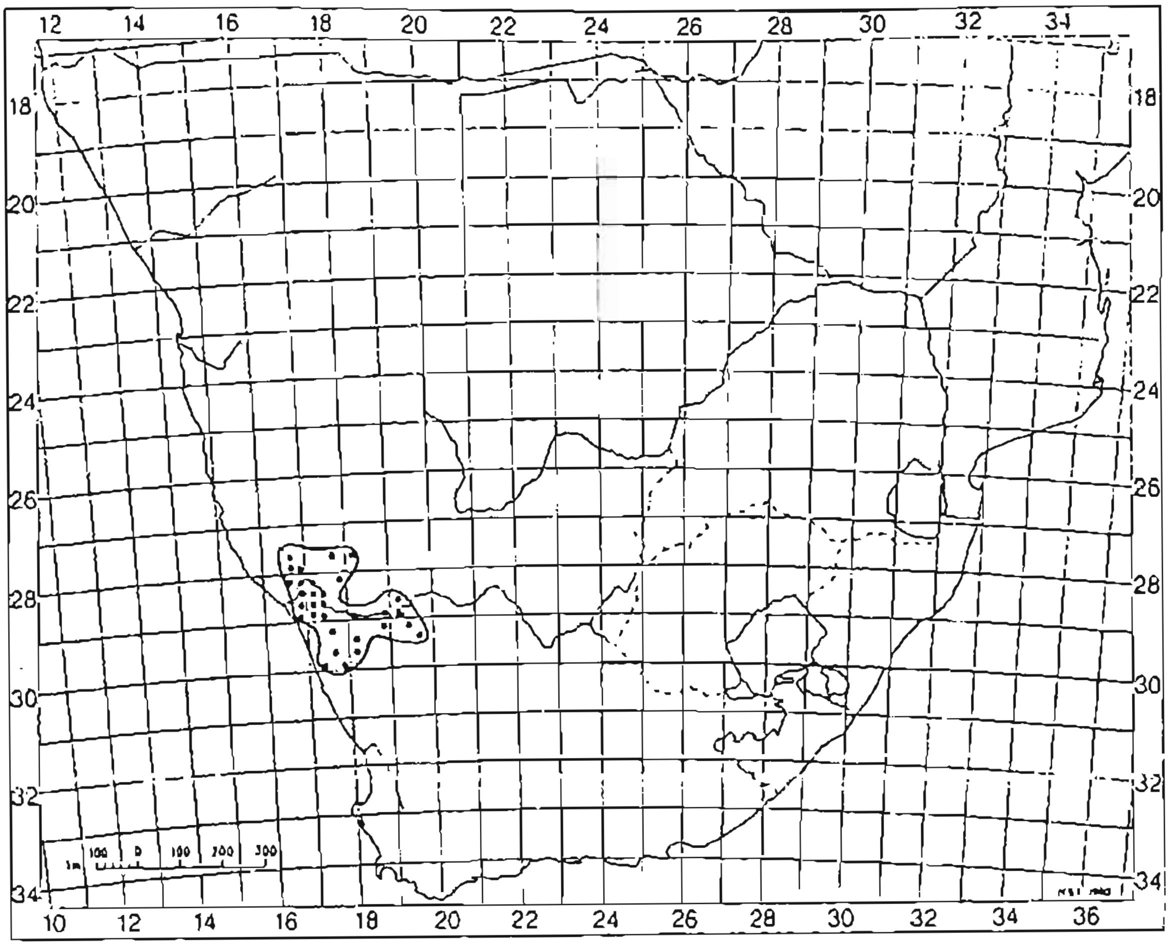
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
						x	x	x	x	x	x

RECOGNISED BY:
The oblanceolate leaves have minute star-like hairs and are toothed, especially at the ends (Le Roux & Schelpe 1988). Bright pink flowers.

USES & PREPARATION:
A palatable plant.

DISTRIBUTION:
Found in the hills of Namaqualand and in the Bushmanland (Le Roux & Schelpe 1988).

Distribution



Grid references

2716DD	2816BD	2817AA	2817CB	2819CC	2917CD	2918AC	2919AB
2718CA	2816DB	2817AC	2818CC	2917BA	2917DA	2918BB	2919BA
2816BA	2816DD	2817CA	2818DD	2917BB	2917DD	2918CA	2919BC

Hermbstaedtia glauca *(Wendl.) Reichb. ex Steud*

AMARANTHACEAE

COMMON NAMES:

Bokhout / Boerebos

HERBARIUM SPECIMEN:

F Archer 173

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
	x					

PART(S) USED:

root

SEASON COLLECTED:

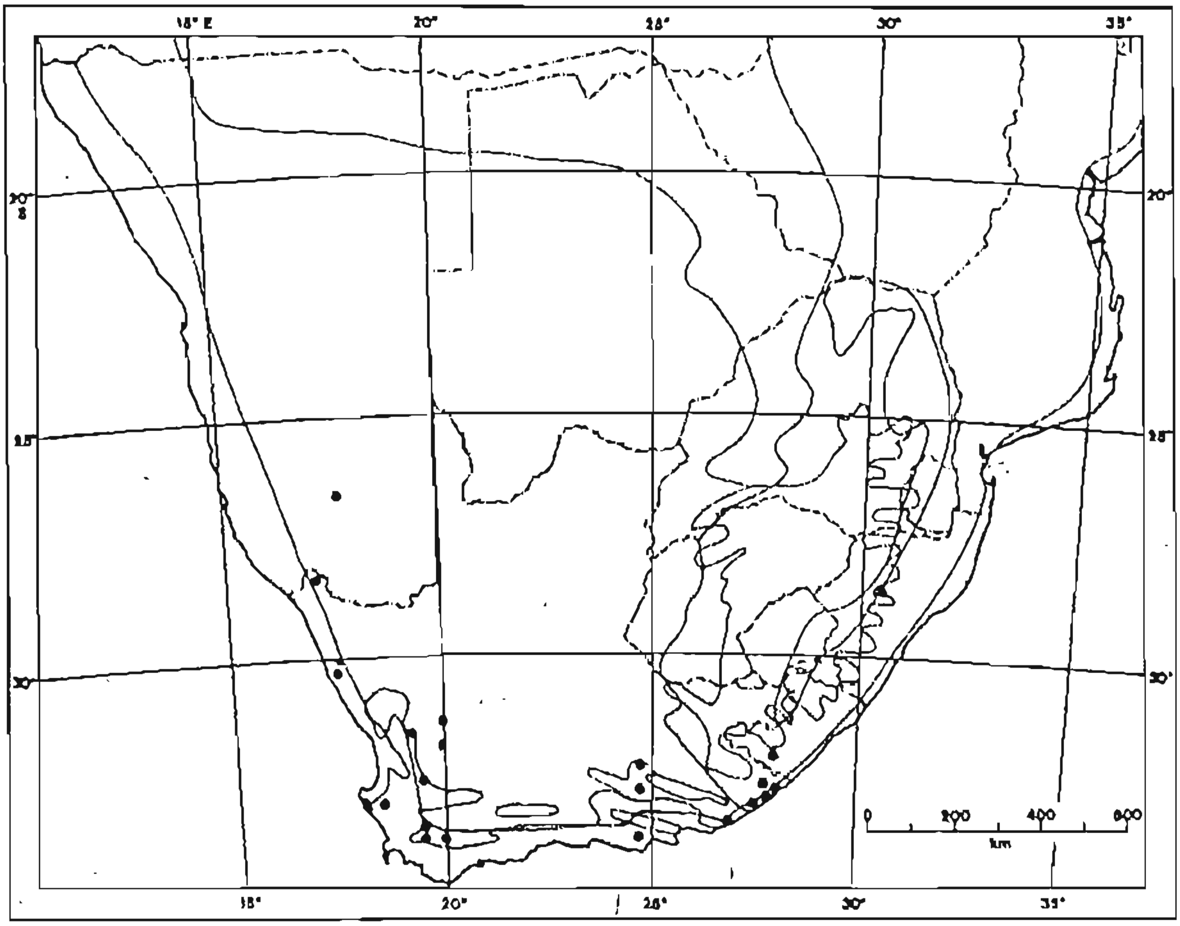
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x	x			

RECOGNISED BY:
Erect shrub with blue-green stems. The blue-green leaves are linear-oblong. Mauve-pink to cream flowers (Le Roux & Schelpe 1988).

USES & PREPARATION:
Beverage.

DISTRIBUTION:
In Namaqualand near the Orange River and in Bushmanland (Thiselton-Dyer 1912:406).

Distribution

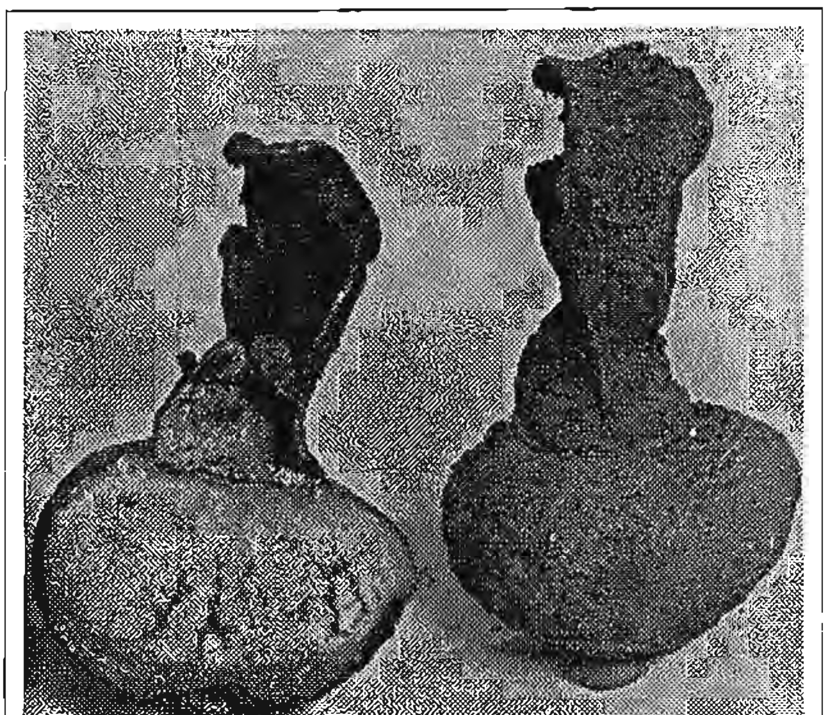


Grid references

2716DD	2816BD	2817AA	2817CB	2819CC	2917CD	2918AC	2919AB
2718CA	2816DB	2817AC	2818CC	2917BA	2917DA	2918BB	2919BA
2816BA	2816DD	2817CA	2818DD	2917BB	2917DD	2918CA	2919BC

Rootstock of Hydnora africana

Fiona Archer



Hydnora africana *Thunb.*

HYDNORACEAE

COMMON NAMES:

Bobbejaanskos / Kannie / Jackal food

HERBARIUM SPECIMEN:

F Archer 15

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
	x					

PART(S) USED:

rootstock

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
									x	x	x

RECOGNISED BY:
Often recognized by the sweet smell it emits when it is ripe.

USES & PREPARATION:
The rootstock is roasted in ash when not yet ripe and eaten raw when ripe.

This parasite, growing principally on the root of *Euphorbia mauretanica* has a reddish-brown subterranean fruit which has the form, size and taste of the potato and is very mealy. It is edible, and when cooked in embers, quite palatable (Fox & Norwood Young:1982 (Watt & Breyer-Brandwijk:1962)).

The whole plant is said to contain *tannin* and has been used for tanning.

It is used in Tanganyika as an astringent for throat inflammations and swollen tonsils, while the juice is used for the preservation of fish nets (Watt & Breyer-Brandwijk:1962).

GENERAL:
The vernacular name of "bobbejaanskos" or "jakkalskos" refers to the fact that these plants, or more precisely their fruits, often are eaten by animals. It is said that the people of southern Africa also relished the fruit. A recipe for the preparation of an apparently delicious dessert has even found its way into Leipoldt's Cape Cookery on traditional South African cooking.

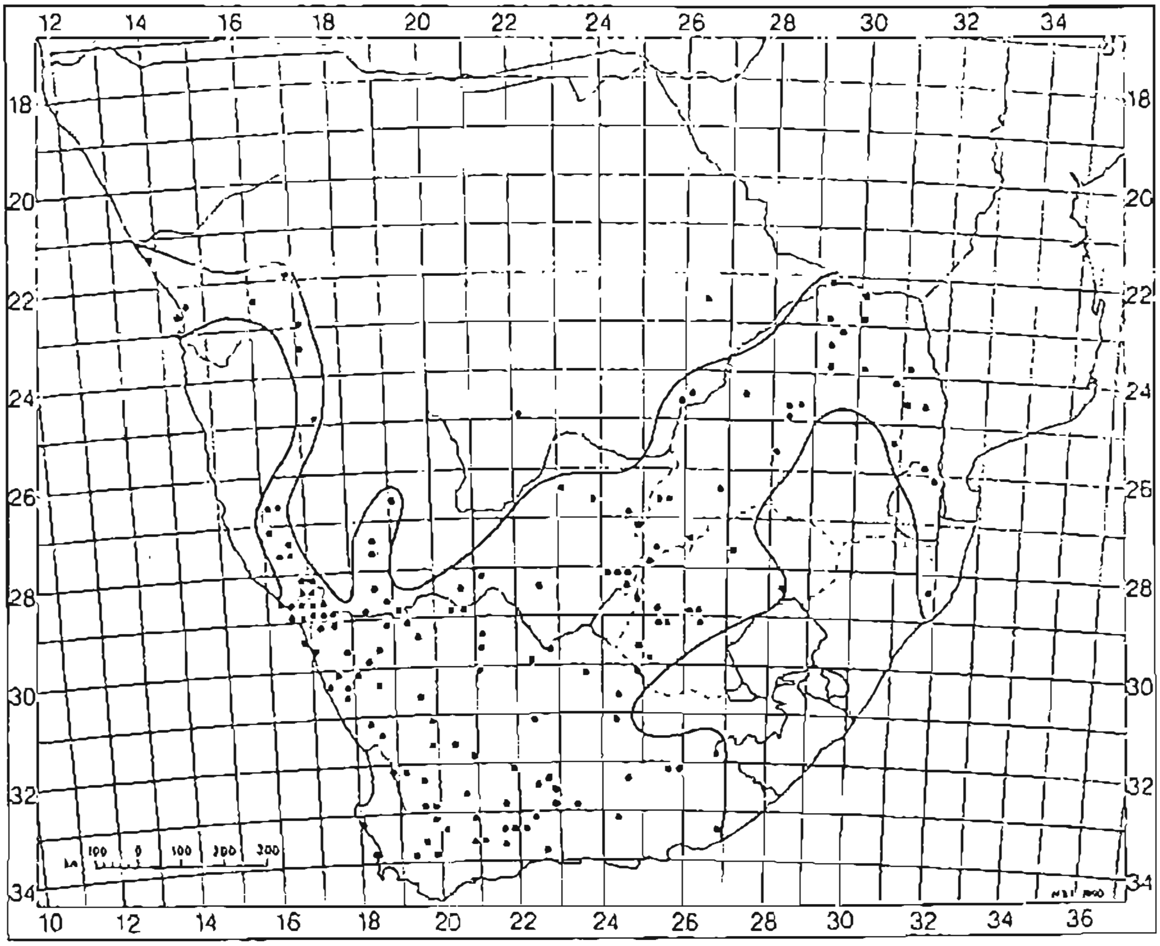
The fruit may reach the size of a person's fist and is filled with a pulp packed with thousands of tiny seeds. It has a slight astringent taste with a mealy consistency.

The smell that *H. africana* emits closely resembles that of tanned hide and consequently dermestid beetles that abound wherever hides are tanned, are the floral visitors and agents of pollination, although they usually become trapped inside the flower (Visser & Musselman 1986).

DISTRIBUTION:
Clanwilliam to the Peninsula, Worcester and Oudtshoorn and in the Eastern Cape, Namaqualand and Namibia (Bond & Goldblatt 1984).

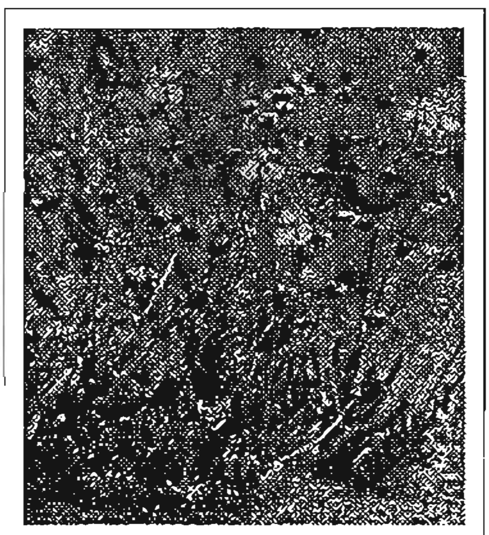
NUTRIENT ANALYSIS:
Refer to Table in Appendix.

Distribution



Hypertelis salsoloides

Namaqualand & Clanwilliam



Grid references

2216AC	2623AC	2817CD	2919BA	3125DD
2217CC	2623DB	2817DC	2919BC	3218BB
2229AB	2625CB	2818BC	2921AC	3219BC
2229CD	2625DA	2818CD	2921CA	3219DA
2230AC	2626BD	2819CC	2922CD	3219DC
2230CC	2631BB	2820BC	2922DB	3219DD
2317AC	2632CC	2820CD	2924DB	3220DA
2329AD	2716BC	2820DC	2924DC	3221BB
2329BA	2716CC	2822BC	2925AB	3221DC
2329CD	2716DA	2824AA	2925BA	3222BC
2330CC	2716DD	2824AB	2925CC	3222DB
2331CC	2718BC	2824BA	2926AB	3222DD
2417CD	2718DA	2824BC	3017AD	3223CD
2422CC	2724BB	2824DB	3017BA	3224BC
2425DB	2725CB	2825CD	3017BD	3225BA
2426AC	2725CC	2826cc	3017DB	3225BB
2427AD	2726AC	2826CD	3018AA	3318CD
2428CB	2727CA	2828AD	3018BC	3319BB
2428CD	2816BB	2831BD	3019DA	3319DD
2428DA	2816BD	2916BB	3021AA	3320AC
2430BB	2816CB	2916BD	3023BA	3320BB
2431CA	2816DA	2917AB	3024BB	3329DB
2431DA	2816DB	2917CA	3024CB	3321DA
2528CA	2816DC	2917DB	3118AB	3322AB
2530BD	2816DD	2918BB	3118BC	3326BD
2531DC	2817AA	2918CD	3119DB	
2616CA	2817AC	2918DA	3120DD	
2616CB	2817CA	2919AB	3122AB	
2619CA	2817CB	2919AC	3124AB	

Hypertelis salsoloides *(Burch.) Adamson*

MOLLUGINACEAE

COMMON NAMES:

Haassuring

HERBARIUM SPECIMEN:

F Archer 175

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x		x				

PART(S) USED:

leaves		leaves				

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
				x	x	x	x	x	x		

RECOGNISED BY:
Narrow grey green succulent leaves, white to pink flowers in loose groups at the end of leafless branches (Le Roux & Schelpe 1988).

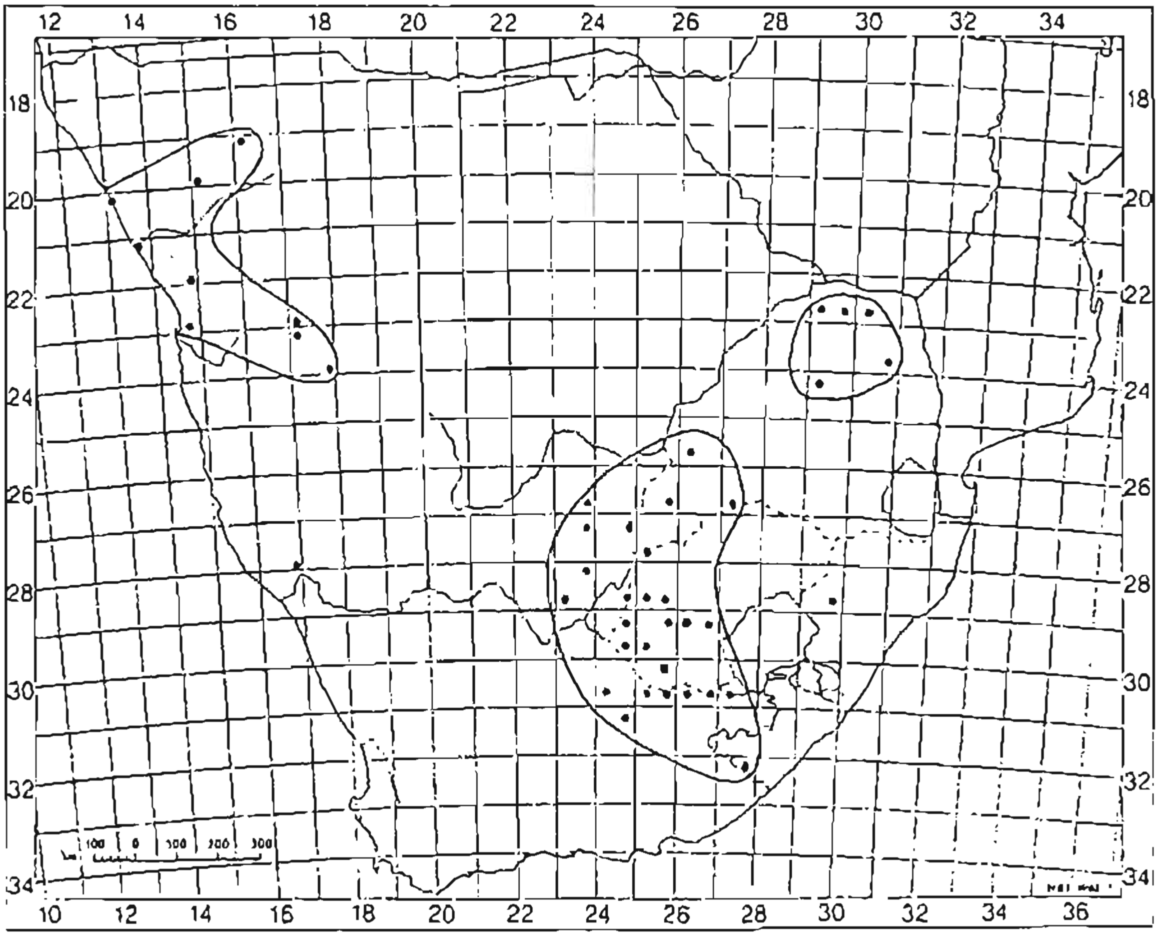
USES & PREPARATION:
The leaves are eaten raw or cooked with meat.

An infusion is used as a remedy against influenza.

DISTRIBUTION:
Throughout Namaqualand and Clanwilliam areas in saline soils, and also widespread in the drier parts of the Cape Province and Namibia (Le Roux & Schelpe 1981).

Note: The Molluginaceae are commonly treated as part of the Aizoaceae by South African taxonomists (Arnold & de Wet, 1993). However, the monoplyby of the Aizoaceae sensusticto after the exclusion of the Molluginaceae has recently been demonstrated by Bithich and Hartman (1988).

Distribution

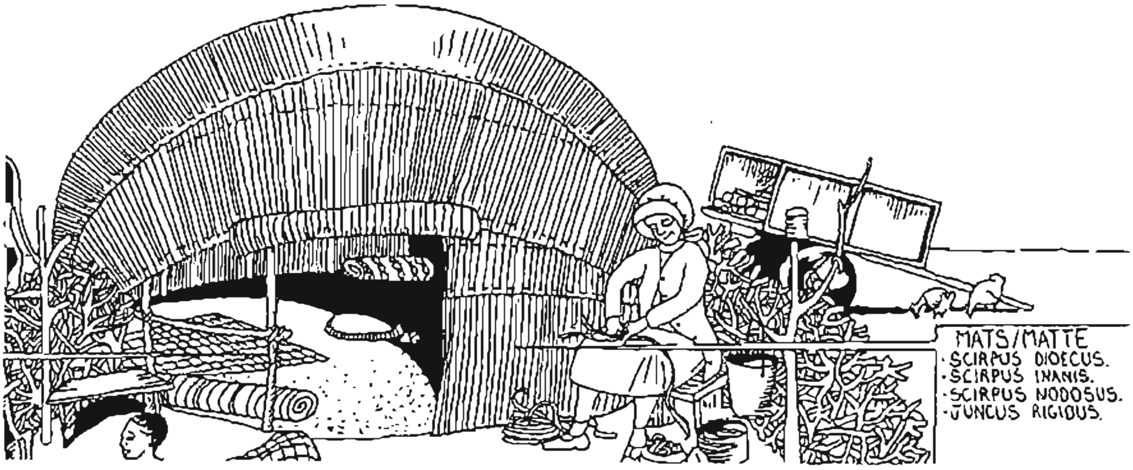


Grid references

1916AB	2229DD	2429AA	2723AB	2823BC	2826BB	2926BB	3130AA
2013AA	2230CD	2526CD	2723AD	2823CA	2826CC	2926DC	3221BB
2113BA	2314BA	2528AC	2724BC	2824AD	2829DB	3025BD	3222AD
2114DC	2315CB	2528CA	2725BD	2824DB	2924BD	3025DA	3225AC
2124BA	2329CD	2623DB	2725CB	2824DD	2924DD	3026BB	3227BC
2124BB	2329DD	2625DA	2725DA	2825CA	2925BA	3026CA	
2214DA	2416AA	2627CA	2726CD	2825CC	2925CB	3026CB	
2217CA	2416AB	2631DA	2726DC	2825DA	2926AA	3026DA	
2229CC	2428BB	2717CB	2822CB	2825DB	2926AC	3124BA	

The reeds of Juncus rigidus are used in the construction of huts.

Tony Hül



Juncus rigidus *Desf.*

JUNCACEAE

COMMON NAMES:

Middelmatjiesgoed

HERBARIUM SPECIMEN:

F Archer 228

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

reeds

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
								x	x	x	x

RECOGNISED BY:

USES & PREPARATION:
Reeds are picked, dried and the heads cut off. Reeds of a smiliar length are stitched together with twine (traditionally made from the fibrous bark of the roots of *Rhus undulata*, more recently with string from hessian fodder bags). Before stitching, the roads are soaked to ensure that they don't split.

DISTRIBUTION:
See map. This specimen may indicate that the plant is more widespread than was thought before.

Grid references

2918CC	3019CD	3118DB	3119BC	3120AB	3320AB		
3018CC	3118BD	3119AB	3119BD	3120BA	3320BA		
3018CD	3118DA	3119AC	3119CA	3220BC	3320BB		

Karroochloa tenella *(Nees) Conert & Tuerpe*

POACEAE

COMMON NAMES:

Gras

HERBARIUM SPECIMEN:

F Archer 457

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

grazing grass

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:
Leaf blade, tufted.

USES & PREPARATION:
One of the most popular grasses for grazing.

DISTRIBUTION:
Fynbos, Nama-Karoo, Succulent Karoo, in sandy soils.

Grid references

2817AC	2917BA	2917DC	3019CD	3119CA	3125AC		
2817CC	2917CD	2931CC	3023AD	3121AB	3325CD		
2818CD	2917DB	3018CA	3118AB	3124AB	3325DC		

Limonium dregeanum *(Presl.) Kuntze*

PLUMBAGINACEAE

COMMON NAMES:

Besembos

HERBARIUM SPECIMEN:

F Archer 229

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

reeds

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Tufted perennial up to 40cm, with blue flowers.

USES & PREPARATION:
Used domestically. Tied for brooms to sweep living areas.

DISTRIBUTION:
Succulent Karoo, south western Cape, Little Karoo and Namaqualand.

Grid references

2216CC	2819DA	2920BB	3119AD	3223CD	3319CB	3322BC	3326BC
2317CA	2820CC	2921DA	3121CD	3223DD	3319DD	3322DA	3326DB
2417BD	2820DC	2922DB	3123AA	3224AC	3320BA	3325AC	
2716BB	2821BC	3021AC	3126DD	3224AD	3320CA	3326AB	
2718BA	2824BA	3023AD	3220CA	3224BC	3321DC	3326BA	
2818CB	2917DB	3023BA	3221BB	3224DC	3322AA	3326BB	
2818DB	2919BC	3118DB	3222BA	3225BA	3322AB		

Lycium oxycarpum *Dun*

SOLANACEAE

COMMON NAMES:

!ari

HERBARIUM SPECIMEN:

F Archer 170, 379

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

fruit

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x									

RECOGNISED BY:
Spiny shrub up to 2m, flowers mauve and berries red.

USES & PREPARATION:
Eaten raw.

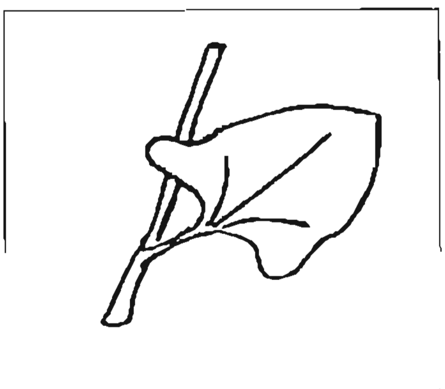
DISTRIBUTION:
Known to occur in Worcester, Montagu and the Karoo (Bond & Goldblatt 1984:424).

Grid references

2616CB	2917BD	3019CD	3118DC	3120CA	3318AB	3319DD
2816DB	2917CC	3118AB	3118DD	3218AB	3318DA	3325BB
2816DD	2917DB	3118CC	3119CC	3218BB	3318DC	3419BD
2916BD	3017AD	3118DA	3119DB	3221CB	3319CB	3421AD

Leaf detail of Manochlamys albicans

Namaqualand and Clanwilliam



Manochlamys albicans *(Aell.)*

CHENOPODIACEAE

COMMON NAMES:

Spanspekbos / Seepbos / Bobbejaanseep

HERBARIUM SPECIMEN:

F Archer 207

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

seeds leaves	leaves fruit

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
						x	x	x	x	x	

RECOGNISED BY:
Grey arrow-head shaped leaves, broad succulent fruits, green to yellow.

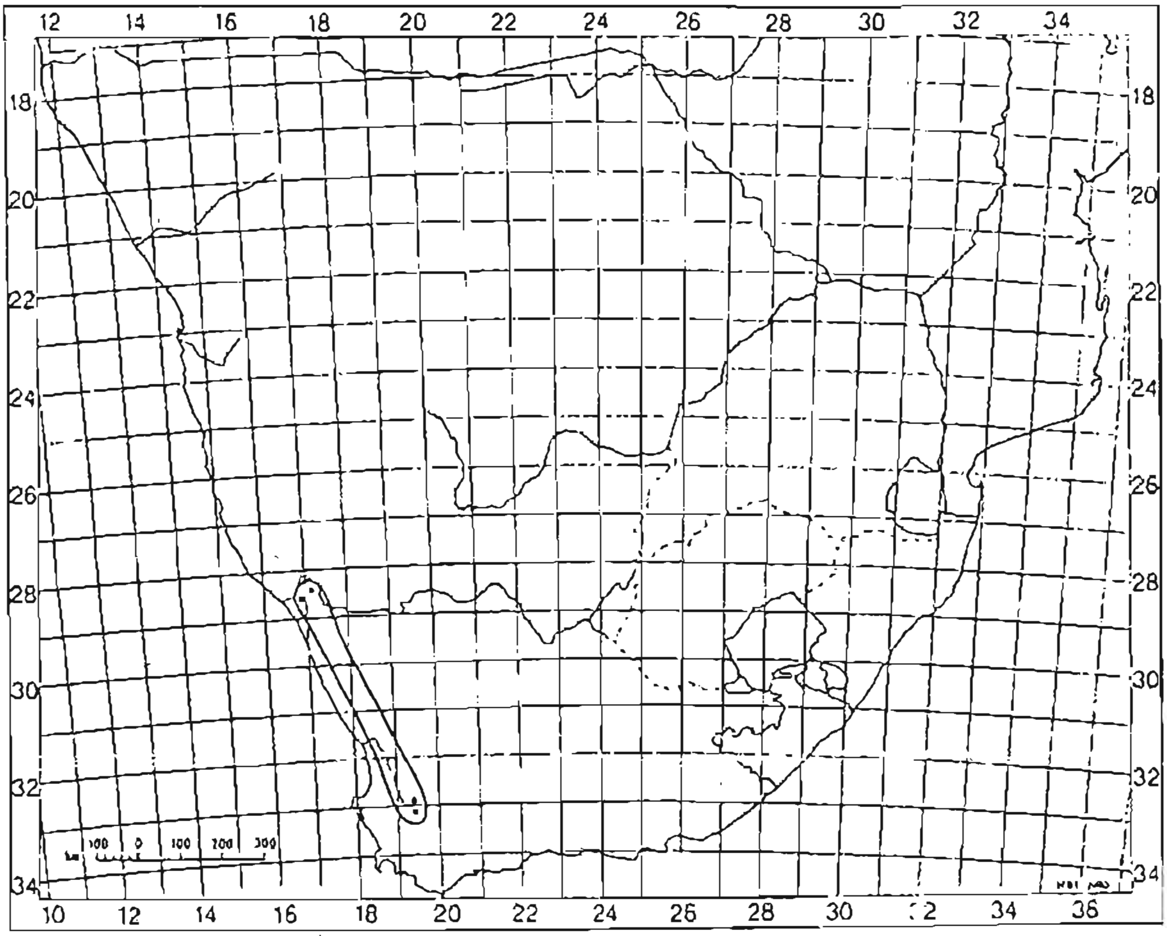
USES & PREPARATION:
The fruits of this plant smell of melon. The leaves are rubbed onto leather to clean the leather. The leaves create a foam when rubbed between the hands. Sometimes the leaves were used as a soap for humans, as well.

The seeds are very palatable but the rest of the plant is mostly grazed during the summer monthes when other palatable plants have shed their leaves (Le Roux & Schelpe:1988).

GENERAL:
There is only 1 species of *Manochlamys* in Namaqualand and Southern Africa.

DISTRIBUTION:
Found in hills throughout Namaqualand and southwards to the Cape Peninsula and also in Namibia (Le Roux & Schelpe:1988).

Distribution



Grid references

3120CC	3219CD	3319AB

A "flowered skin" traditionally used for sleeping on.

The orange flowers of **Manulea cephalotes** are used to dye the skin yellow.

Sagittarius
Fiona Archer

Manulea cephalotes *Thunb.*

SCROPHULARIACEAE

COMMON NAMES:

Saffraan

HERBARIUM SPECIMEN:

F Archer 189

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

flowers

SEASON COLLECTED:

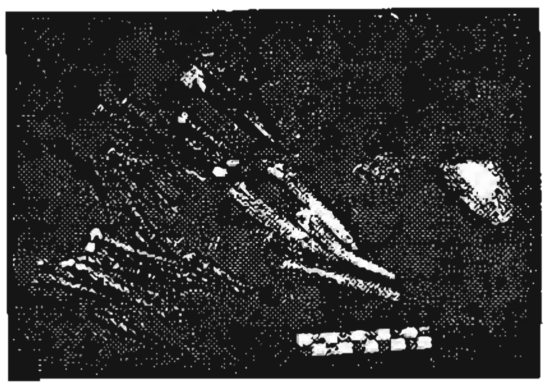
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							x	x	x		

RECOGNISED BY:
Small bright orange flowers.

USES & PREPARATION:
Dyeing leather.

Rubbed into the leather; or make an infusion with water and soak the leather. Colours the leather yellow. The plant is not used regularly for this purpose because it is not very abundant.

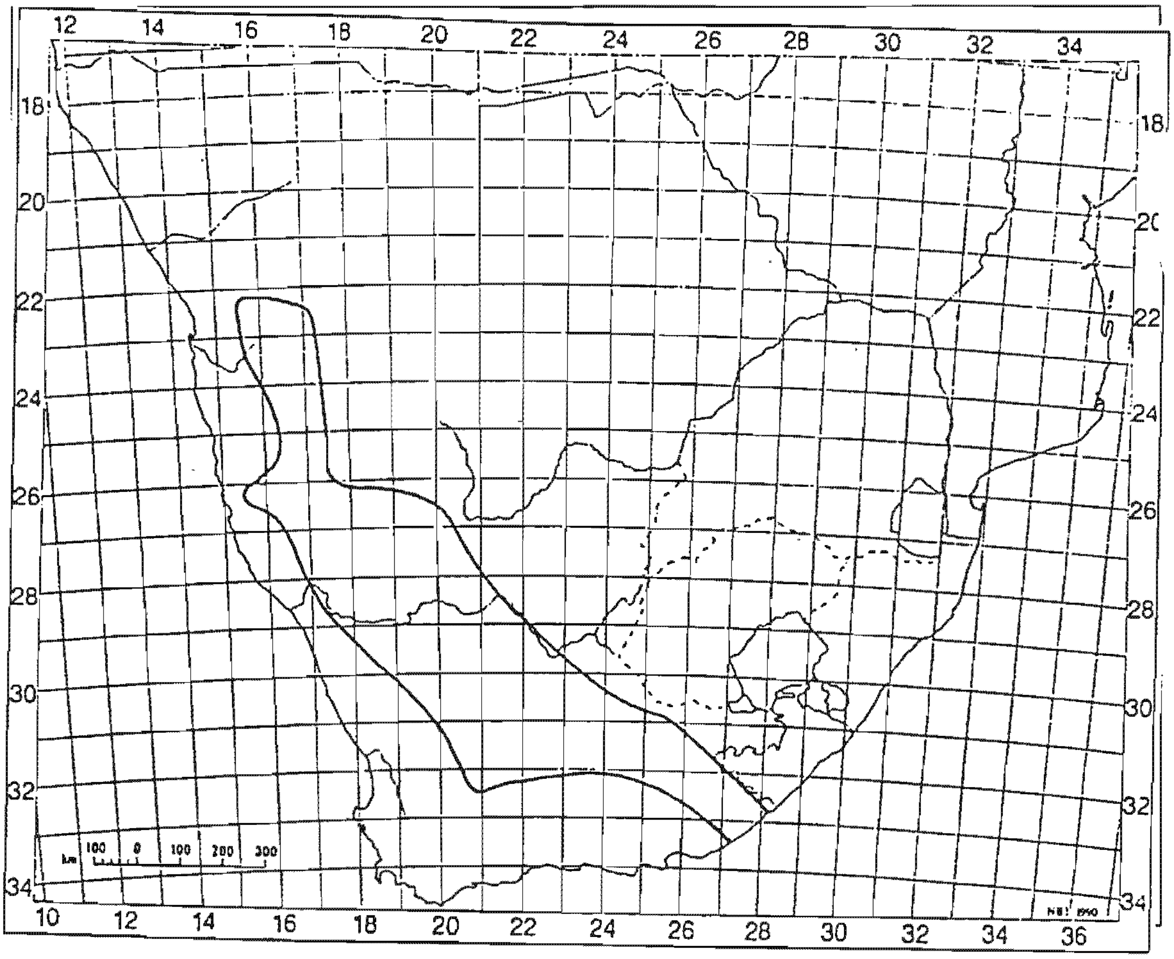
DISTRIBUTION:



Pegs, horns, stone scrapers and bark on a dyed skin.

Sagittarius - Fiona Archer

Distribution

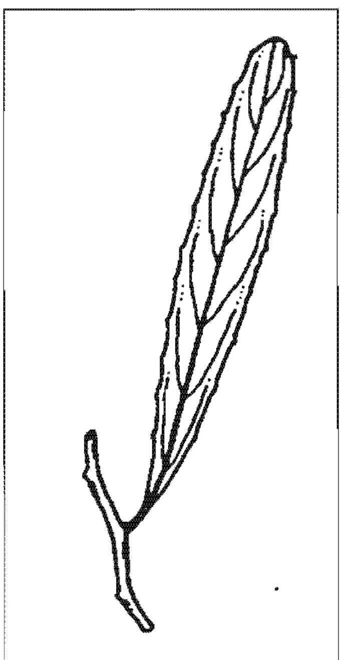


Grid references

2616BA	2816BD	2817CB	2821AC	2919AB	3322DC	3326AB
2618CB	2817AC	2820CB	2824BA	3224AD	3325BC	3326BC
2816BB	2817CA	2820DC	2917BD	3225AD	3325CA	

Leaf detail of Maytenus linearis

Trees of Southern Africa



Maytenus linearis *(L.F.) Marais*

CELASTRACEAE

COMMON NAMES:

Pendoring / Narrow-leaved spike thorn

HERBARIUM SPECIMEN:

F Archer 129

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		x

PART(S) USED:

				young green branches		

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:

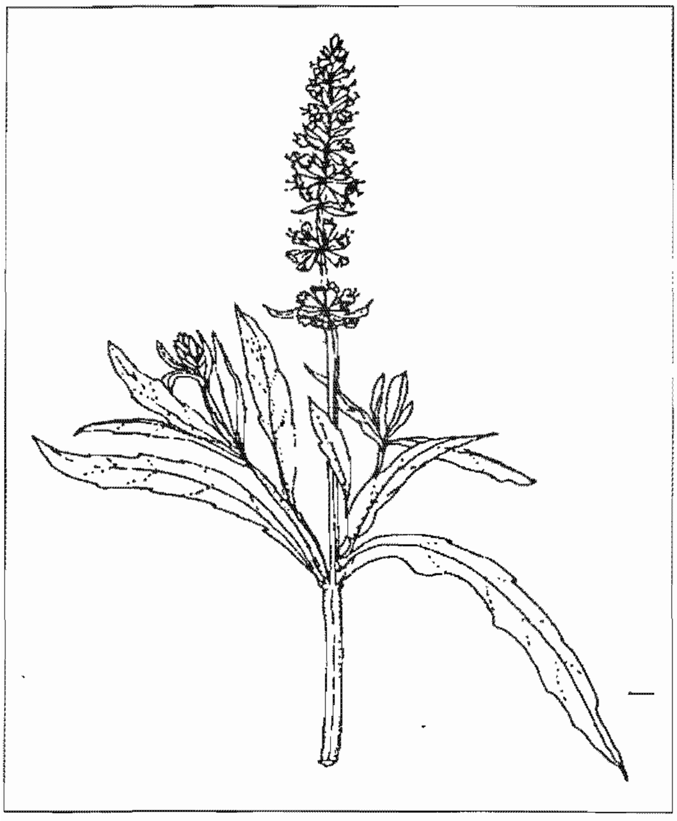
USES & PREPARATION:
The branches are bent and used as a framework for houses.

Small branches are cut into spikes for use in leatherwork. The wood is sharpened on the on end so that it has the appearance of a nail. The leather is then pinned onto the ground so that it can dry without wrinkles. The horns of some of the smaller antelope are used in this manner, too.

DISTRIBUTION:
Namibia, northern, central and eastern Cape (Palgrave:1983).

Mentha longifolia

Indigenous Healing Plants



Grid references

2627AA	3119CB
2725CB	3119DB
2821BC	3124DA
2824DB	3125AC
2827AC	3125BC
2827CD	3126DA
2828AB	3128BB
2828BC	3219AC
2828CC	3219CA
2828DA	3219CD
2917DB	3220CC
2922DA	3221BA
2925CB	3221BB
2927BB	3222BD
2927BD	3225AB
2928AA	3225DA
2928AC	3226DD
2928AD	3227CC
2928CB	3227DB
2929AC	3228CB
2929CC	3318CD
3026DA	3318DD
3027DC	3319CC
3027DD	3319DA
3028CA	3319DD
3028CD	3320CC
3029CB	3325CD
3118DC	3326AC
3119BC	3326CA

Mentha longifolia *(L.) Hudson.*

LAMIACEAE

COMMON NAMES:

Wallerja / Balerja

HERBARIUM SPECIMEN:

F Archer 188, 381

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x		x		x		

PART(S) USED:

Ea	Eu	Ma	Mu	Da	Du	F
leaves		leaves		leaves branches		

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:

USES & PREPARATION:
In the Richtersveld the branches are hung in the house to ward off flies.

The plant is widely used in Namaqualand as a medicinal tea. When the leaves of the Balerja is mixed with tea leaves it improves the flavour of the brew - used in this way the plant is considered to be a delicacy.

Infusion is also used for colds and coughs, cramps, colic, indigestion, headaches and stomach ailments (Roberts:1990).

Dry, warm (roasted) leaves are placed on the head of someone who has lost someone through death, so that the person can sweat and the head remains cool (Hoff:1990).

An infusion of *Mentha longifolia ssp. capensis* is used to relieve painful or delayed menstruation. According to Pappe the plant was formerly prized as an antispasmodic and carminative and was used as an infusion in flatulent colic and other conditions.

Externally it was applied to glandular and other swellings. To this day the plant is a popular remedy in the Western Province, being used for inflammatory conditions of the chest, croup, diphtheria, whooping cough, pulmonary tuberculosis, typhoid fever, scarlet fever, gynaecological conditions and oedema (Watt & Breyer-Brandwijk:1962).

GENERAL:
Propagated very easily. Examples taken to people in Cape Town to test for palatibility as a tea has shown that there may be a demand for this resource as an additive to tea.

DISTRIBUTION:
Widespread in Europe and the Mediterranean region to eastern Asia, the Canary islands and extending to Ethiopia from where there is a gap to Zimbabwe and Southern Africa. It grows on river banks and in moist places.

Grid references

2716DC	2816BB						

Mesembryanthemum pellitum *Friedr.*

MESEMBRYANTHEMACEAE

COMMON NAMES:

Slaai

HERBARIUM SPECIMEN:

Fresh

IDENTIFICATION:

N Jürgens

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		x

PART(S) USED:

leaves
fresh/dried

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Fleshy leaves and stems during the winter months and the dry sticks during the summer months.

USES & PREPARATION:
To remove the hair from animal skins, the leaves are beaten to a pulp and then smeared onto the hairy side of the skin. The skin is then carefully covered or even buried in the ground. After a few days it is dug up, and the hair and leaf mixture is wiped off.

The dried leaves were often burnt to ash, and then kept for use as kindling when an iron was used to start a fire. The spark caused by hitting the iron against a rock would set the ash alight.

When the dried plant is used as kindling it is believed that there will be fog the following morning.

DISTRIBUTION:

Grid references

2615CB	2615CD	2715BC	2716DB	2816BB	2816DB	2817AC	3218AB

Mesembryanthemum squamulosum *(L.Bol.) L.Bol.*

MESEMBRYANTHEMACEAE

COMMON NAMES:

Olifantsoutslaai

HERBARIUM SPECIMEN :

(fresh)

IDENTIFICATION:

N Jürgens

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		x

PART(S) USED:

leaves
fresh/dried

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Large soft leaves which break easily.

USES & PREPARATION:
To remove the hair from animal skins, the leaves are beaten to a pulp and then smeared onto the hairy side of the skin. The skin is then carefully covered or even buried in the ground. After a few days it is dug up, and the hair and leaf mixture is wiped off.

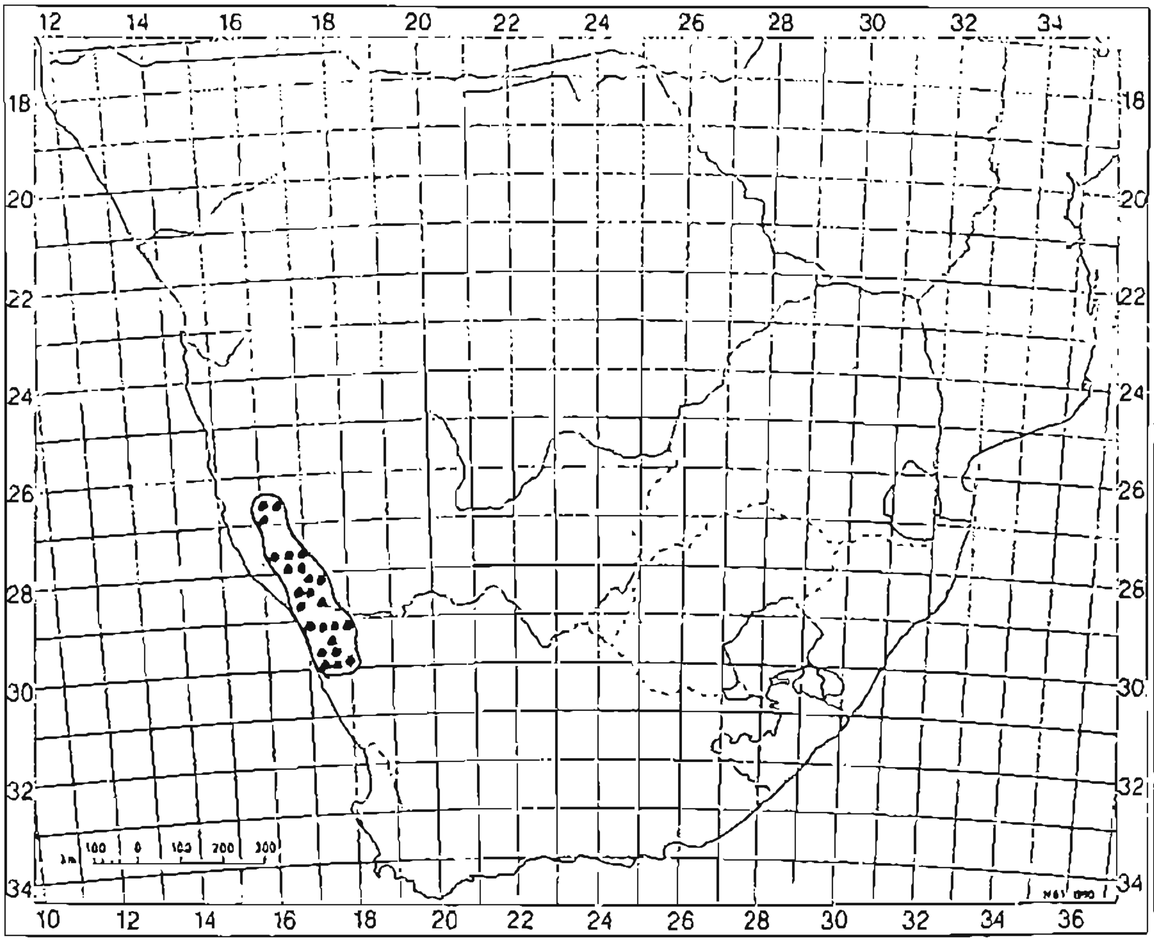
The dried leaves were often burnt to ash, and then kept for use as kindling when an iron was used to start a fire. The spark caused by hitting the iron against a rock would set the ash alight.

Used by the Bushmen for cleaning their hands after cutting up carcasses (C A Smith:1966).

GENERAL:
One inevitably gets wet when walking through a field of this plant (E van Jaarsveld: pers comm).

DISTRIBUTION:
North eastern Namibia and Northern Namaqualand, very common between Kuboes and Lekkersing after good rains (E van Jaarsveld: pers comm).

Distribution



Grid references

2616CA	2716BA	2816BD	2817AD	2817CC	2917BA	2917BD
2616CB	2716DC	2817AA	2817CA	2817CD	2917BB	2917DB
2715BC	2716DD	2817AC	2817CB	2916BD		

Microloma calycinum *E. Mey.* ssp. calycinum

ASCLEPIADACEAE

COMMON NAMES: Bokhoring

HERBARIUM SPECIMEN: F Archer 136

IDENTIFICATION:

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

pods

SEASON COLLECTED:

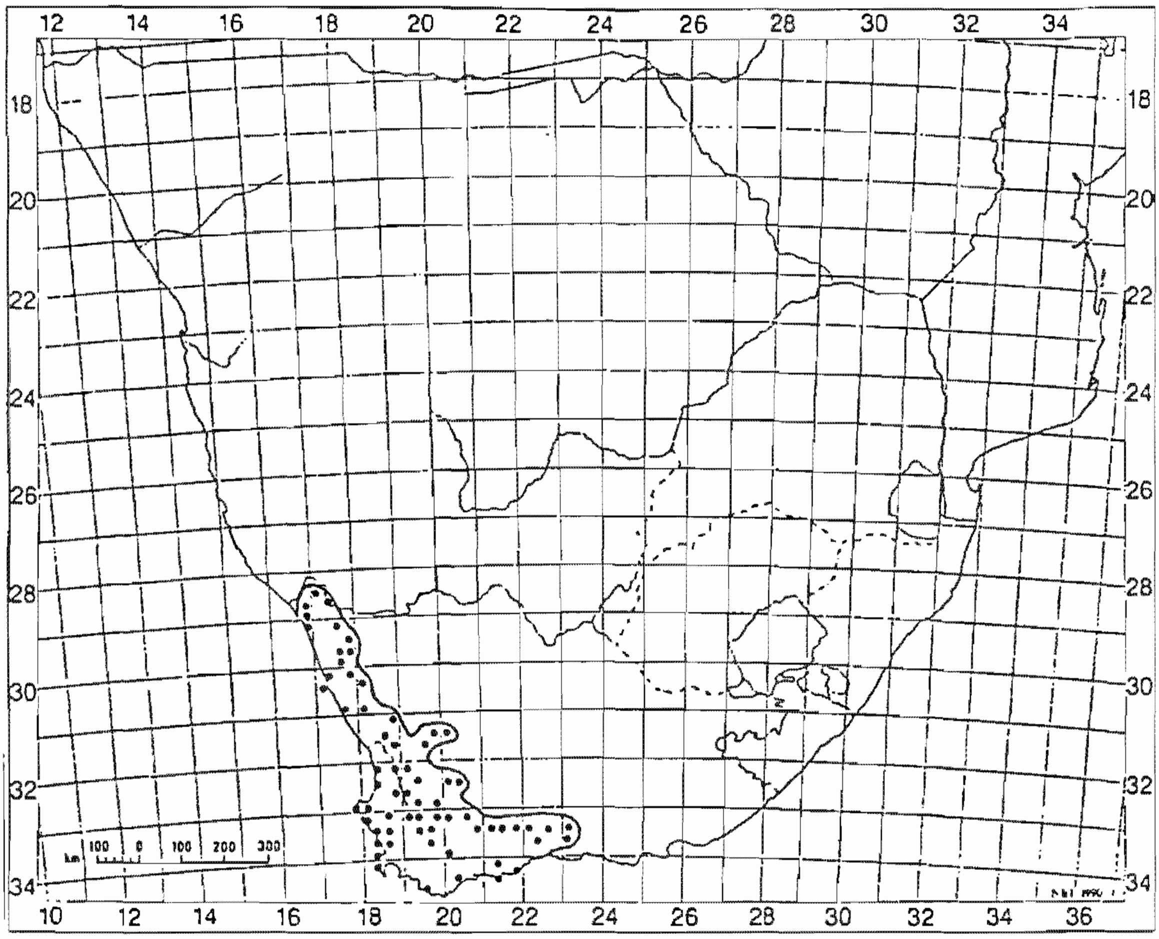
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x				

RECOGNISED BY:
Bright red flowers.

USES & PREPARATION:
The pods are eaten raw when young. As they grow older they become fibrous and although they retain their sweet taste, they become unpalatable.

DISTRIBUTION:
Found in the stony hills of Namaqualand and also in Namibia.

Distribution



Grid references

2817CA	3017BC	3119BD	3219AA	3318CD	3319DB	3322DA	3420AD
2817CB	3017DC	3119DA	3219AB	3318DA	3319DD	3325DC	3420CA
2917BC	3018CA	3120CC	3219AC	3318DB	3320CC	3418AB	3421AB
2917DA	3018CC	3218AD	3220CA	3318DC	3320CD	3418AD	3421AD
2917DB	3118AB	3218BA	3317BB	3318DD	3320DD	3418BA	
2917DC	3118CB	3218BB	3318AA	3319AA	3321CA	3418BB	
2918CA	3118DB	3218CB	3318AB	3319BC	3321CB	3419AB	
2919AA	3118DC	3218DA	3318AD	3319BD	3322CA	3420AA	
3017BB	3119BC	3218DD	3318BC	3319DA	3322CB	3420AB	

Microloma sagittatum *(L.) R.* ssp. sagittatum

ASCLEPIADACEAE

COMMON NAMES:

Bokhoring

HERBARIUM SPECIMEN:

F Archer 158

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

pods

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x				

RECOGNISED BY:
Twining stem and pink flowers.

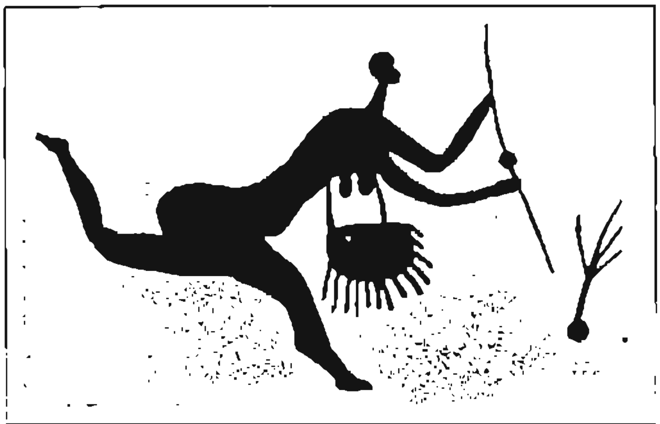
USES & PREPARATION:
The pods are eaten raw when young. As they grow older the pods become very fibrous and unpalatable.

DISTRIBUTION:
Clanwilliam to the Peninsula, Worcester, Riversdale and in Namaqualand (Bond & Goldblatt:1984).

NUTRIENT ANALYSIS:
Refer to Table in Appendix.

Grid references

2917DB	3118DB	3218BD	3318AD	3318DD	3319DD	3420AA
2917DD	3118DC	3218DB	3318BA	3319AA	3418AB	3420AD
3017BB	3119AC	3218DC	3318BC	3319CB	3419AA	3420BA
3017DC	3119BC	3219AA	3318CB	3319CC	3419AD	3420BC
3018CC	3217DD	3219AC	3318CD	3319CD	3419BA	3420CB
3118DA	32I8AB	3318AB	3318DC	3319DC	3419DB	3421AD

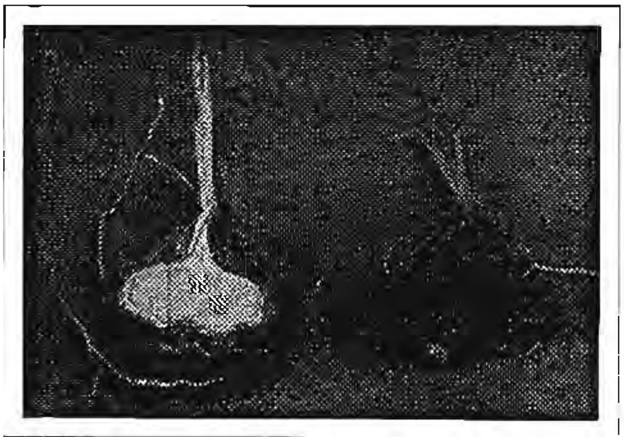


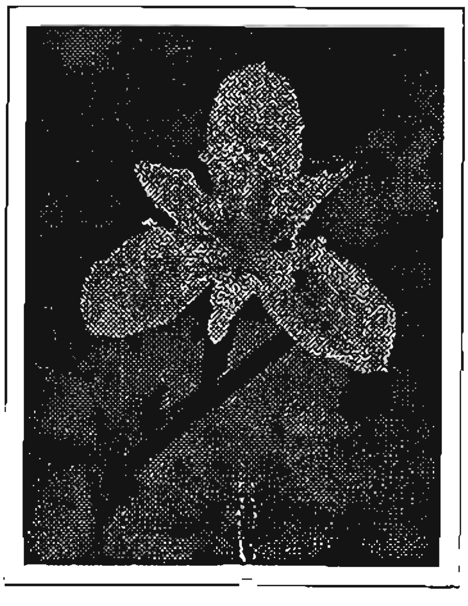
A San rock painting depicting a woman collecting bulbous plants

Veld & Flora vol 68 : 2

Corm of Moraea fugax

Fiona Archer





Moraea fugax flower

Namaqualand and Clanwilliam

Moraea fugax *(DelaRoche) Jacq.* ssp. fugax

IRIDACEAE

COMMON NAMES:

Sanduintjie / Duinuintjie

HERBARIUM SPECIMEN:

F Archer 162

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
	x					

PART(S) USED:

corm

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
						x	x	x	x	(x)	

RECOGNISED BY:
Long grass-like leaf. The flowers are white, blue or yellow, strongly scented. There is usually only one flower open at a time (Le Roux & Schelpe: 1988).

USES & PREPARATION:
This was described by inhabitants of the Richtersveld as one of the major food supplies in earlier years. Pastoralists and their families would travel to the areas where the plant is abundant to harvest the resource.

The corm is roasted in the fire, or boiled in milk after the tunic has been removed.

Watt & Breyer-Brandwijk comment on it as tasting of boiled chestnuts (Fox & Norwood Young: 1982).

GENERAL:
Abundant and widespread in sandy areas. Nutrient analysis show that the corm is nutritious and that it has a low moisture content.

DISTRIBUTION:
Southern Cape to Namaqualand frequently in sandy locations (Goldblatt: 1976).

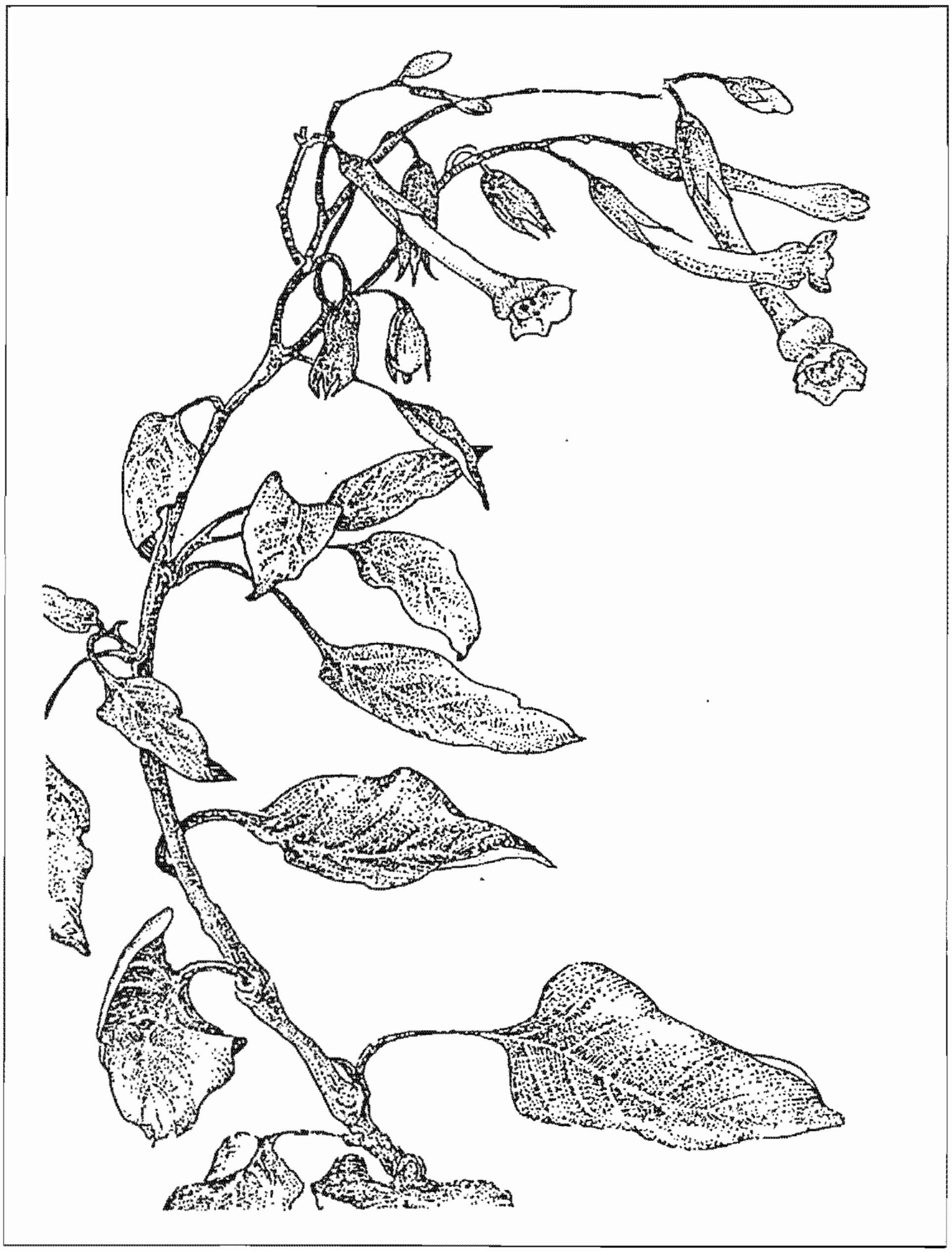
NUTRIENT ANALYSIS:
Refer to Table in Appendix.

Grid references

2224DA	2431DC	2727CA	2824DB	3017BC	3122DC	3320CA	3326AC
2229AB	2525AB	2816CB	2826CD	3017DB	3125AC	3320CC	3326BA
2230AC	2526CB	2816DA	2826DC	3018CA	3125BC	3321BC	3326BC
2327AD	2527BA	2816DD	2917DD	3024BA	3127CC	3322AA	3326CB
2329CD	2527DD	2817AA	2920BB	3025DA	3129DB	3322DA	3327AC
2429BB	2528CA	2817AC	2922DB	3027AC	3218BB	3323AD	3418AB
2429BD	2528CB	2819DA	2924BB	3027CC	3219AC	3324CA	3420AB
2429CD	2531CC	2820DC	2925CB	3118CD	3225BD	3325BB	3421AB
2430BC	2726AC	2824BA	2926AA	3118DA	3228CA	3325CD	3422AA
2431BB	2726BC	2824DA	2927BC	3118DB	3318CD	3325DC	3423AB

Nicotiana glauca

Heil- und Giftpflanzen in Südwestafrika



COMMON NAMES:

Tobacco Tree / Jantwak

HERBARIUM SPECIMEN:

F Archer 127

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
		x		x		

PART(S) USED:

		leaves		young branches		

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
The big grey-green leathery leaves and yellow flowers in loose groups at the ends of the branches.

USES & PREPARATION:
Raw leaves are applied as a plaster to burn wounds and cuts. It is also used in conjunction with an (unidentified) fungus for burnwounds.

Branches are bent and used as a framework for houses, especially next to the Orange River. These are usually very temporary structures.

Warm leaves are placed in shoes to relieve sore and tired feet and applied to the throat and forehead to alleviate pain. A cooked leaf is placed on pimples and sores to extract pus. When children have mumps, warm leaves are applied to the swollen cheeks with a compress to reduce swelling. A very popular medicine for burnwounds. (Watt & Breyer-Brandwijk:1962)

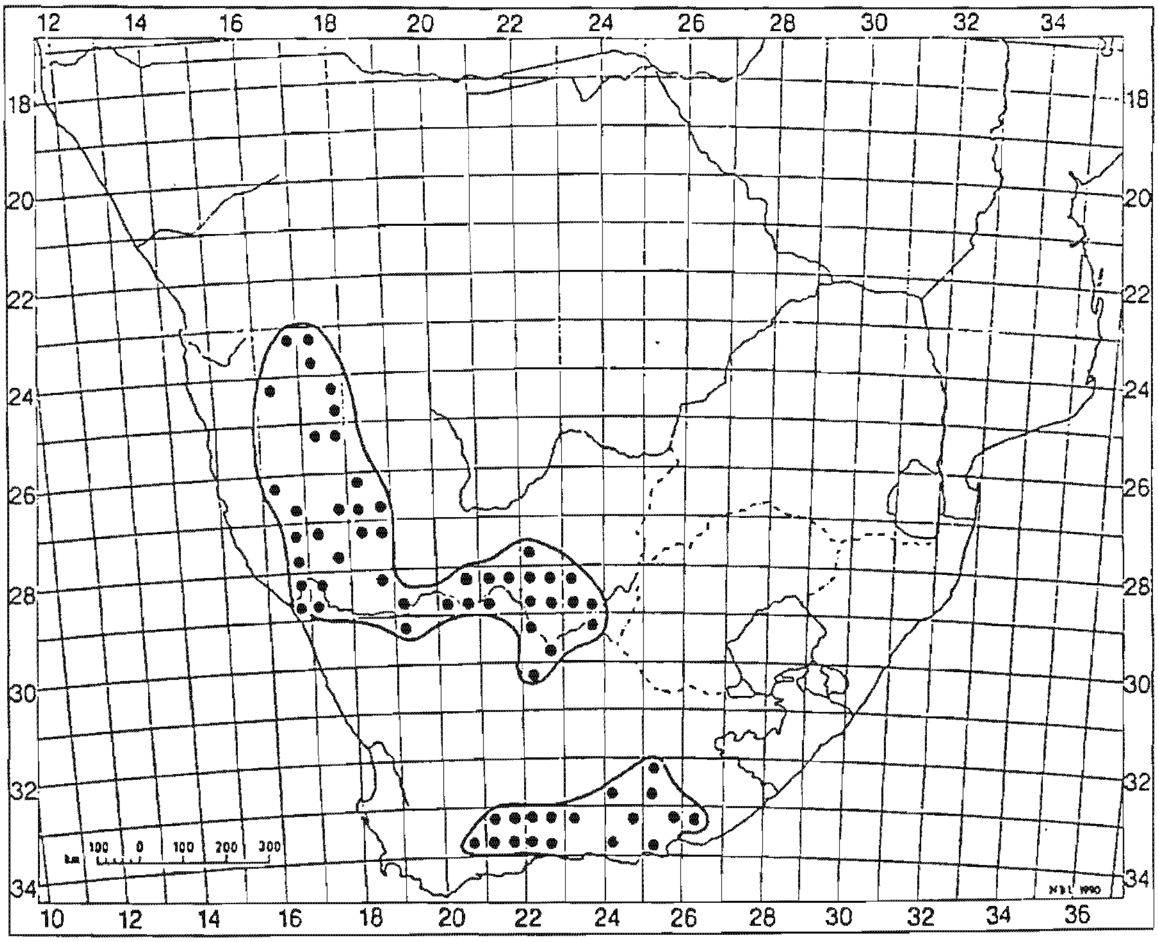
Branches are also used for house construction, kraals and fences by the Topnaar in Namibia. (Van den Eynden:1992)

GENERAL:
Although *N. glauca* is generally regarded as being indigenous to SA, it has really been introduced from South America, probalby as an ornamental plant, and is now wild in some parts. The significance of tobacco lies in the widespread availability of material containing an extremely toxic principle and its extensive use in some form as a habit (Watt & Breyer-Brandwijk:1962).

DISTRIBUTION:
An exotic fast growing shrub from the Argentine, it is widespread in disturbed places.

Found throughout Namaqualand as well as in other drier parts of the Cape Province, especially along riverbeds (Le Roux & Schelpe:1988)

Distribution

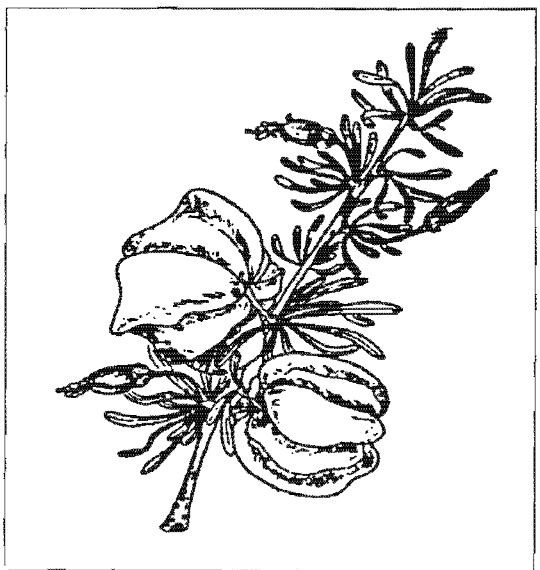


Grid references

2316BD	2528CC	2718BA	2817CD	2822BC	3224CD	3321DA	3324BD
2317AC	2616AB	2718BB	2818BD	2822BD	3225AC	3321DC	3324CB
2416AA	2617DD	2718BD	2819CC	2823AC	3225CA	3322AC	3325BB
2416AB	2618AA	2718CA	2819DA	2823CC	3225CB	3322AD	3325BC
2417BD	2618AD	2816BD	2820BC	2823DC	3318CD	3322BC	3325CA
2417DA	2618DC	2816DB	2820CB	2919AB	3320DC	3322CA	3325CB
2417DB	2715DC	2817AC	2820DA	2919BA	3321AD	3322CB	3326AA
2517BB	2716DD	2817AD	2820DC	2922DA	3321BA	3322CC	3418AD
2522DB	2717AD	2817CA	2821AC	2923BB	3321BC	3322DA	
2528CA	2717DA	2817CB	2821CA	3022AD	3321CA	3323AB	

Leaf and fruit detail of Nymania capensis

National List of Indigenous Trees



Nymania capensis *(Thunb.) Lindb.*

MELIACEAE

COMMON NAMES:

Ystervarkbos / Kankerbos / Klapperbos / Chinese lanterns

HERBARIUM SPECIMEN:

F Archer 172, 359, 383

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
		x		x		

PART(S) USED:

leaves branches

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x	x	x		

RECOGNISED BY:
This erect shrub has conspicuous red "lantern-like" fruits.

USES & PREPARATION:
An infusion of the leaves is used in the Richtersveld as a medicine against influenza.

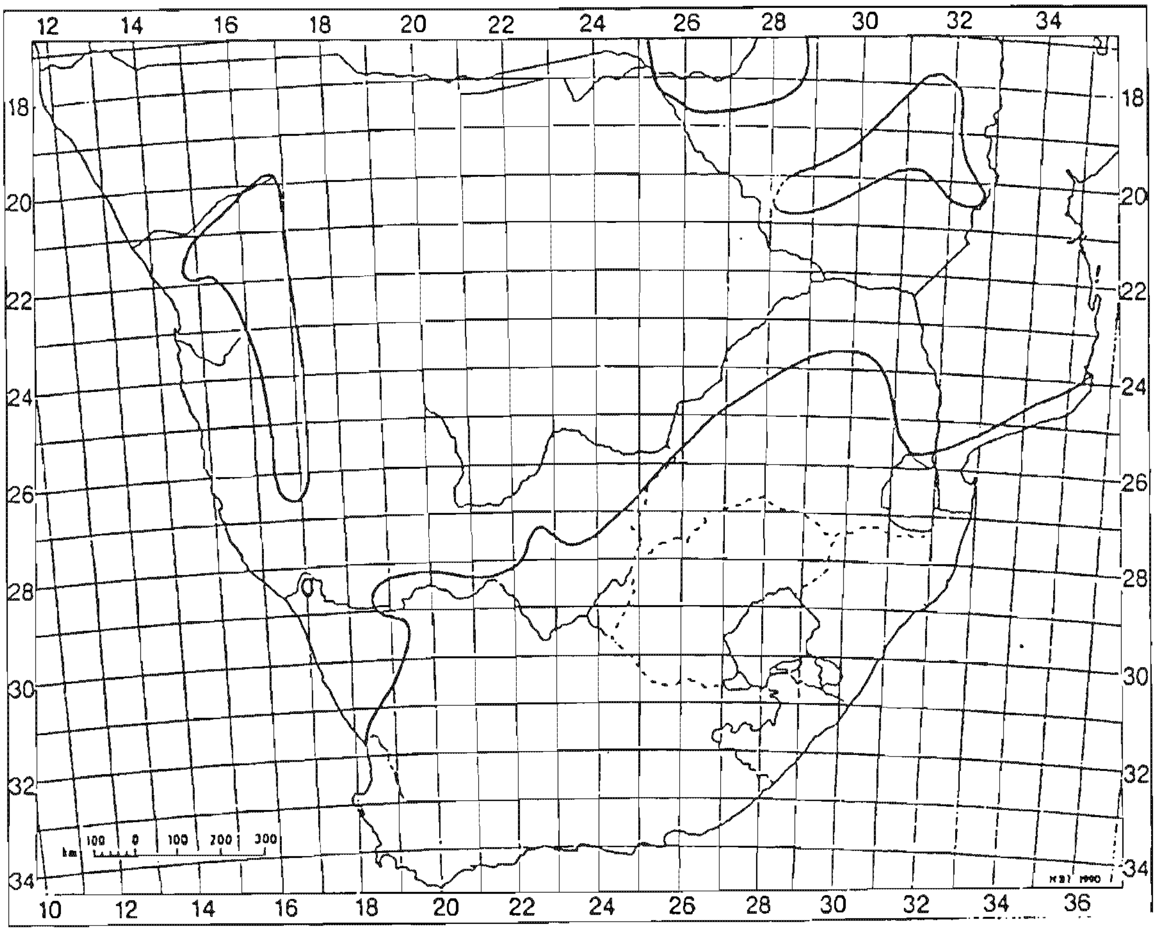
Nymania capenis was used by the European and the Khoi for the treatment of convulsions (Watt & Breyer-Brandwijk:1962).

Considered a palatable plant.

GENERAL:
It has good potential as a garden plant in semi-arid to arid regions (E van Jaarsveld: pers comm).

DISTRIBUTION:
It is confined to dry water courses and rocky hillsides (E van Jaarsveld: pers comm). Little Karroo and Uitenhage as well as parts in the Eastern Cape, Namaqualand and Namibia (Bond & Goldblatt:1984.

Distribution



Grid references

1917CB
1918CA
2114BC
2217CA
2229DD
2230DA
2316AD
2326BA
2328BB
2329AA
2329BB
2329DD
2330AA
2330CA
2416AA
2416AB
2416CB
2425DB
2427BC
2427DA
2428AA
2428BC
2428CD
2429AA
2429AD
2429DD
2430AA
2430AC
2430AD
2430CA
2430CC
2430DB
2430DC
2523CB
2525AB
2525BA
2525BD
2526cA
2526CB
2526DA
2527AA
2527AC
2527BA
2527CC
2527CD
2527DA
2527DB
2527DC
2527DD
2528CA
2528CB
2529AC
2529AD
2530BD
2530CB
2531AA
2531AC
2531AD
2531CB
2531CC
2616CB
2626AA
2627AA
2627AB
2627AD
2627BA
2627BB
2627CD
2628AA
2628CA
2631AA
2631AD
2631BD
2631CA
2631CB
2631CD
2631DA
2631DC
2632CA
2723AB
2723AD
2724CD
2724DA
2725BB
2726CA
2731AA
2731BD
2731CA
2732AB
2732CD
2817AC
2823AC
2823BC
2823CC
2823CD
2823DC
2824AA
2824AB
2824BA
2824DA
2824DB
2826BC
2826CD
2827AC
2827AD
2827DC
2827DD
2828AA
2828CC
2828DB
2829DD
2830CA
2830CB
2830CC
2830CD
2831AA
2831BD
2831CA
2831DC
2832AA
2832AB
2922CB
2925BA
2925CB
2926AA
2926AB
2927BB
2927BC
2927CD
2930AD
2931AA
2931CC
3025AC
3026AC
3026BB
3026CA
3026DA
3027BC
3030CA
3118CD
3118DB
3118DD
3119AC
3119CA
3123AC
3125AB
3125AC
3126DC
3126DD
3127AB
3218BA
3218BD
3219AC
3219CA
3221BA
3224BC
3225BA
3225DA
3225DC
3225DD
3226DD
3227AC
3227CD
3227DB
3318AA
3318CB
3318CD
3318DA
3318DB
3318DC
3318DD
3319AA
3319AC
3319AD
3319BC
3319CC
3319DA
3319DD
3321DA
3322AC
3322BC
3322CC
3323CA
3323DB
3323DD
3324CA
3324CB
3324DA
3324DD
3325BA
3325BD
3325CA
3325CB
3325CD
3326AC
3326AD
3326BC
3326BD
3326CB
3326DA
3326DB
3327BA
3418AB
3418BD
3420AB
3420AD
3420BC
3420CC
3421AA
3421AD
3421BA
3421BC
3423AB

Olea europaea *L.* **ssp. africana** *(Mill.) P.S. Greeen*

OLEACEAE

COMMON NAMES:

Wild Olive / Swartolienhout / Olien

HERBARIUM SPECIMEN:

None

IDENTIFICATION:

N Jürgens

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x				x		

PART(S) USED:

bark & fruit	wood

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
The round shape and black berries.

USES & PREPARATION:
The bark is used to brew beer. First the black bark is scraped off until the white stem is exposed. Then the fine white bark is scraped off, pounded and dried. The dried mixture is put in water for two days. Then it is strained. This is repeated three times. (To get rid of the bitter taste.) The de-bittering process takes about eight days. Then water and honey are added to this mixture.

In the Richtersveld (and Namaqualand) the wood from this tree is seen as particularly useful for making walking sticks, as the grain of the wood is beautiful and the natural knobs are utilised at the top end, where they form the "handle". Some people presently use the wood for wood ornaments.

In spite of the fact that the wood does not have a strong scent, it is supposed to bring good fortune. It also has the power to weaken the strength of heavy thunderstorms (Hoff 1990).

The commercial olive has been grafted on to wild stock with success, (Palgrave: 1983) and the wild fruits, although bitter, are eaten by some tribes (Fox & Norwood Young: 1982).

Africans drink an infusion of fresh bark to relieve colic; they use an infusion of the leaves as an eye lotion for both humans and animals, while a decoction of the leaves provides a gargle for sore throats (Palgrave: 1983).

The fruit is a source of olive oil which is an important edible oil, used also as a mild purgative. The fruit does not often reach maturity and was used by the early Cape settlers as an astringent in diarrhoea. (Watt & Breyer-Brandwijk: 1962)

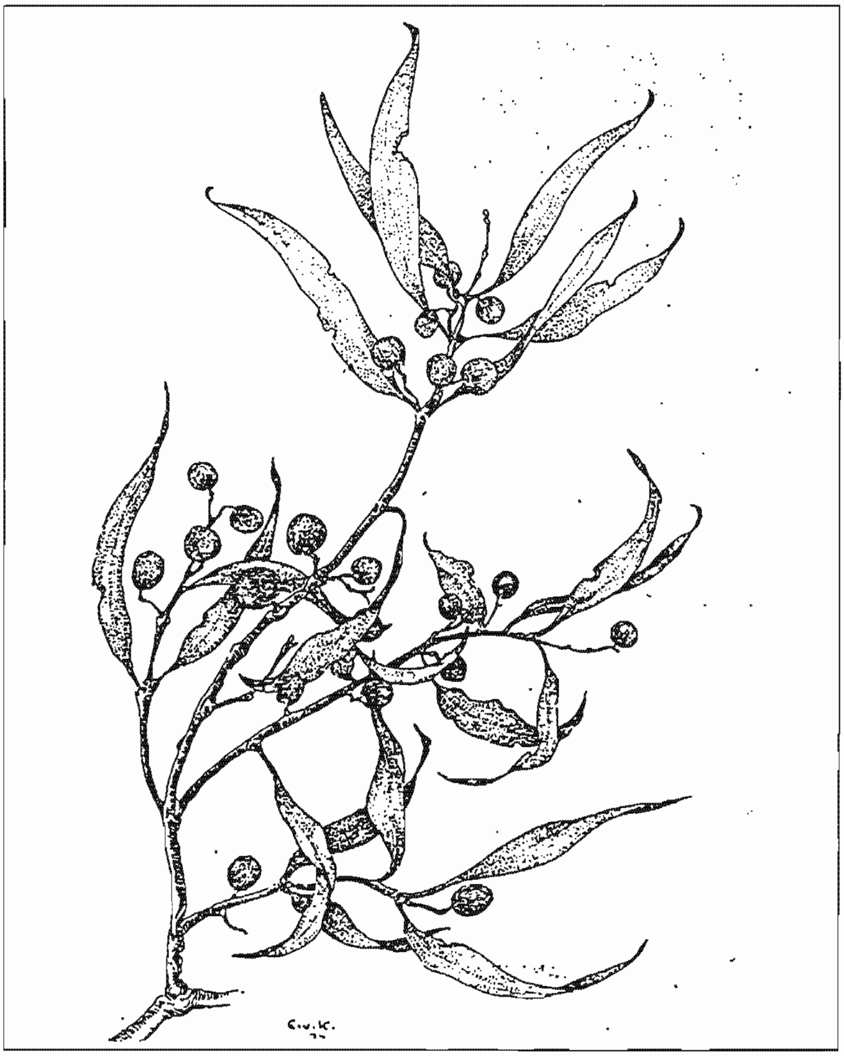
Wood is suitable for furniture and fence posts and provides a pleasant smelling fuel (Palgrave: 1983).

The Tswana use a large bunch of leaves twisted into a wad to wash with and cleanse the body of impurities (Roberts:1990).

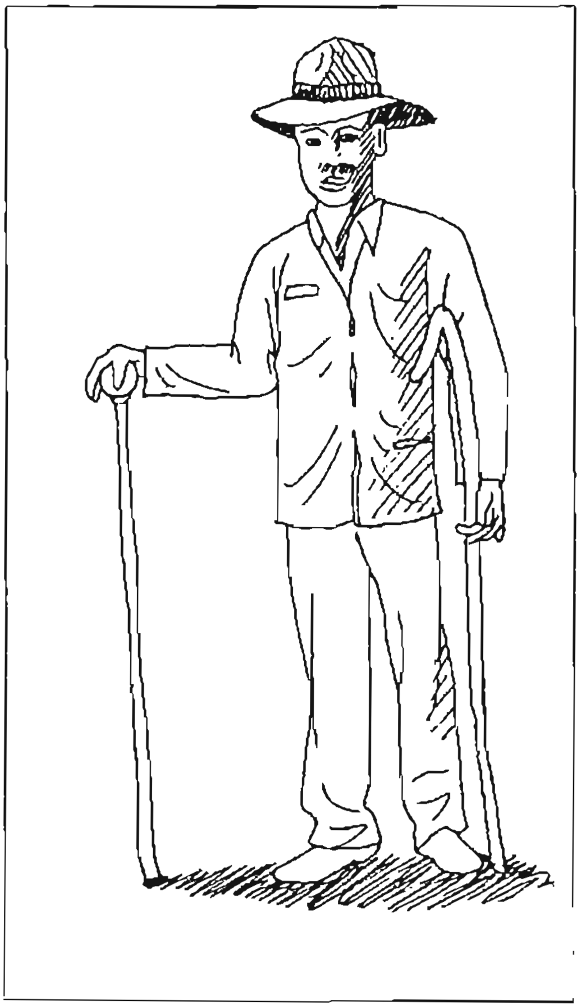
GENERAL:
This tree was widely used in the copper mining process in Namaqualand. Today the tree would be considered scarce.

Olea europaea ssp. africana

Heil- und Giftpflanzen in Südwestafrika



DISTRIBUTION:
Throughout SA, common in arid and semi-arid parts of the Karoo and north western Cape and northwards through east Tropical Africa to Eritrea.



In the Richtersveld the wood is used for making walking sticks, as the grain is beautiful and the natural knobs are utilised at the top end, where they form the "handle".

Tony Hül

Grid references

2917DB	2918BB						

Orbea namaquensis *(N.E. Brown) Leach*

ASCLEPIADACEAE

COMMON NAMES:

Gunu

HERBARIUM SPECIMEN:

F Archer 150. s.n.

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

fleshy stems, flower buds, flowers

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
				x	x	x	x	x	x		

RECOGNISED BY:
By large mottled fleshy stems.

USES & PREPARATION:
The stems, buds and flowers are eaten raw.

GENERAL:
This is seen as the most tasty member of the STAPELIACEAE in the Richtersveld. It is easily propagated and popular among the inhabitants of the Richtersveld - who still collect it regularly, during the season.

DISTRIBUTION:
Northern Namaqualand and southern Namibia on rocky slopes and flats (E van Jaarsveld: pers comm).

Oxalis copiosa *F.Bol.*

OXALIDACEAE

COMMON NAMES:

Suring

HERBARIUM SPECIMEN:

F Archer 134

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x	x			x		

PART(S) USED:

leaves, whole plant	whole plant					

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x				

USES & PREPARATION:
The leaves are boiled and this pulp is mixed with milk and warmed. The pulp is then removed (by hand) and the sourish milk is drunk, or eaten like a porridge.

This plant was used by the early Cape settlers in preparing a good and serviceable salt of wood sorrel, while the raw bulb was used as an anthelmintic (anti-worm). The plant has been used as a diuretic.

Grid references

2631CA	2917CD	3018AC	3119BD	3218DC	3318DD	3322DB	3420BC
2816BD	2917DB	3018BC	3119CA	3219AC	3319AD	3418AB	3421AD
2817AC	2917DC	3018CA	3119CD	3220DC	3319BC	3418AD	3422AA
2817CB	2917DD	3118DB	3120DC	3221BB	3319DA	3419AB	
2818CD	3017BB	3118DC	3218AB	3318BB	3321CA	3419AD	
2917BA	3017BD	3118DD	3218BB	3318CD	3321CC	3419CB	
2917BC	3018AA	3119AC	3218DB	3318DB	3322AD	3420AD	

Oxalis obtusa *Jacq.*

OXALIDACEAE

COMMON NAMES:

Suring

HERBARIUM SPECIMEN:

F Archer 159

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x	x					

PART(S) USED:

leaves corms

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x				

RECOGNISED BY:
Yellow or red flowers with a dark centre.

USES & PREPARATION:
The leaves are soaked in milk overnight; the resultant mixture is squeezed into a pulp which is then removed. The remainder is eaten as a porridge.

The corms are also eaten raw.

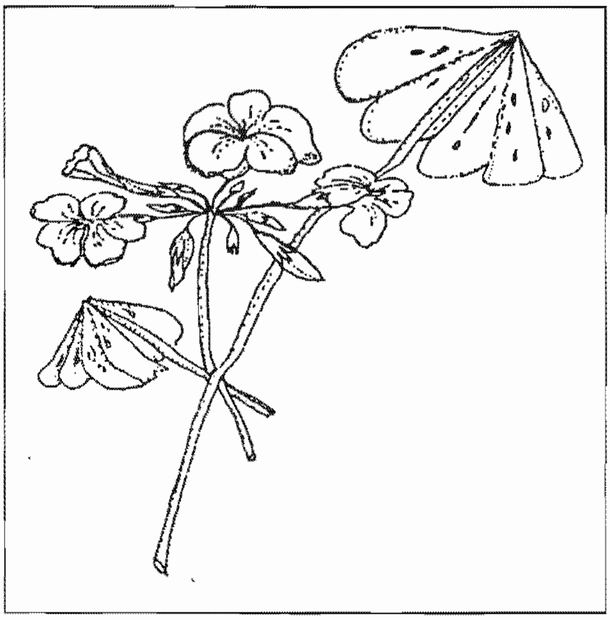
DISTRIBUTION:
Found in sandy places throughout Namaqualand as well as throughout other winter rainfall areas (Le Roux & Schelpe: 1988).

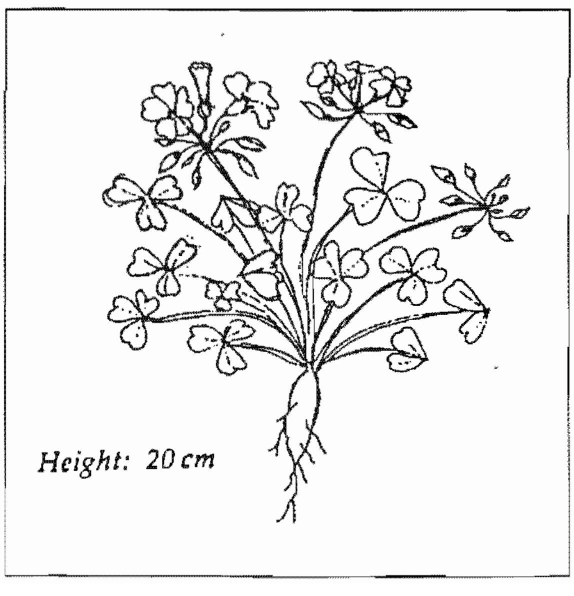
Grid references

2616CB	2917BD	3019CD	3118DC	3120CA	3318AB	3319DD
2816DB	2917CC	3118AB	3118DD	3218AB	3318DA	3325BB
2816DD	2917DB	3118CC	3119CC	3218BB	3318DC	3419BD
2916BD	3017AD	3118DA	3119DB	3221CB	3319CB	3421AD

Oxalis pes-caprae

Indigenous Healing Plants





Oxalis pes-caprae *L.* var.

OXALIDACEAE

COMMON NAMES:

Langbeensuring / Geelsuring / Wood sorrel

HERBARIUM SPECIMEN:

F Archer s.n.

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x	x	x				

PART(S) USED:

leaves	roots	leaves				

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x	x			

RECOGNISED BY:
Tall yellow flower.

USES & PREPARATION:
The leaves are soaked in milk overnight; the resultant mixture is squeezed into a pulp and the pulp is then removed. The remainder is eaten as a porridge.

The roots are eaten raw.

The roots are eaten raw, fresh from the ground or boiled and served with milk ((Watt & Breyer-Brandwijk: 1962 in Fox & Norwood Young: 1982)).

The triangular, lobed leaves have a sour taste and are used as a salt substitute by both the Xhosa and the Zulu. The leaves make a soothing dressing on burns and scrapes, and leaves warmed in hot water can be applied as a poultice on boils, abscesses and suppurating sores. With its high oxalic content the plant was much prized in the treatment of scurvy, and the corms were taken on board the ships calling at the Cape to keep the sailors healthy (Roberts: 1990).

GENERAL:
Because of the acid taste of the leaves, the people in Namaquland prefer other Oxalis spp.

DISTRIBUTION:
Widespread in the western Cape and Namaqualand, naturalized in SW Australia and California.

Oxalis spp.

OXALIDACEAE

COMMON NAMES:

Kraaiuintjies

HERBARIUM SPECIMEN:

F Archer 140, 161, 185, 166, 137, 159, 220

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
	x					

PART(S) USED:

corms

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
						x	x	x			

RECOGNISED BY:
The clover-type leaves.

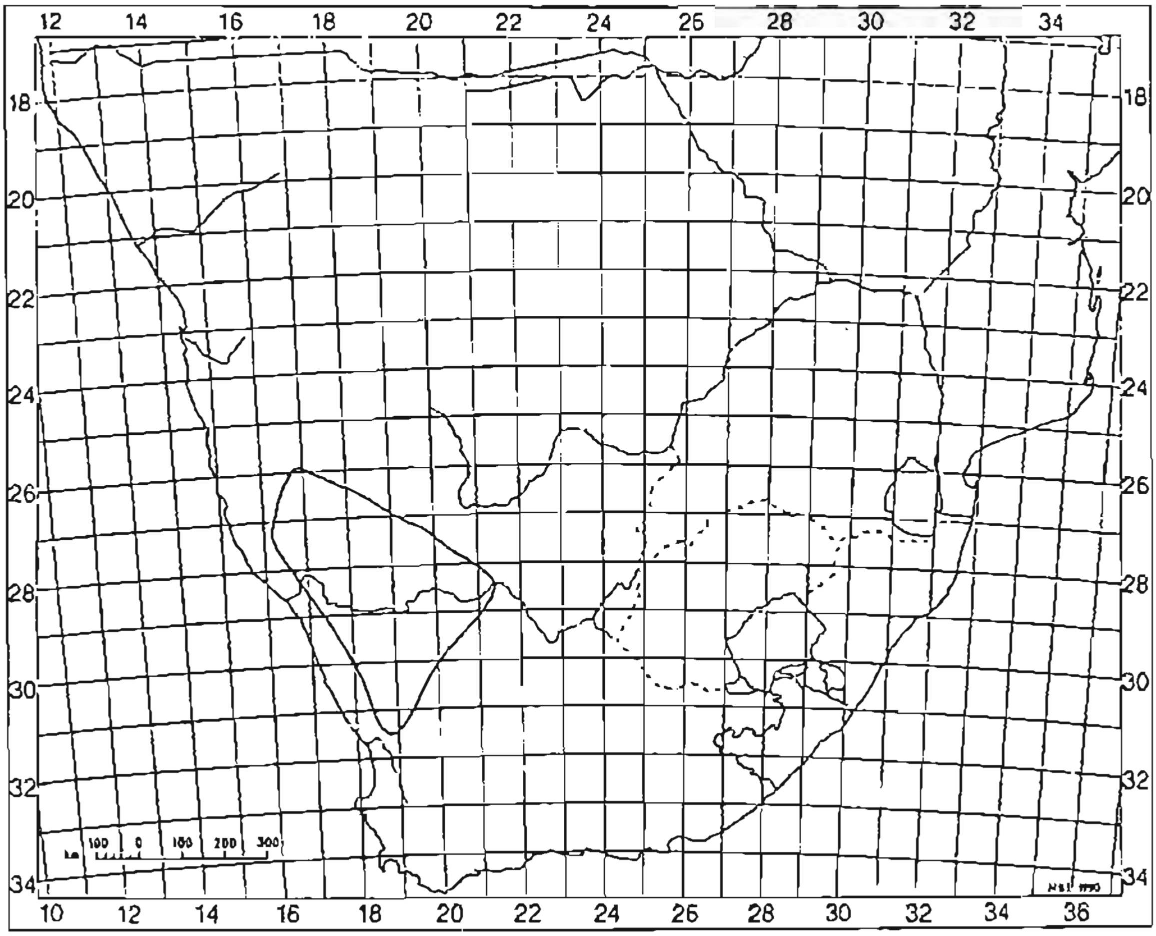
USES & PREPARATION:
The corms are roasted.

GENERAL:
This species grows abundantly - measurements were done in two places and the following results were obtained:

14 p. square metre
8 p. square metre

NUTRIENT ANALYSIS:
Refer to Table in Appendix.

Distribution

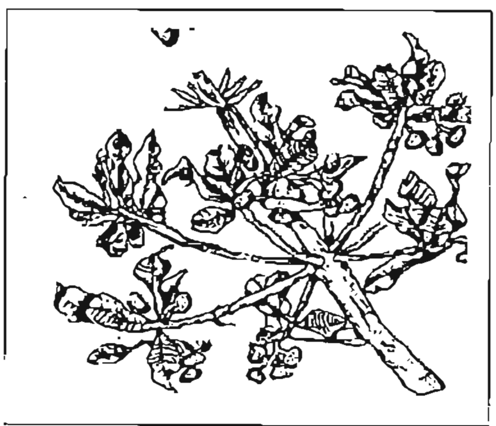


Grid references

2716DD	2817AC	2817CD	2917DA	3017BB	3018DA
2816BD	2817CA	2820CB	2917DB	3018AC	3218BB
2817AA	2817CC	2917BC	2918BB	3O18CA	3319DB

Ozoroa dispar

National List of Indigenous Trees



Ozoroa dispar *(Presl.) R. & A. Fernandes*

ANACARDIACEAE

COMMON NAMES:

!orrie / Namaqua resin tree / Namakwaharpuisboom

HERBARIUM SPECIMEN:

F Archer s.n.

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						x

PART(S) USED:

fruit

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:
Round shape, bright green leaves and small yellow to white flowers in sprays forming at the end of branches and kidney-shaped black fruits.

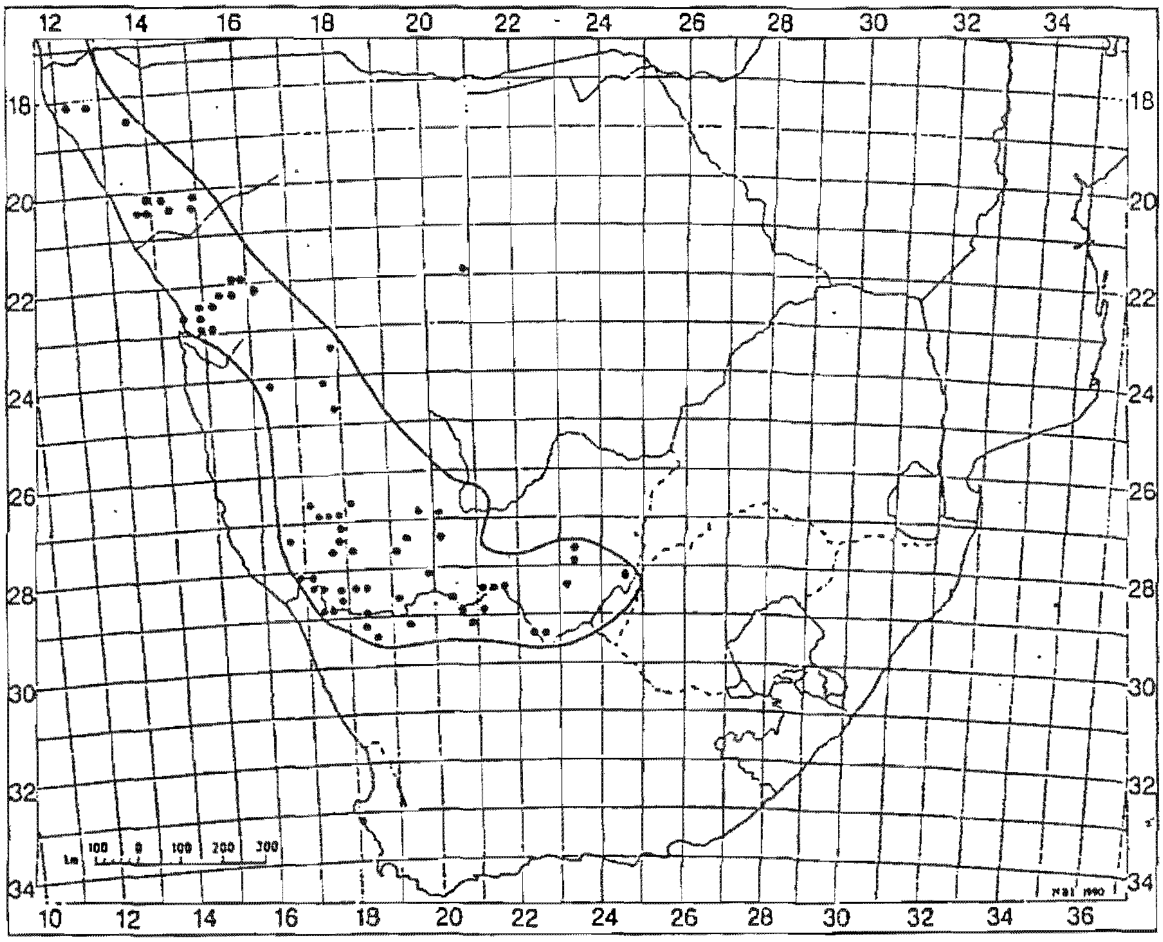
USES & PREPARATION:
The fruits are rarely eaten.

GENERAL:
With its bright green leaves it is very conspicious on the rocky Namibian hillsides.

DISTRIBUTION:
Southern Namibia, northern Cape and Botswana.

NUTRIENT ANALYSIS:
Refer to Table in Appendix.

Distribution



Grid references

2013BB	2115DD	2215BA	2417DB	2718CA	2818CD	2821BC	2920BB
2013BD	2120DD	2216AA	2617DD	2719AD	2819BB	2821CC	2922AD
2014AD	2214CB	2315AA	2618CA	2719CA	2820CB	2823AC	2922BC
2014BB	2214DB	2317BD	2619DC	2720AC	2820DC	2824BA	3418AD
2014BD	2214DD	2329BB	2620CC	2723CB	2821AC	2918AB	
2115DC	2215AC	2416AB	2717DA	2723CD	2821AD	2918BC	

Parkinsonia africana

National List of Indigenous Trees

Parkinsonia africana *Sond.*

FABACEAE

COMMON NAMES:

Lemoendoring / !xha / Peulboom / wild green-hair tree

HERBARIUM SPECIMEN:

F Archer 18

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x	x			x		

PART(S) USED:

seeds leaves	roots			wood		

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:
Spreading branches with long, narrow leaves, yellow flower and long reddish-brown pods.

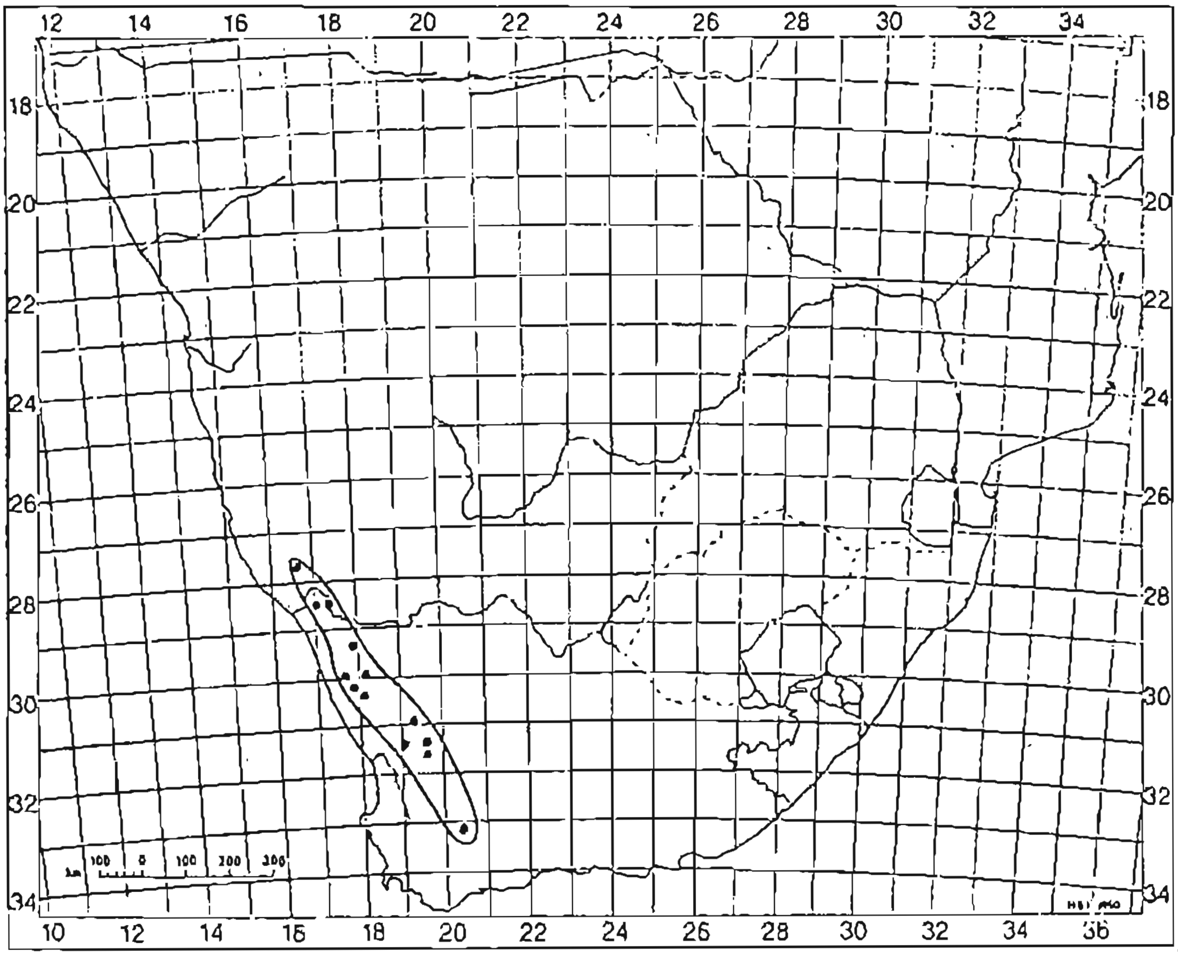
USES & PREPARATION:
In desert areas where so little grows that is edible, these trees are browsed on by animals (Palgrave: 1983).

The roasted and ground seeds are added to coffee to improve its taste.

The wood is used for pipes as it does not crack when hot (Van den Eynden: 1992).

DISTRIBUTION:
Widespread in northern Namaqualand, Bushmanland and Namibia occurring on sparsely vegetated sandy plains (E van Jaarsveld: pers comm).

Distribution

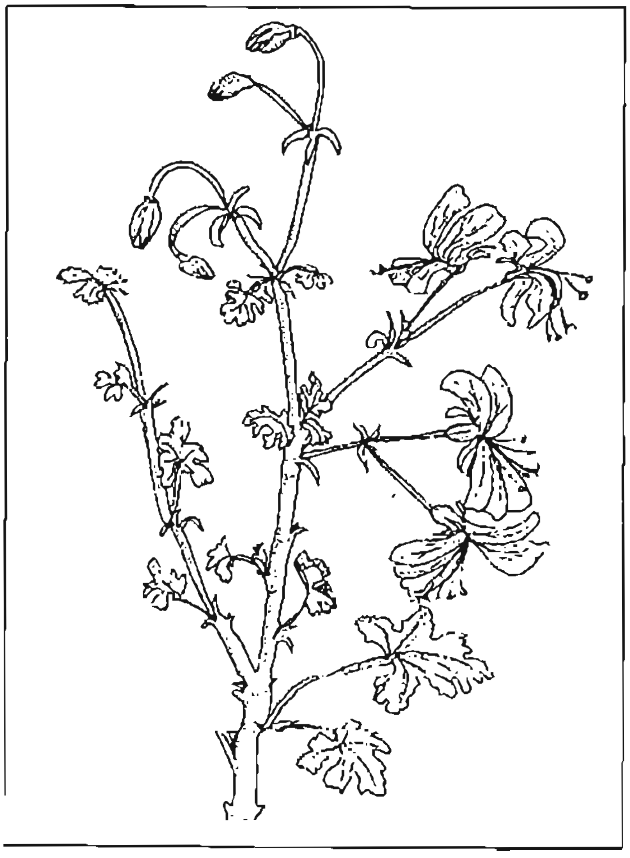


Grid references

2716DC	2917BA	3018DC	3119AC	3119BD	3319CB		

Pelargonium antidysentericum

Indigenous Healing Plants



Pelargonium antidysentericum *(Eckl. & Zeyh.) Kostel.*

GERANIACEAE

COMMON NAMES:

!namie / t'kami / t'nami(e) / namiewortel / Rabas / Rooistormwortel

HERBARIUM SPECIMEN:

Information supplied by Ernst van Jaarsveld

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
			x			

PART(S) USED:

caudex

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:
Shrubby spiny plant up to 1,5 m tall with swollen reddish caudex, covered with reddish-brown papery scales. Leaves aromatic, 3-lobed, kidney-shaped. Flowers small purplish-pink.

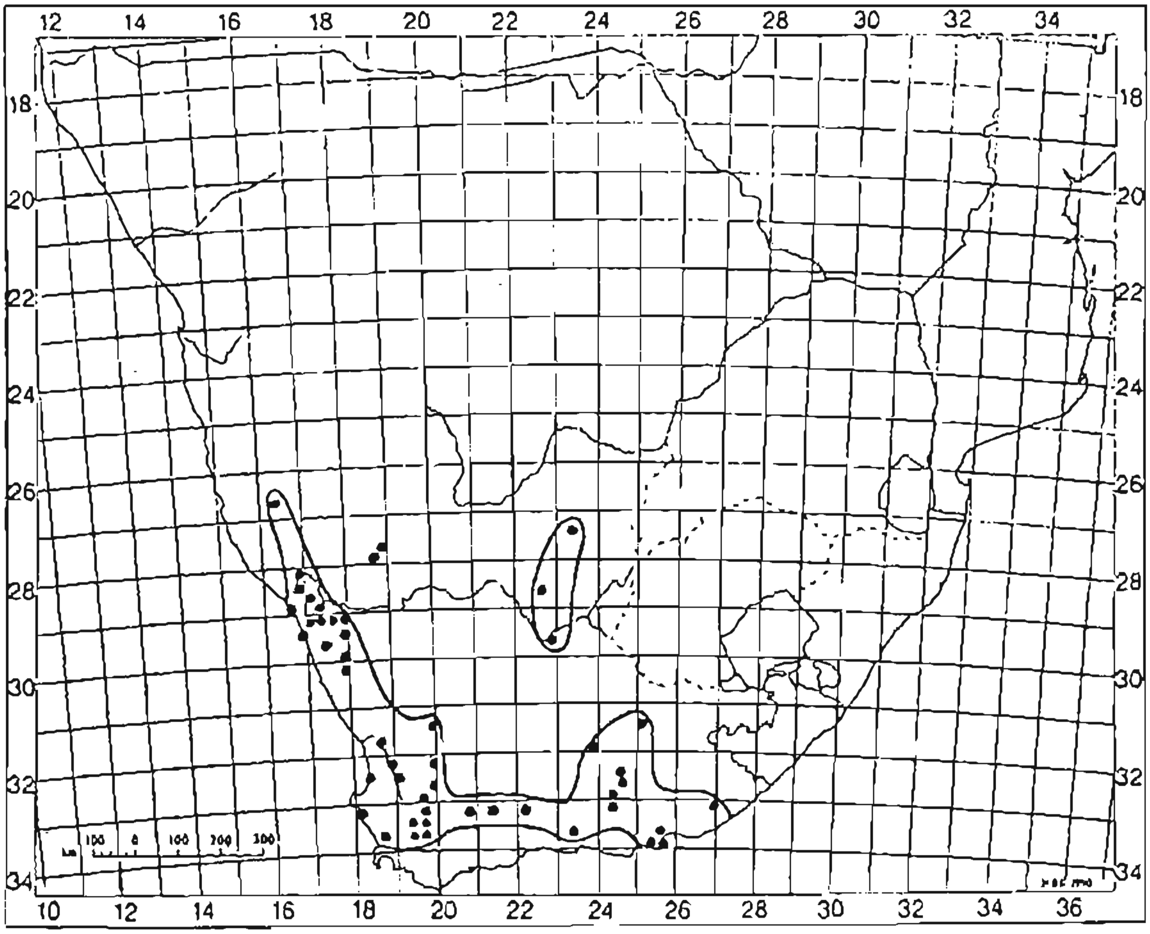
USES & PREPARATION:
The tubers are astringent and were boiled in milk.
According to C.A.Smith, the common name t'namie and its use as an antidysenteric was first recorded by the Ecklon & Zeyher (authors of this species).

The astringent tubers were boiled in milk and used as a remedy against dysentery, naemia and weaknesses. Repeated doses were given in the case of dysenteric fevers. It was used both by the Hottentot and Boere tribes (C A Smith 1966).

GENERAL:
Occasionally cultivated for ornamental purposes

DISTRIBUTION:
In the rocky mountainous terrain of Namaqualand. In the Richtersveld it is confined to the high mountain ranges. The main centre of distribution is Springbok. Occurs as far south as the Kamiesberg near Kamieskroon. Grows in a mountainous habitat where the rainfall is higher. (Van der Walt & Vorster 1981).

Distribution

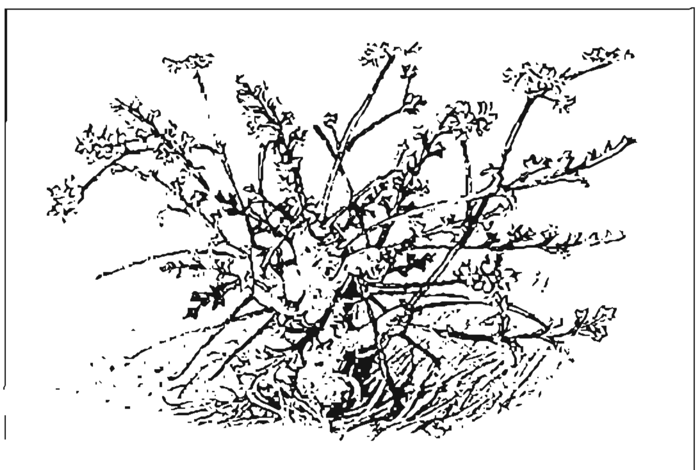


Grid references

2716DA	2816CB	2817CA	2918CC	3118DB	3219CA	3318AD
2716DC	2816DA	2917BD	3017BB	3119CA	3222DD	3320BB
2718DA	2816DD	2917CA	3118CC	3119CC	3223CA	
2816AD	2817AA	2918BB	3118DA	3218CC	3224DC	

Pelargonium carnosum

Pelargoniums of Southern Africa
Ellaphie Ward-Hillhorst



Pelargonium carnosum *(L.) L'Herit*

GERANIACEAE

COMMON NAMES:

Kanna

HERBARIUM SPECIMEN :

F Archer s.n.

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

new growth
fleshy stems

SEASON COLLECTED:

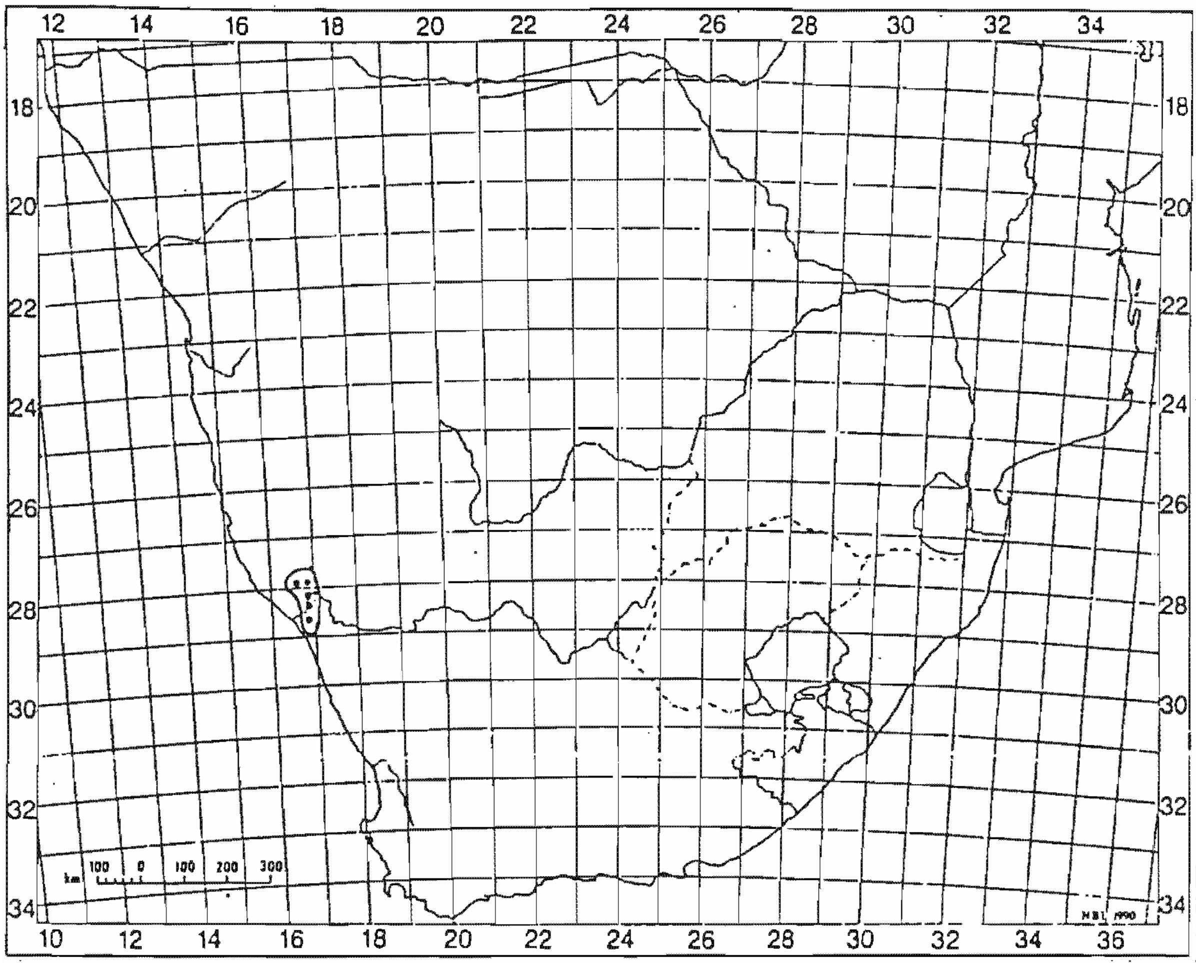
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
						x	x	x			

RECOGNISED BY:
Fleshy grey-green stems and aromatic leaves.

USES & PREPARATION:
The fleshy stems are peeled and roasted.

DISTRIBUTION:
Occurs in the southern parts of Namibia, Richtersveld, Namaqualand, Karoo, S W Cape and dry areas in the Eastern Province. Confined to xerophytic habitats, grows in sandy soil (Van der Walt 1977 : vol 1).

Distribution

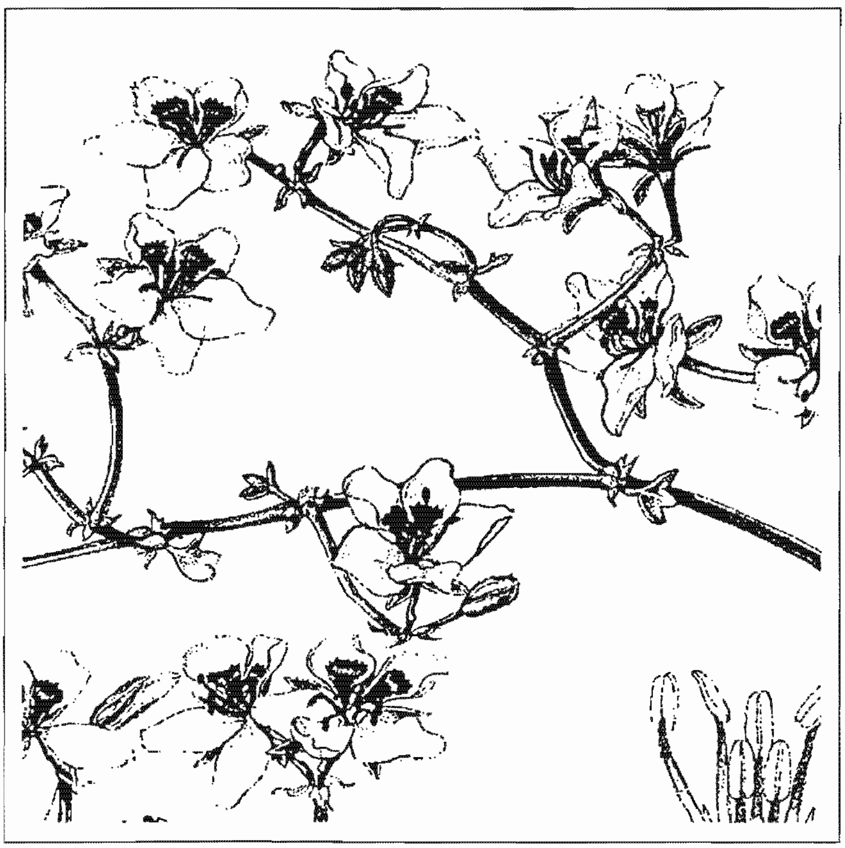


Grid references

2816BD							

Pelargonium tenuicaule

Pelargoniums of Southern Africa - Ellaphie Ward-Hillhorst



Pelargonium tenuicaule *Knuth*

GERANIACEAE

COMMON NAMES: | **HERBARIUM SPECIMEN:**

Suring

F Archer 231

IDENTIFICATION:

U S

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

leaves

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:
Thin spreading branches, breaking easily. Attractive white flowers with purple spots and the base of the two upper petals.

USES & PREPARATION:
The leaves are eaten raw.

GENERAL:
A graceful floriferous species easily propagated, soon developing tuberous roots.

DISTRIBUTION:
Confined to the central Richtersveld mountain range and the Rosh Pina district of southern Namibia.

This species is know from a restricted area along both sides of the lower reaches of the Orange River. The plants grow on rocky slopes, cliff faces and also on flats, among rocks (Van der Walt & Vorster 1988 : vol 3 pg. 139).

Grid references

2817AC	2817CA	3118BB	3218BB	3218BD	3219AA	3319AB

Polemanniopsis marlothii *(H. Wolff) B. L. Burtt*

APIACEAE

COMMON NAMES:

Narona

HERBARIUM SPECIMEN:

F Archer 224

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
	x					

PART(S) USED:

corm

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							x	x			

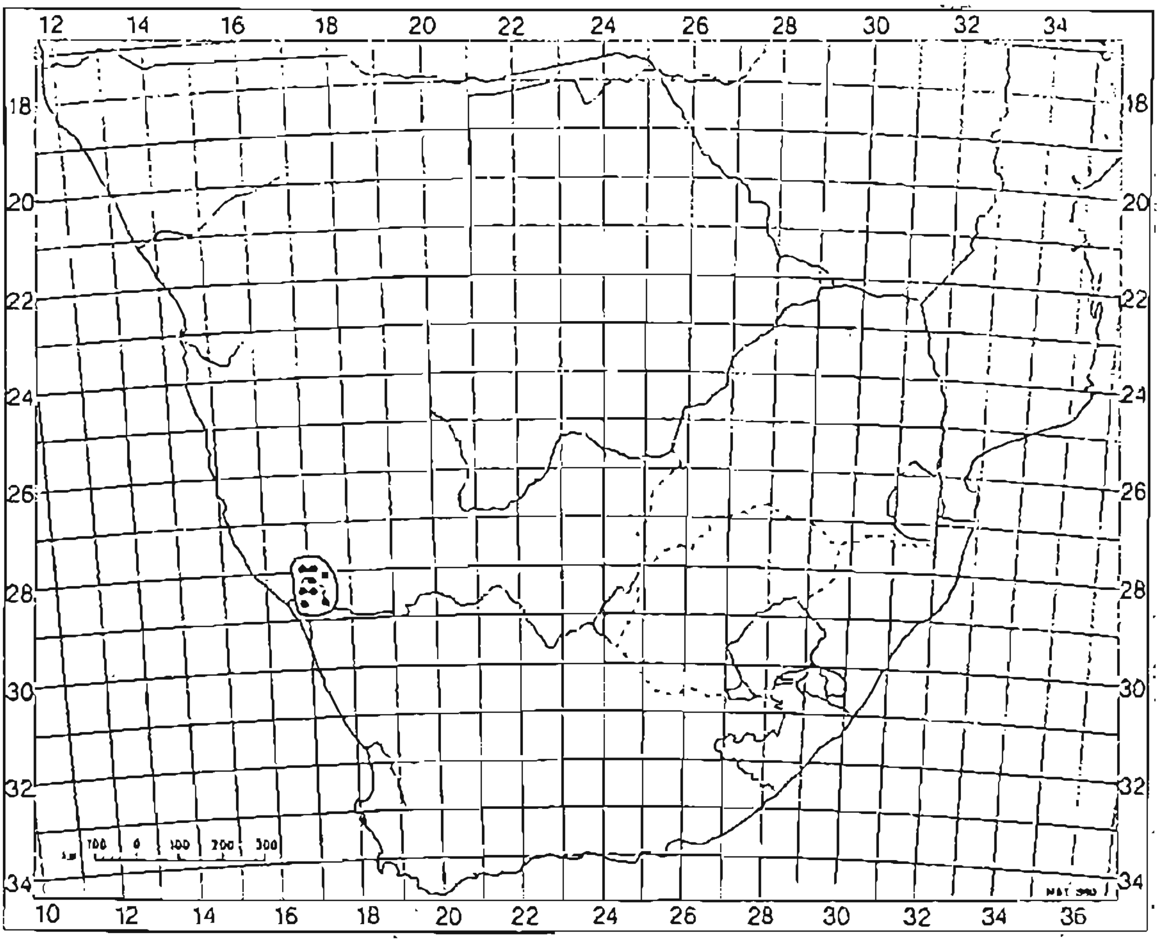
RECOGNISED BY:
The flat prostrate leaves and flowers.

USES & PREPARATION:
The corm is roasted with meat.

GENERAL:
An endemic and monotypic genus of the north-western Cape.

DISTRIBUTION:
Clanwilliam and the Western Karroo (Bond & Goldblatt 1984: 144).

Distribution



Grid references

2716DD	2816BB	2816DA	2817AC	2817CA			
2716DD	2816BD	2817AC		2817CB			

Prenia sladeniana *(L. Bol.) L. Bol.*

MESEMBRYANTHEMACEAE

COMMON NAMES:

Skotteloor

HERBARIUM SPECIMEN :

F Archer 186

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

leaves
branches

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Soft flat branches with broad fleshy leaves.

USES & PREPARATION:
The fresh leaves are pounded and rubbed until they foam and then used as a soap for cleaning leather.

Also used by people as a soap.

The Dassierot (Petromus typicus) have been observed collecting from branches on the koppies of the Koeroegab vlakte in northern Richtersveld (E van Jaarsveld: pers comm).

GENERAL:
Often very common locally and occasionally dominant on hillsides. A fast growing perennial species common after good rains.

DISTRIBUTION:
Richtersveld and southern parts of Namibia and succulent Karoo (E van Jaarsveld: pers comm).

Psilocaulon sp.

MESEMBRYANTHEMACEAE

COMMON NAME(S):

Fyn litjiesbos

HERBARIUM SPECIMEN :

F Archer 182

IDENTIFICATION:

Bolus

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

leaves

SEASON COLLECTED:

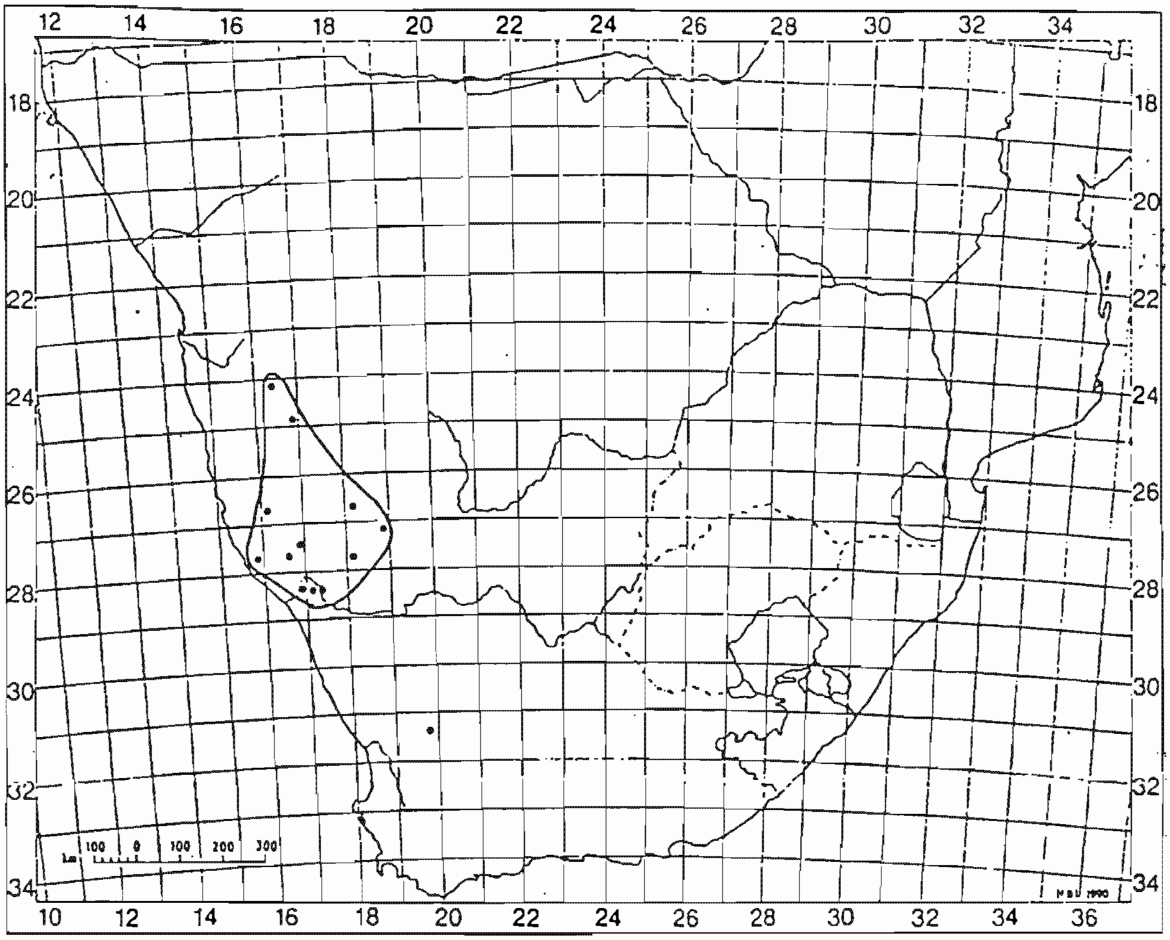
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:
Grey-blue stems, white flowers.

USES & PREPARATION:
The fresh leaves are rubbed onto leather until they foam, in order to clean the leather.

DISTRIBUTION:
North western Cape.

Distribution



Grid references

2616CA	2715DB	2716BD	2718BB	2816BA	2818CD		
2618CA	2716BA	2716DA	2718CA	2817AC	3119BD		

Psilocaulon subnodosum *L.Bol.*

MESEMBRYANTHEMACEAE

COMMON NAMES:

Fyn loogbos

HERBARIUM SPECIMEN

F Archer 208

IDENTIFICATION:

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

				white flowers		

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:
Densely branched with white flowers.

USES & PREPARATION:
The fresh leaves are rubbed onto leather until they foam, in order to clean the leather.

GENERAL:
An important indicator of disturbed areas.

DISTRIBUTION:
Northern Namaqualand and south Namibia.

Pteronia lucilioides *DC.*

ASTERACEAE

COMMON NAMES:

!abarals

HERBARIUM SPECIMEN:

F Archer 139, 215

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
		x				

PART(S) USED:

leaves

SEASON COLLECTED:

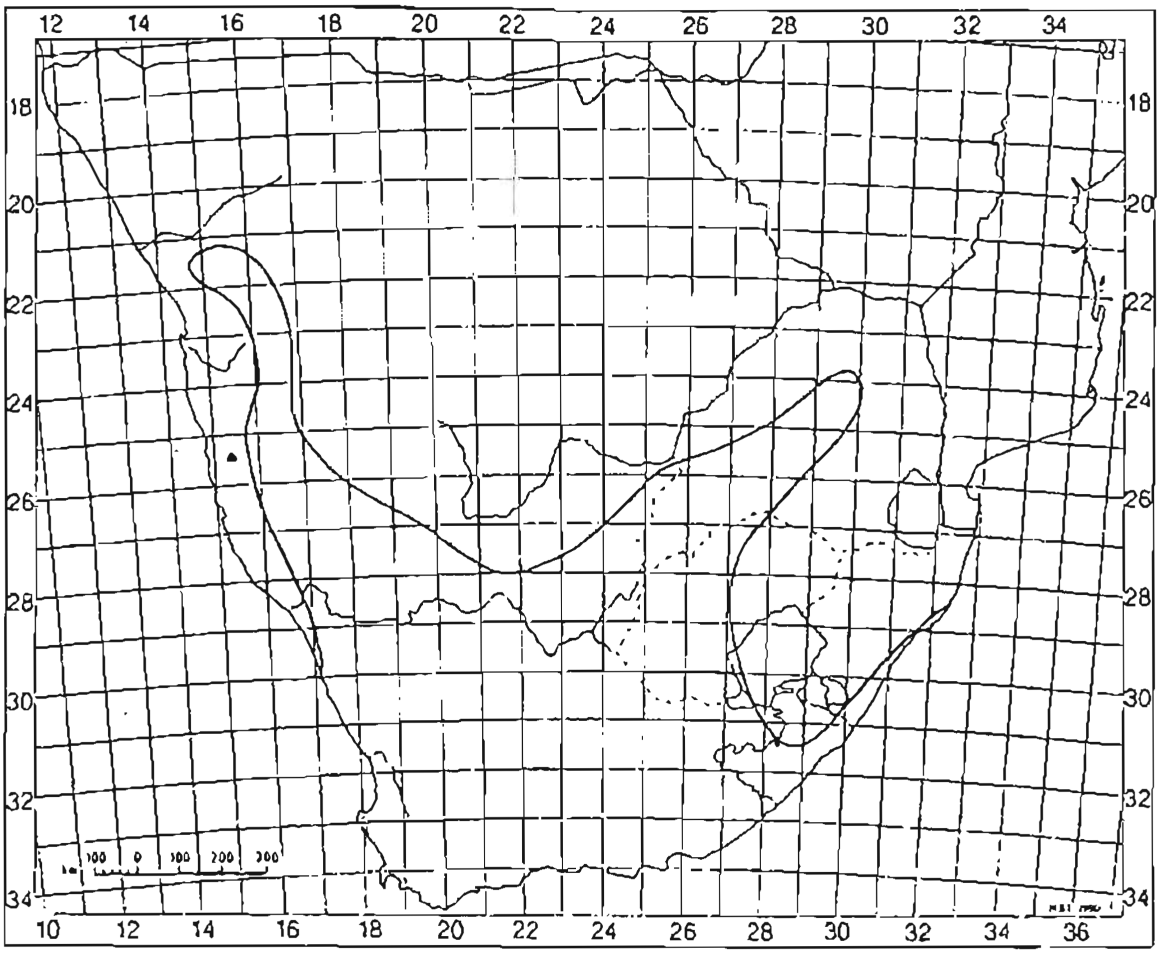
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:

USES & PREPARATION:
Infusion.

DISTRIBUTION:
Namaqualand to Bushmanland (Hutchinson: 1917).

Distribution



Grid references

2526DA	2817CB	3018AC	3126DD	3225BA	3319CD	3323AD	3326CA
2527AC	2817CC	3022CC	3128DB	3225CA	3319DA	3323DA	3326DA
2527DD	2827CA	3025CC	3129DA	3226AC	3319DB	3323DB	3326DB
2528CA	2828DA	3027BC	3218AD	3226CB	3319DD	3324DB	3327BB
2622BC	2828DB	3029CD	3218BB	3226DD	3320BA	3324DD	3418AD
2628AA	2829DA	3030CA	3218BD	3227AD	3320CC	3325BA	3419BA
2716BC	2829DB	3118AA	3218CB	3227CA	3321AD	3325BC	3421AB
2716DC	2917AA	3118BB	3218CC	3227DB	3321BD	3325BD	3421BA
2717BC	2917CA	3118DB	3218DC	3228DA	3321CB	3325CD	3421BD
2717DB	2917DB	3118DD	3219AC	3318AA	3322AB	3325DB	3422BA
2718BB	2917DC	3119AC	3219CB	3318BA	3322AC	3325DC	3422BB
2730CB	2929BA	3119CA	3222BA	3318DD	3322BC	3326AA	
2731AC	2930DA	3119DD	3222BC	3319AA	3322CB	3326AC	
2816DB	2931CA	3121DC	3223DD	3319AC	3322CD	3326AD	
2816DD	3017BA	3122BC	3224BC	3319CA	3322DA	3326BA	
2817AC	3017BB	3125CA	3225AB	3319CB	3322DC	3326BC	
2817CA	3018AB	3126AC	3225AD	3319CC	3323AC	3326BD	

Leaf and berry detail of Rhus burchellii

National List of Indigenous Trees

Rhus burchellii *Sonder ex Engl.*

ANACARDIACEAE

COMMON NAMES:

!'narra / taaibos / Kuni-bush / !garra

HERBARIUM SPECIMEN:

F Archer 132

IDENTIFICATION:

U W C

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x		x				x

PART(S) USED:

berries leaves

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:
Rounded shrub with wavy leaves. The fruit is round and hairless.

USES & PREPARATION:
The berries are husked and then soaked in milk and eaten as a porridge. The berries are also eaten when dry.

The leaves are soaked and taken as an infusion.

The dried berries are eaten as a relish in the Malmesbury district and Riebeeck West, Cape Province (Fox & Norwood Young: 1982).

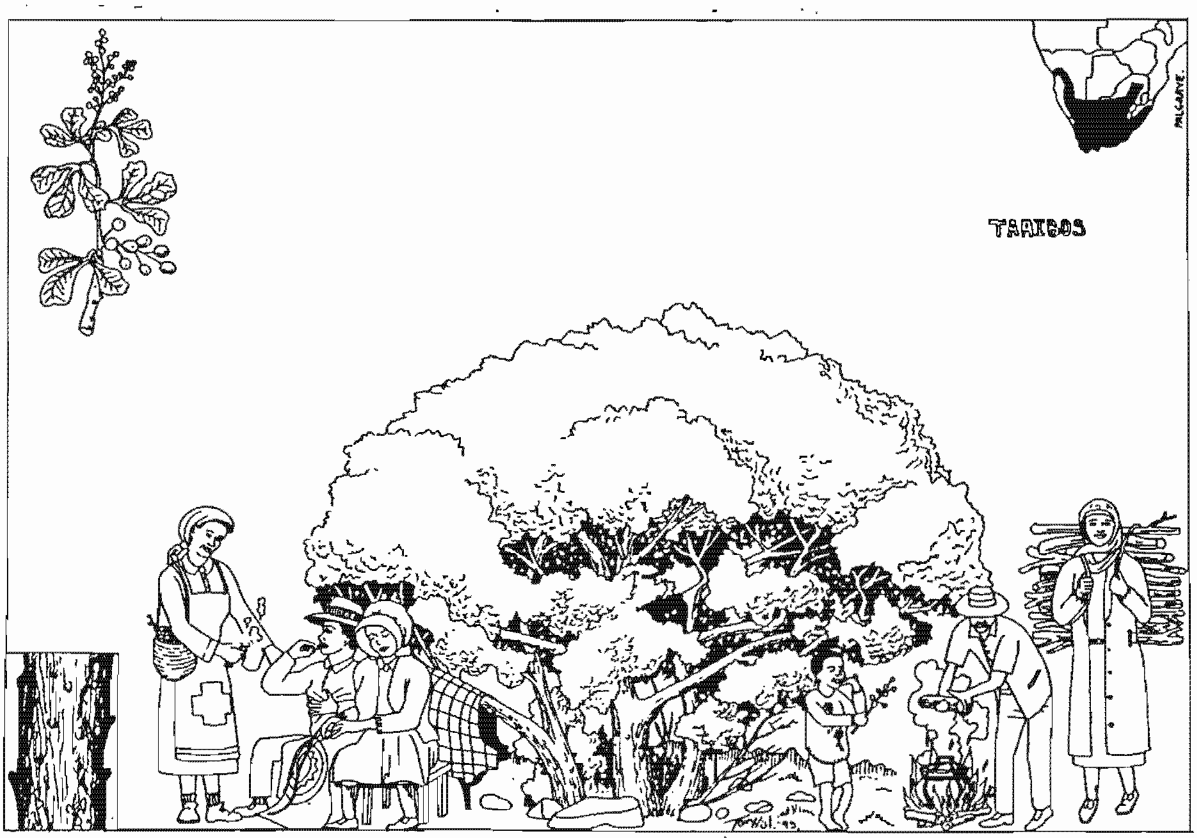
The Hottentots who call this tree !Kuni, used a decoction of the leaves for postparturient problems; the Namaquas chew them as a treatment for chest colds (Palgrave: 1983).

GENERAL:
Fruits of *Rhus undulata* are recognised as a major traditional source of food. It is still collected for snacking.

DISTRIBUTION:
Common in the arid areas of the Cape, Lesotho, the Orange Free State and Namibia.

Grid references

2615CB	2716DC	2816DB	2817AC	2817CD	2819CC	2917BC	2919AA
2616CB	2716DD	2816DD	2817AD	2818CD	2819DA	2917CB	2919AB
2716BC	2816BD	2817AA	2817CA	2818DD	2820CB	2918BA	
2716CA	2816CB	2817AB	2817CB	2819CB	2824BA		



Rhus populifolia *E. Mey. ex Sond.*

ANACARDIACEAE

COMMON NAMES:

Taaibos

HERBARIUM SPECIMEN:

F Archer 46, 350

IDENTIFICATION:

U W C: Moffat

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x					x	x

PART(S) USED:

fruit

SEASON COLLECTED:

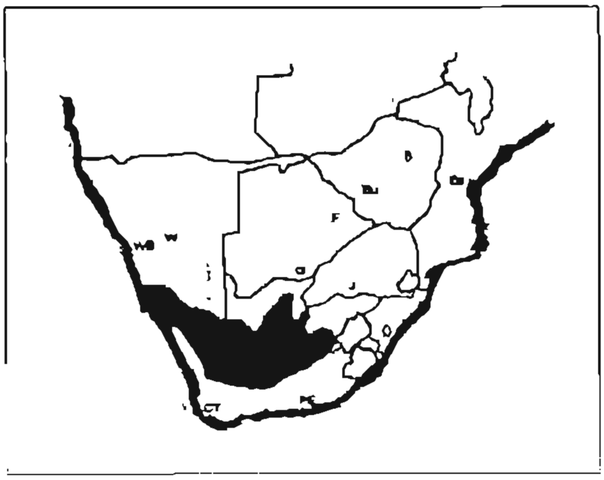
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:
Rounded shrub with winged leaf-stalks bearing three ovate dark green leaflets that are yellow and hairy underneath. Small flowers, kidney-shaped fruits (Le Roux & Schelpe 1988: 126).

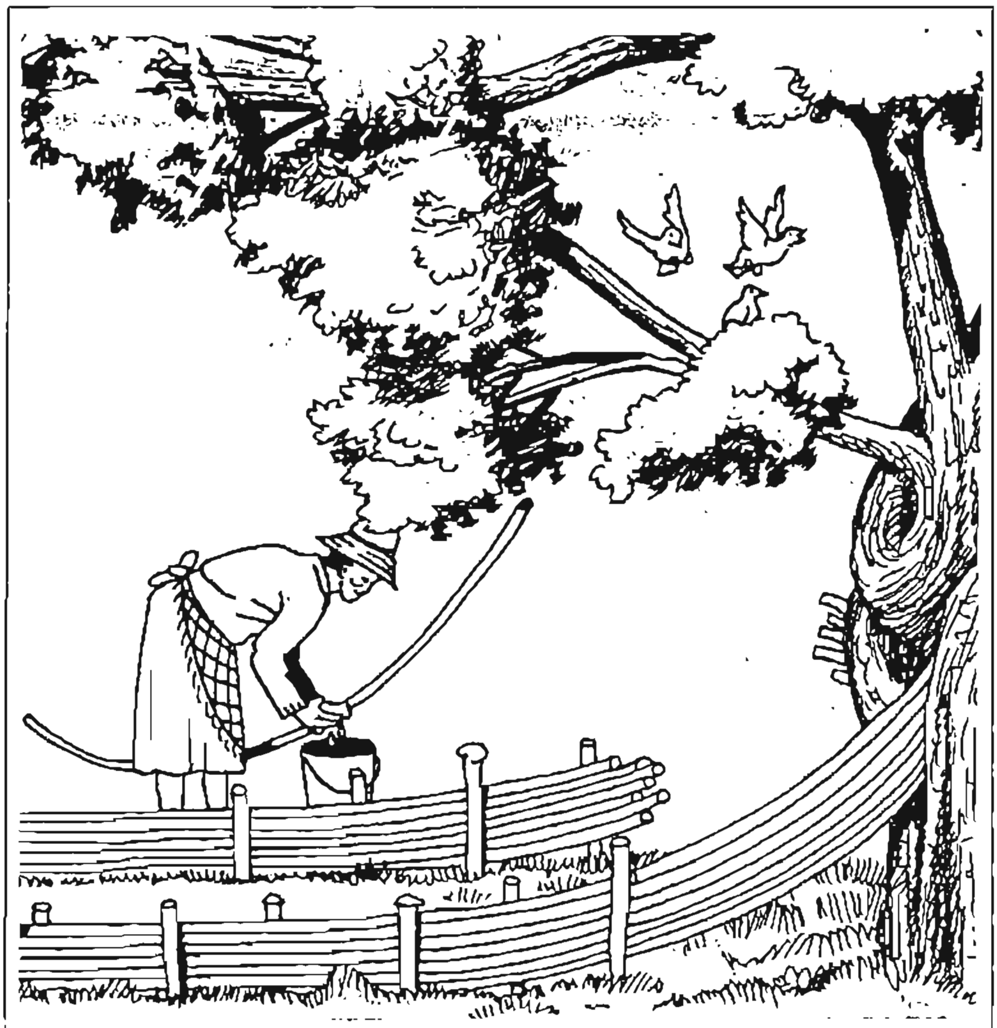
USES & PREPARATION:
The dried fruit is eaten.

DISTRIBUTION:
Namaqualand and Namibia; usually confined to rocky outcrops and dry river beds (E van Jaarsveld: pers comm).

Distribution *(Trees of Southern Africa)*



The branches are bent and dried so that the houses have the characteristic dome shape.
Tony Hül



Rhus viminalis *Vahl.*

ANACARDIACEAE

COMMON NAMES:

Rosyntjieboom / Witkaree / White karee

HERBARIUM SPECIMEN:

F Archer 17, 148

IDENTIFICATION:

Compton / U W C

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x				x		x

PART(S) USED:

fruits seeds	wood branchlets

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x									

RECOGNISED BY:
Large tree, hanging, willow-like growth, long leaves.

USES & PREPARATION:
The dry seeds are collected and eaten; or pounded into hyra (see *Acacia karroo*) to make cakes (which can be stored for long periods). The dry seeds are also soaked in milk overnight and eaten as a porridge the next day. The seeds are very nutritious and are high in carbohydrates as well as vitamin C.

According to Hoff (1990) myth has it that the Big Snake - an important figure in the Nama mythology - also fed on the dried seeds of this species when he grazed at night. If people dropped the raisins on the ground when they ate; or if they dropped the raisins in the fire, this would lure the Snake to the site. Unlucky people had to be especially cautious not to drop the food - as they would be confronted by this terrible creature which could make them very sick.

Hoff (1990) also mentions the belief that contact between this food and people who were dying, or who had recently had sex or who had recently entered puberty, could cause this important food resource to burn out.

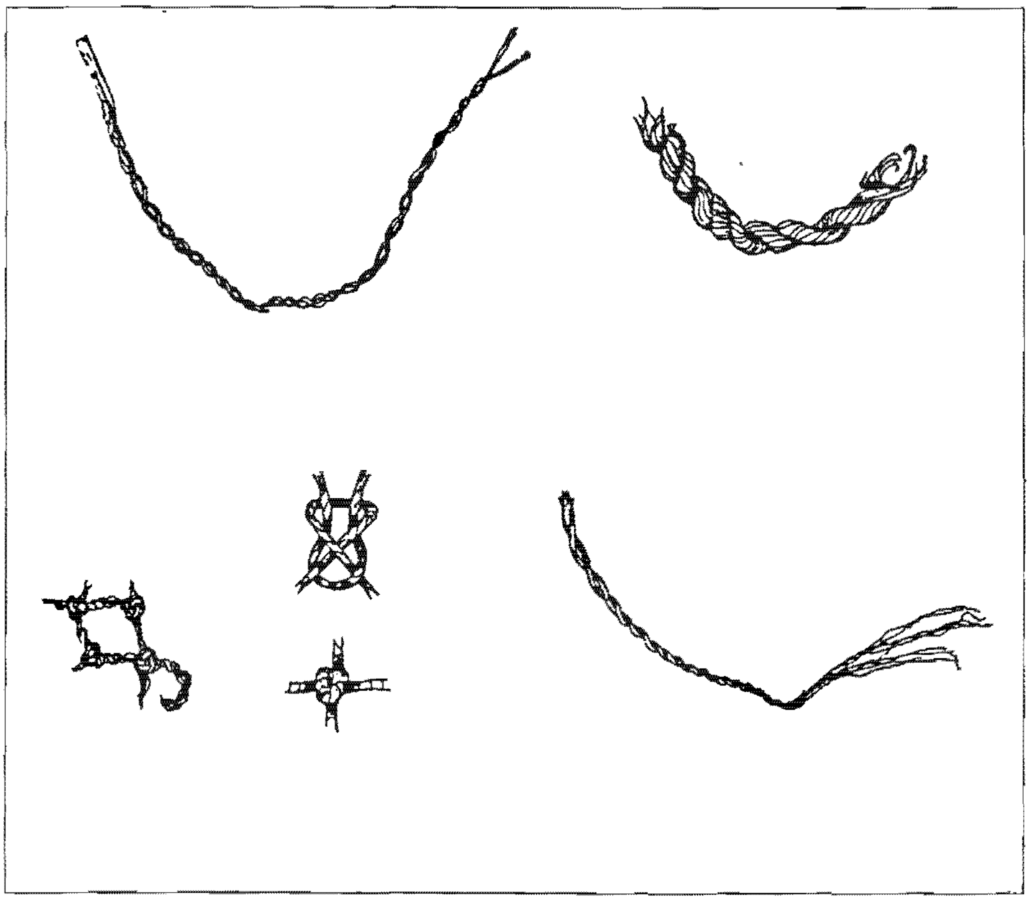
A leaf infusion is used medicinally against colds.

Branches are used as a framework for houses. The illustration shows how the branches are bent and dried so that the houses have the characteristic dome shape. Before the branches are bent, the bark is removed. To remove the bark the stem is slightly burnt in the fire and the bark peeled off - according to the inhabitants of the Richtersveld, processing the branches in this way improves the durability of the branches. As a framework, the branches last for about six years.

At present this species is the one most commonly used in the construction of the framework of the matjieshouses because it is widely available in many of the riverbeds in the Richtersveld..

It is known that the Nama people earlier used the pliant twigs in construction of fish traps (Codd 1977).

Twine has been found in archaeological deposits.
In the case of Melkhoutboom, Deacon (1976) suggests that twine was used in the making of fishing nets.
In the Richtersveld, the pliable branches of Rhus viminalis were used for this purpose, while the fine roots of Rhus burchelli and Acacia karroo were used for the twine.



Leaf detail of Rhus viminalis

Trees of Southern Africa

The wood is popular as a firewood and the leaves and twigs are good fodder for sheep and goats.

Along the Orange river the tree grows abundantly and forms a major part of the diet of livestock in the dry summer months. Patoralists move up and down the river to utilize the tree. Apparently the tree recovers within about three weeks after having been grazed.

In the villages the tree is popularly planted as a shade tree and to provide food for the sheep and goats which are brought into the village to be slaughtered.

In the Richtersveld the importance of the tree cannot be overestimated, presently as well as in the past. The importance of the tree is corroborated in the frequent mentioning of it in mythology - where waste of the resource brings ill fortune

Certain African peoples prepare a milk infusion from the leaves and this is given, as an enema, to children suffering from stomach upsets.

The wood has a reputation for durability and is suitable for fencing posts and for hut-building. (Palgrave 1983).

DISTRIBUTION:
Southern Namibia, northern and central Cape.

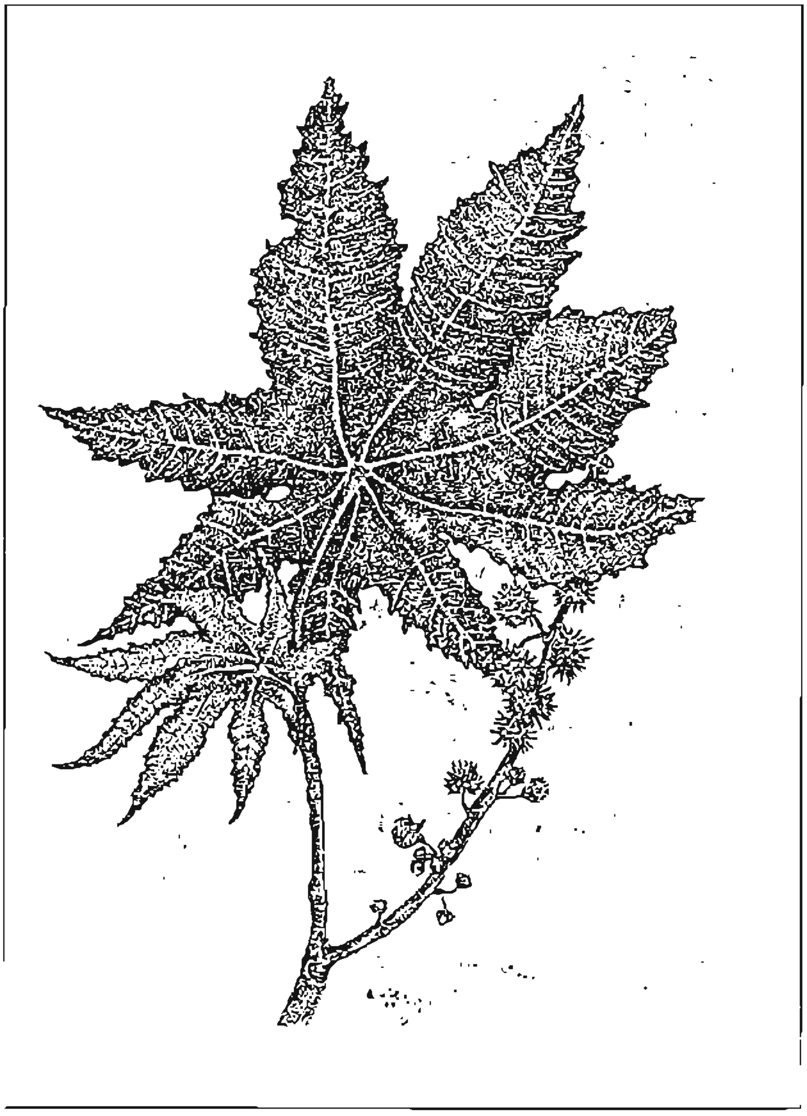
NUTRIENT ANALYSIS:
Refer to Table in Appendix.

Grid references

1922AC	2230CD	2431BB	2631AB	282OCB	2930CB	3227DB	3327BB
1923CD	2314BA	2527BA	2632AA	2830CC	2930CC	3319DD	3421AB
2014CB	2330AA	2527DB	2731CC	2830CD	2931BA	3324DD	
2125AD	243OAB	2528CA	2732CB	2831CC	3030BC	3325CD	
2229AA	243OCA	2530CB	2816DB	2832AA	3118AD	3326AD	
2229CC	243ODB	2531DC	2817CB	2832AD	3226DB	3326DB	

Ricinus communis

Heil- und Giftpflanzen in Südwestafrika



Ricinus communis *L.*

EUPHORBIACEAE

COMMON NAMES:

Oliebos / castor bean

HERBARIUM SPECIMEN:

F Archer 206

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
		x				

PART(S) USED:

seeds
leaves

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:
Large, soft leaves.

USES & PREPARATION:
Seeds are ground and boiled or roasted and the paste is used for cosmetic decoration on the face and as a sunblock.

Further south, in the Spoegrivier region of Leliefontein Rural Area, the oil from the seeds is used for stomach disorders (diarrhoea). This medicine is known to be highly toxic if the incorrect dosage is applied.

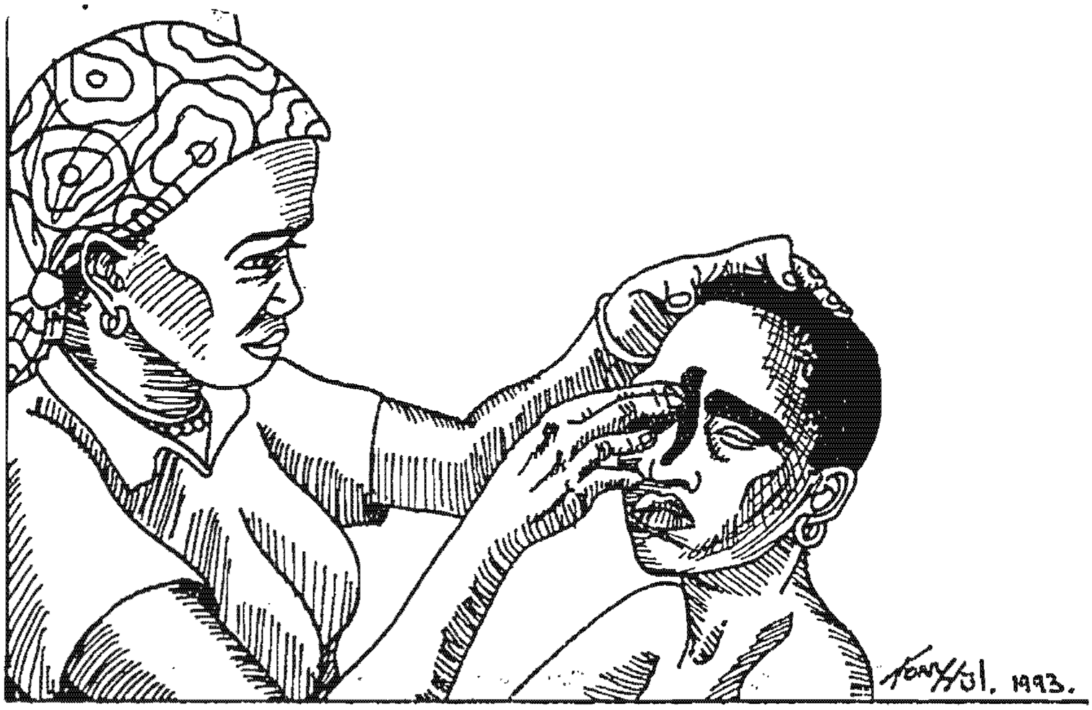
In cases of mumps and toothache, the seeds are ground, boiled and rubbed on the swollen cheek. The whole is covered with a warmed leaf and a compress. The roasted and ground seeds are applied to burns and wounds. A warmed leaf can be used as a poultice on wounds and skin diseases, also on painful knees or breasts and on the throat in cases of throat pains (Van den Eynden:1992).

The Sotho, after washing the feet in a strong tea of *Athrixia phylicoides*, bind them in castor oil leaves and often sleep in these green bandages. The Bushmens Tea and the castor oil leaves have a deep-acting effect on the hard, horny skin of the feet and on the muscles (Roberts:1990).

It is used worldwide as a medicine to treat several diseases e.g. rheumatism, fever, diarrhoea, nervous disorders, ulcers, toothache. The unbroken seed is strongly purgative, but at the same time extremely toxic: 2 or 3 seeds are lethal (Van den Eynden:1992).

The entire seed is very actively poisonous on account of the presence of a toxalbumin *ricin*. Ricin is not present in the oil expressed from the seed but remains in the cake which is thus poisonous.

Metelerkamp & Sealy (1983) report that the castor oil seed is rich in the oil that is well known as a laxative, but the seed itself is poisonous. Their informant stressed this, and said that as far as he



KHOI ⇨ DETAIL: GORDON

knew, no part of the plant was taken orally, but a poultice of the leaves could be applied to the forehead to relieve a headache.

The oild from the crushed seeds was formerly used to make soap by boiling it up with lye water made from the ash of *Psilocaulon* species.

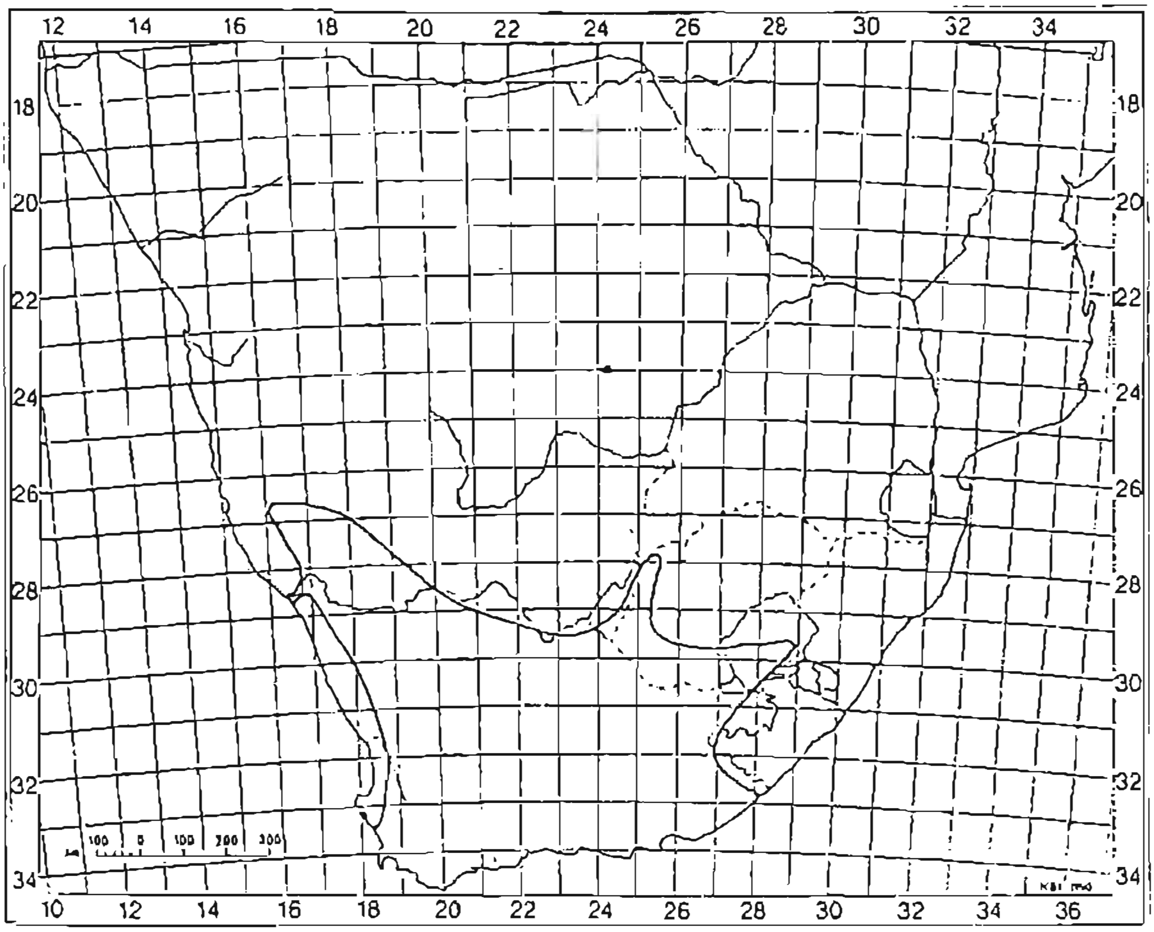
GENERAL:
Helme (Veld & Flora vol 78 (3)) recounts a conversation he had with a goat farmer on the banks of the Orange River, who in reply to his question *"why were the stock herders burning particular riverine areas"*, said he set fire to dense stands of castor oil bush, an invasive alien, the numbers of which fluctuate dramatically over the years. It will apparently be quite inconspicuous for many years and then suddenly populations will explode, infesting areas of indigenous riverine vegetation. The knowledgeable stock farmer told us that when eaten by goats and sheep, the castor oil seeds cause a potentially fatal condition known as "blaasop", in which the animals stomach fills with gas. He was thus practising a form of alien plant control by burning the infestations, and he mentioned that any burnt indigenous trees would soon resprout and stablilize the river banks.

DISTRIBUTION:
Widely distributed in the tropics. According to Henderson and Anderson (1966) thought to be native to Africa and India. A quick growing pioneer species frequently occurring along the banks of the Orange River.

DETAIL: GORDON (1879)

DETAIL: PATERSON (1777-79)

Distribution

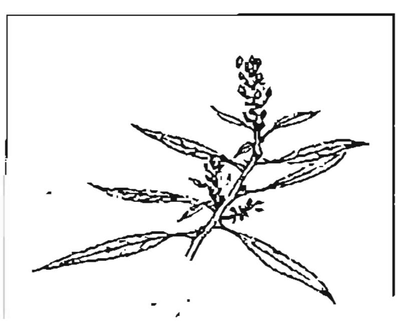


Grid references

2229DD	2631AD	3318DD	3319CB	3322CA	3418BB
2528CD	3218DC	3319AA	3320CA		3420AB

Leaf detail of Salix mucronata

National List of Indigenous Trees



Salix mucronata *Thunb.*

SALICACEAE

COMMON NAMES:

Willerhout / River Willow

HERBARIUM SPECIMEN:

F Archer 212

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
		x		x		

PART(S) USED:

Ea	Eu	Ma	Mu	Da	Du	F
		leaves & wood splinters		wood & dry branches		

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Hanging branches.

USES & PREPARATION:
Infusion as a remedy for coughs, used as a tea.

The wood splinters are used as toothpicks.

The willow is one of the oldest sources of medicine, and is still used today as a treatment for rheumatism. The Khoikhoi used it as a medicinal tea and as a wash for skin ailments, and in the treatment of fevers, particularly rheumatic fever, malaria and heat exhaustion. A lotion of leaves and branches boiled in water is used for scalp itches, sores and inflammations, and is also used to stimulate hair growth.

A tea made of the bark and the soft twigs is used for headaches and neck stiffness.

Goats, sheep, cattle and fowl relish the leaves when grass is scarce, and the wood is light, soft and workable and excellent for roof rafters and for carving into bowls, spoons, grain mortars and flat dishes (Roberts:1990).

The branches were used to assist in swimming across the Orange River.

Gordon (1770) mentions that Bushmen in the area swum across like this. An anonymous traveller (1870) into the Orange river area mentioned that wood used like this was called a 'river-horse' and that a long dry log, into one end of which a peg was firmly driven, was used. The swimmer would then hold onto the peg with one hand and swim with the other. When a traveller wished to be ferried over, he/she would be placed between two such logs and propelled by a couple of men. Some Khoi apparently lived next to the river and eked out an existence by providing this service.

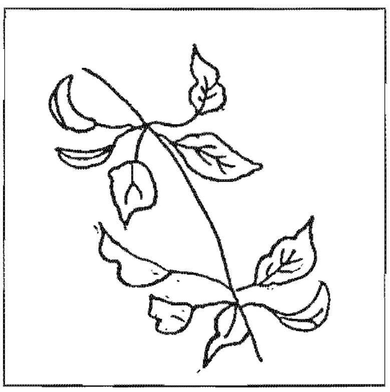
DISTRIBUTION:
South Africa, coastal regions to Tulbagh, Worcester, Clanwilliam, Calvinia and on the banks of the Great and Little Fish rivers as well as the banks of the Orange river at Aliwal North and Namaqualand. In the Richtersveld it is confined to the Orange River and also always associated with permanent water bases (E van Jaarsveld:pers comm). Also in the region of Rustenburg and Tembuland. (Thiselton-Dyer 1925:577)

Grid references

817AC	2917BD	2917DA	2918CA	3017DB	3018AB	3118DB	3119BD
2917BA	2917CA	2917DB	3017BB	3017DD	3018AC	3119AC	3218BD
2917BC	2917CB	2917DC	3017BD	018AA	3118AB	3119BC	

Leaf detail of Salvia dentata

Namaqualand and Clanwilliam



Sarcocaulon patersonii *(DC.) G.Don*

GERANIACEAE

COMMON NAMES:

Norap / Gifdoring / Maagdoring / Boesmanskers

HERBARIUM SPECIMEN:

Information supplied by Ernst van Jaarsveld

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
		x		x		x

PART(S) USED:

		stem		stem		

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:
Tough succulent stems with long spines. Flowers rose to purple.

USES & PREPARATION:
In the Richtersveld it is used as kindling because the fresh and dry branches are highly flammable -due to the high wax content. Moffatt (1982) ascribes the burning to the woody core of the plant.

Stems grounded into powder or pounded and boiled (Smith: 1966).

Hottentots used the powdered stems for medicinal purposes (stomach troubles for both man and sheep).

The pounded and boiled stems were also used as a abortificant. The early trekboers employed the finely pounded ground roots as a poultice which being peppery acted as a substitute for a mustard plaster (Smith: 1966).

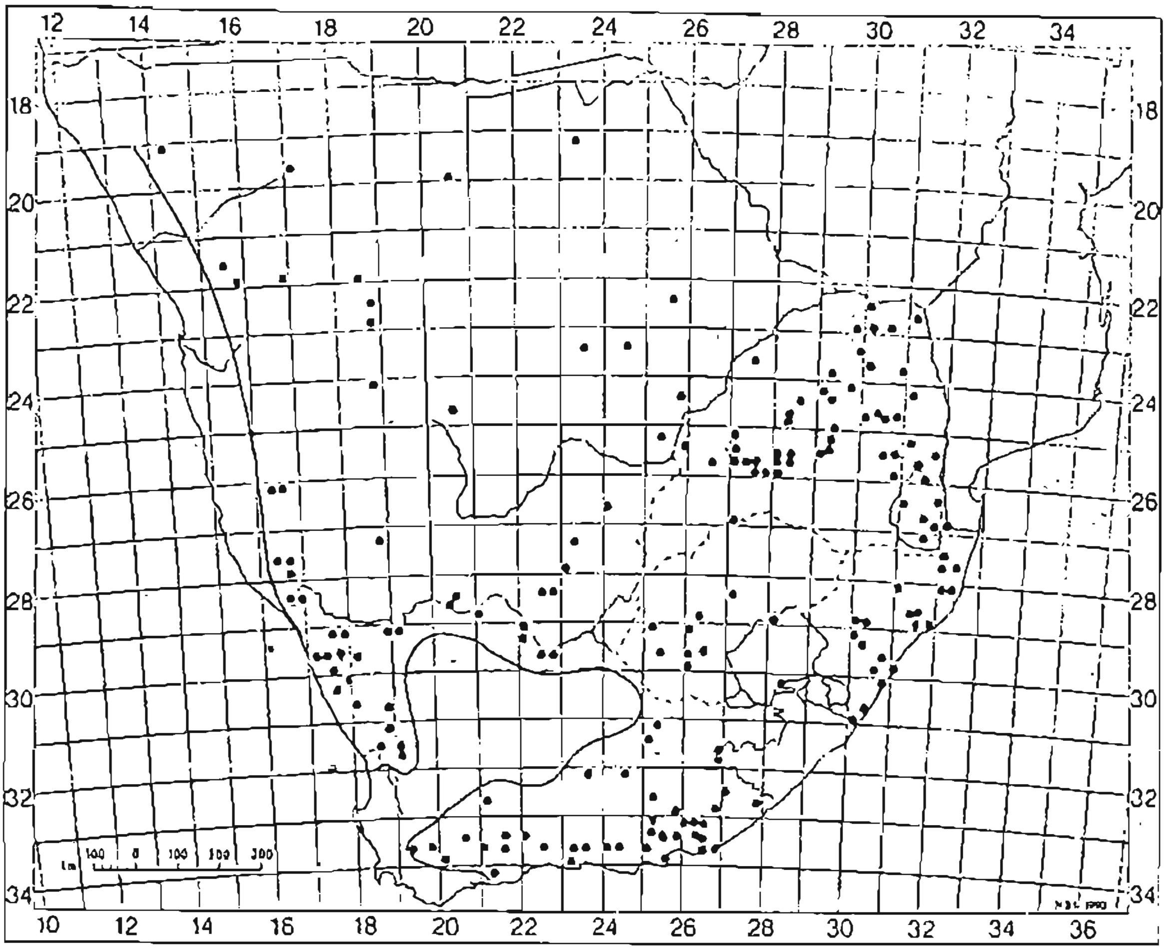
It was an important source of fuel for fires used to distill the sea water at Luderitz (Dunker: 1930).

The resinous substance of all *Sarcocaulon* is flammable and is popular kindling with various groups in Namaqualand.

GENERAL:
This plant is not easy to cultivate (Moffatt: 1982).

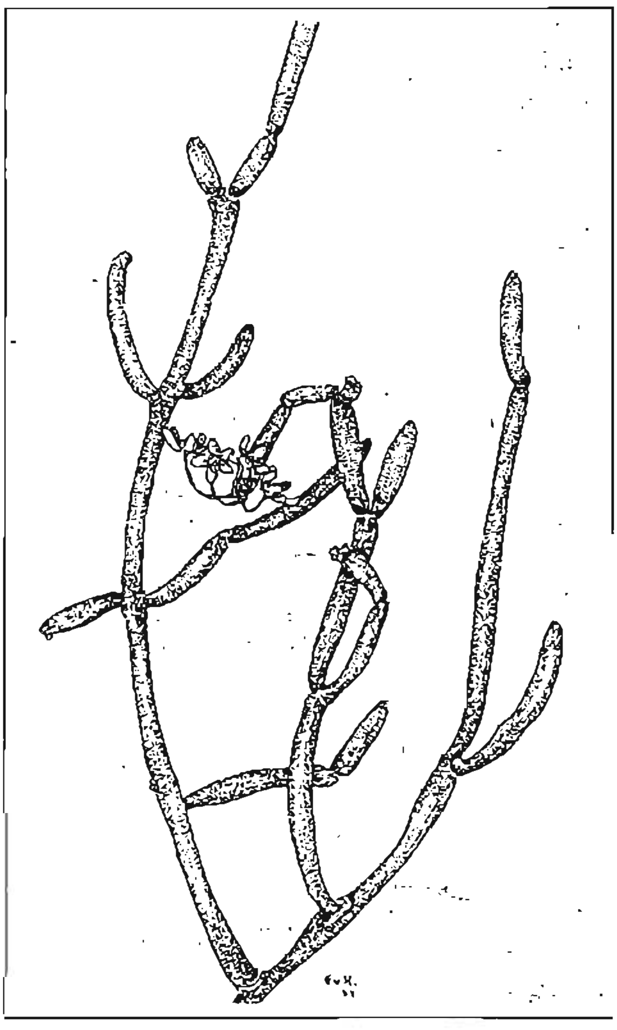
DISTRIBUTION:
Richtersveld, southern Namibia in Succulent Karoo (Moffat 1979).

Distribution



Sarcostemma viminale

Heil- und Giftpflanzen in Südwestafrika



Grid references

1917CA	2527AC	2821CC	3126DB
1920DC	2527CA	2822BD	3126DD
1923AB	2527CB	2824CA	3126DD
2115AD	2527DD	2826CD	3226DD
2116DD	2528AC	2827AC	3227DB
2225BC	2528AD	2828CC	3319DB
2229DD	2528CA	2830CD	3320CC
2230AC	2528CA	2830CD	3322AC
2230CC	2528CA	2830CD	3322AC
2230DC	2528CA	2831AA	3322DA
2324BC	2528CA	2831AD	3324CA
2326AD	2528CB	2831DA	3325BC
2327DA	2529AB	2831DC	3325BC
2330CA	2529AC	2831DC	3325BD
2330CA	2529AD	2831DC	3325BD
2330DB	2530BC	2831DD	3325CA
2420DA	2530BD	2832AA	3325DC
2428BC	2530BD	2832AA	3325DC
2428CB	2530BD	2832AB	3325DC
2428CD	2530DD	2922DA	3326BA
2429AD	2531AA	2922DA	3326BA
2429AA	2531BD	2922DA	3326BC
2429AD	2531CB	2922DA	3326DA
2429CD	2531CC	2922DA	3326DA
2430CA	2531DC	2922DB	3326DB
2430DA	2627CC	2922DB	3326DB
2430DA	2631AC	2925CB	3421AB
2430DA	2631AC	2926AB	3421AD
2430DB	2631BD	2926AD	3422AA
2430DB	2631DD	2930DB	3422AA
2431AA	2632CC	2931CC	3422AA
2525AB	2731AD	2931CC	3422BB
2525BD	2732AC	3030CB	
2526DA	2732CA	3118BB	
2527AA	2820CB	3125AB	

Sarcostemma viminale *(L.) R. Br.*

ASCLEPIADACEAE

COMMON NAMES:

!gubu!gubu / Spantoumelkbos / Wolfsmelk / Melktou (bos)

HERBARIUM SPECIMEN:

Information supplied by Ernst van Jaarsveld

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x		x				

PART(S) USED:

young shoots	latex

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:
A leafless climber, or scrambler (in Karoo parts) with terete jointed green succulent stems 4-5 mm in diameter (with divided follicles when in fruit) with milky latex when damaged. Flowers in pedunculate umbells, yellow, scented.

USES & PREPARATION:
Young shoots are cooked.

Used both as food and medicine, however uses by the Nama in the Richtersveld and Namaqualand have not been reported.

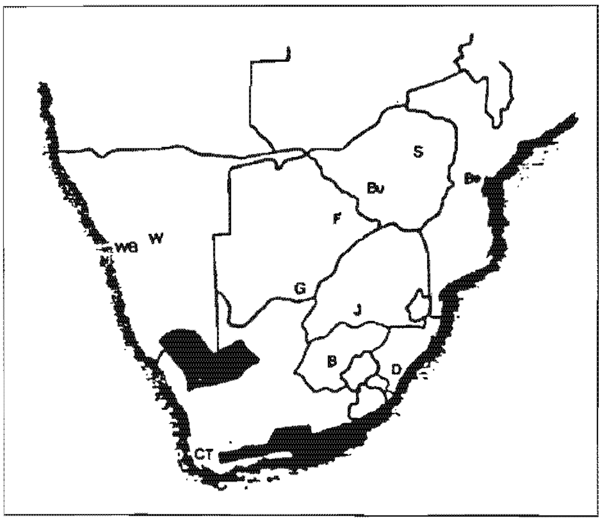
According to Smith (1966) the Zulus use the latex to treat an eye infected with the juice of *Euphorbia* (this juice is extremely painful to the eyes).

According to Story (1958) natives in the Cape, Natal and Transvaal eat young shoots either fresh or cooked but he warns that this is a dangerous affair since poisonous strains occur indistinguishable from the edible ones.

DISTRIBUTION:
Common throughout South Africa and northwards to tropical Africa, in summer and winter rainfall regions with several forms. It can occur as a line or often as a dominant cover on some mountain slopes.

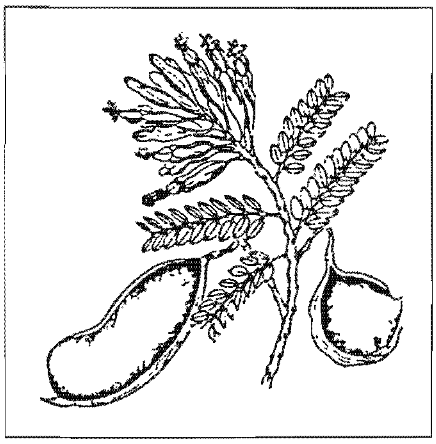
Distribution

Trees of Southern Africa



Leaf and seed detail of Schotia afra

National List of Trees



COMMON NAMES:

Karooboerboon / Lammerbout

HERBARIUM SPECIMEN:

IDENTIFICATION:

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

branches

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
The bright red flowers in November.

USES & PREPARATION:
The pods are edible and were sometimes used in stews.

Used to make crook-sticks and walking sticks - still popular today.

GENERAL:
The plant is an endemic of the East Gariep Centre and grows from the Richtersveld to Pofadder. Its distribution is distinct. (Jürgens 1993: in prep.)

DISTRIBUTION:
Common in karroid bush and scrub and in rocky semi-desert regions - often along dry watercourses (Palgrave 1983).

The bent poles of the framework of a hut being securely tied.

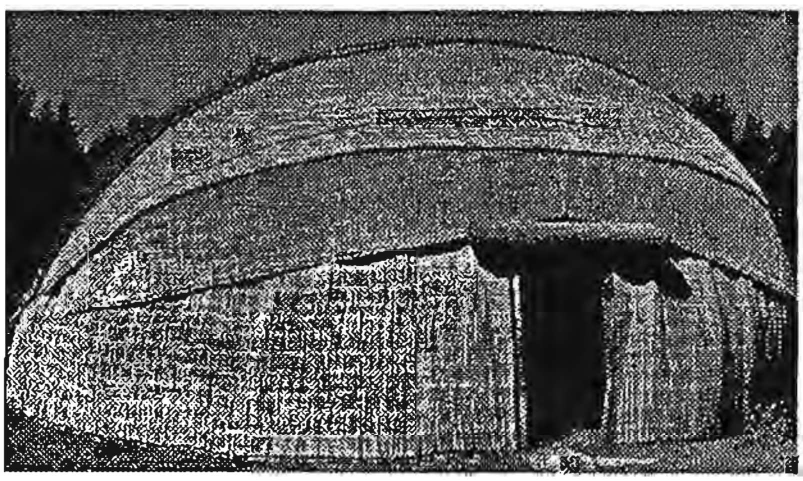
Men of Men - Seton Bailey

Grid references

2824CC	2924BD	3025DA	3027BA	3221BA	3222BA	3226BC
2824DB	2925CB	3026DA	3027BC	3221BB	3222BD	3321BC
2923BB	2926AC	3027AC	3125AC	3222AD	3225AB	

The mats are placed over the framework.

Sagittarius 4:4 - Fiona Archer



Scirpus inanis *(Thunb.) Steud.*

CYPERACEAE

COMMON NAMES:

Biesie / Matjiesgoed / Dik matjiesgoed

!ob

HERBARIUM SPECIMEN:

F Archer 227

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

reeds

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
								x	x	x	

RECOGNISED BY:

USES & PREPARATION:
Reeds are picked, dried and the heads cut off. Reeds of a similar length are stitched together with twine (traditionally made from the fibrous bark of the roots of *Rhus undulata*, more recently with strings from hessian fodder bags.) Before stitching, the reeds are soaked to ensure that they don't split.

These are the most popular reeds for making mats for houses, and people travel far to collect them.

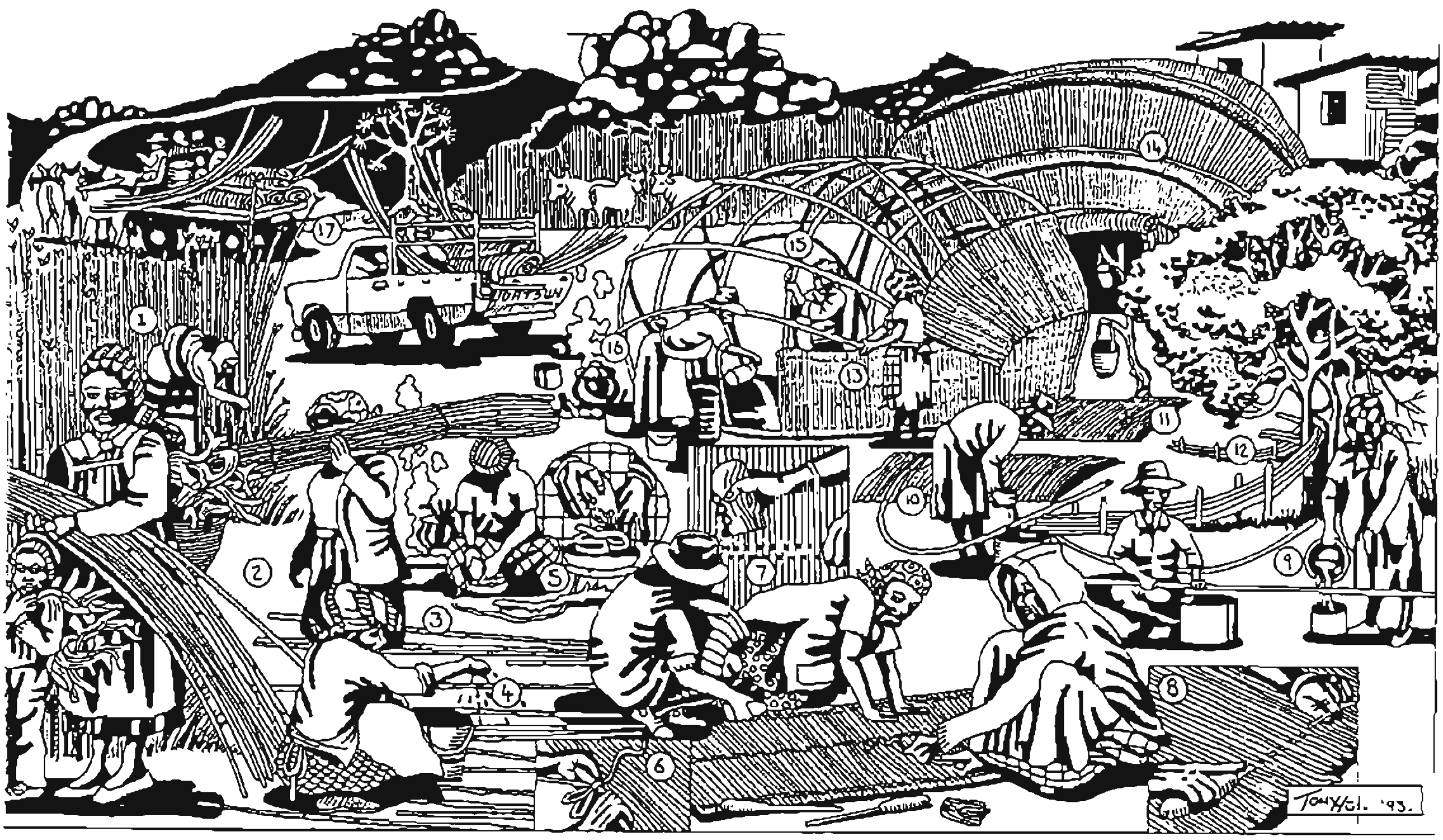
DISTRIBUTION:
Semi-arid and arid parts of the Cape, along water courses (E van Jaarsveld: pers comm).

Hut of the Hottentot Chief at Klaarwater

Woodcut vignettes from "Travels in the Interior of Southern Africa"

Grid references

3119CA	3318CD	3325CD	3326DB	3418AD	3418BD	3419AD	3424AA
3228BD	3324DD	3325DC	3327BB	3418BA	3419AB	3419DC	3424BB
3228CB	3325CC	3326CD	3418AB	3418BB	3419AC	3420AB	3425BA



Activities around the contruction of a hut.

1. Picking the reeds. 2 Binding into bundles of one or two "faam".
3. Preparing the reeds by chopping them to a similar size.
4. Sprinkling with water, prior to stitching.
5. Making the rope with which to stitch the reeds. 6. Binding the reeds.
7. Pushing the reeds to tighten the twine with which the reeds are stitched.
8. Stitching the rope through. 9. Mixing dung and gum for the floor of the hut.
10. Dyeing the poles (framework) of the hut. 11. Spreading the mats out prior to placing them over the hut. 12. Bending the poles for the framework.
13. Pulling the mats over the hut. 14. Completed hut.

Tony Hül

Scirpus nodosus *Rottb.*

CYPERACEAE

COMMON NAMES:

Vleibiessie / Dunner matjiesgoed

!khowobes

HERBARIUM SPECIMEN:

F Archer 233

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

reeds

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
								x	x	x	x

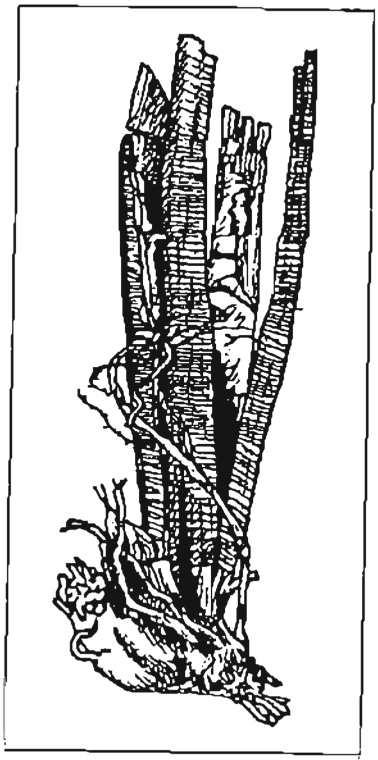
RECOGNISED BY:

USES & PREPARATION:
Reeds are picked, dried and the heads cut off. Reeds of a similar length are stitched together with twine (traditionally made from the fibrous bark of the roots of *Rhus undulata*, more recently with strings from hessian fodder bags.) Before stitching, the reeds are soaked to ensure that they dont split.

They are also used to pack a cooking shelter.

GENERAL:
Confined to moist habitats.

DISTRIBUTION:
Coastal areas of the Cape.



The outer casing of the reed which is removed and then discarded.

Tony Hül

Grid references

2816BA	2816DB						

Solanum tomentosum *L.*

SOLANACEAE

COMMON NAMES:

Skerpioenbos / !nuheis

HERBARIUM SPECIMEN:

F Archer 138

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
	x					

PART(S) USED:

root

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Round shape, white wooly broad leaves and yellow fruits.

USES & PREPARATION:
The root is put in milk to sour it and give a good taste.

DISTRIBUTION:
Clanwilliam to Port Elizabeth and other parts in South Africa (1984:425).

GENERAL:
This is probably an incorrect identification.

Grid references

2816BA	2816DB						

Stoeberia beetzii *(DTR)* var. arborescens *Friedr.*

MESEMBRYANTHEMACEAE

COMMON NAMES:	HERBARIUM SPECIMEN:
Rooivye / Rooiklooi / Wyfievyebos	F Archer 180, 178
	IDENTIFICATION:
	Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
						x

PART(S) USED:

dried branches

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

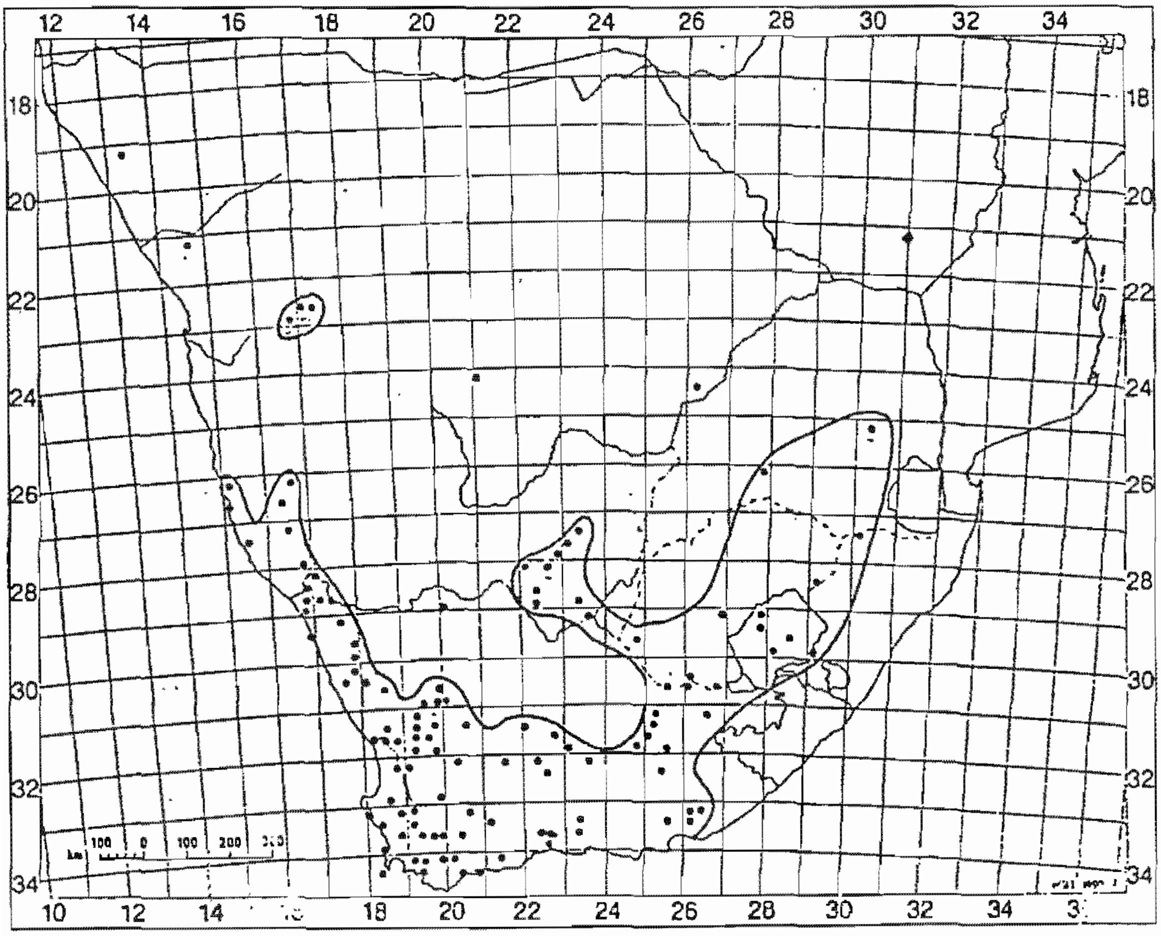
RECOGNISED BY:
Shrub with blue-green succulent leaves and small white flowers

USES & PREPARATION:
The most popular firewood of many people. It produces a fine quality firewood which forms excellent coals.

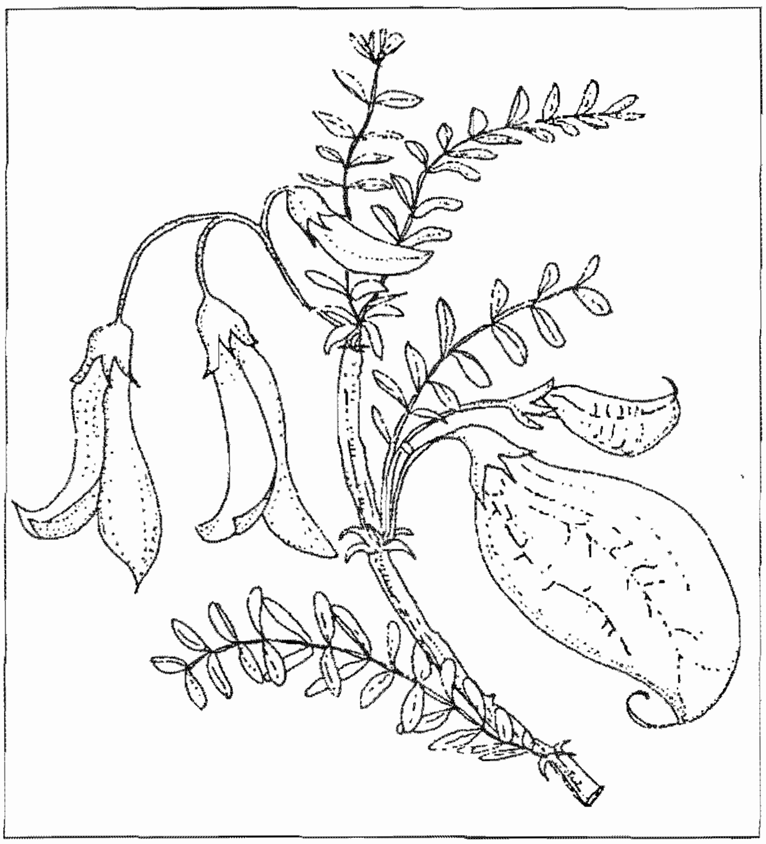
GENERAL:
Related to *S. beetzii*, a common pioneer found in the same region but with inferior wood quality. The latter is a spreading shrub up to 1m high. (E van Jaarsveld: pers comm)

DISTRIBUTION:
Found in the Sandveld of Namaqualand in flat, sandy places (Le Roux & Schelpe:1988).

Distribution



Sutherlandia frutescens
Indigenous Healing Plants



Grid references

2114BA
2216DD
2217CA
2217CB
2421AA
2426AC
2530AB
2615AA
2615CA
2616BA
2616cB
2627BB
2715BC
2716DD
2722DD
2723AD
2723CA
2730CA
2816BA
2816BD
2816DB
2816DD
2817AA
2817CA
2820CC
2822AA
2822BA
2822CB
2822CD
2823CD
2829AC
2916BD
2917BA
2917DB
2917DD
2923BA
2924DB
2925CB
2926BB
2927BB
2927BD
2928CC
2928DA
2929CC
3017BB
3017BC
3018AC
3018DA
3019DB
3019DC
3019DD
3020CC
3021DD
3025DA
3026AC
3026CA
3026DB
3118BC
3118CB
3118DA
3118DB
3119AB
3119AC
3119AD
3119BD
3119CB
3119CD
3119DA
3119DB
319DD
3120BC
3122AC
3122DB
3123CC
3124DD
3125AB
3125BD
3125CA
3125DC
3126BA
3218BB
3218DC
3219AA
3219DD
3220AB
3221BA
3222AB
3222BC
3223BA
3224AC
3225AD
3318AD
3318BB
3318CD
3318DB
3319AA
3319AC
3319BB
3319CB
3319DA
3319DB
3320BA
3320CB
3321AC
3321BD
3322CB
3322DA
3322DB
3322DC
3323AD
3323CB
3323CC
3323DB
3325BC
3326AA
3326AB
3326AC
3418AD
3419AA
3419AB
3419AD
3419BB
3420AA
3420AD
3420BD
3421AB
3422AA
3423AA
3423AB
3423BB

Sutherlandia frutescens *R.Br.*

FABACEAE

COMMON NAMES:

Jantjie Bêrend / Kankerbos / Kalkoentjiebos

HERBARIUM SPECIMEN:

F Archer 205

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
		x	x			

PART(S) USED:

leaves roots

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Red flowers and grey-green leaves, divided into 17 leaflets, narrow with hairy underneath.

USES & PREPARATION:
Make an infusion and drink.

The inhabitants of Namaqualand still use this remedy for stomach ailments. If the infusion is taken in large quantitites it causes intoxication - and some young people in the region use it as a drug.

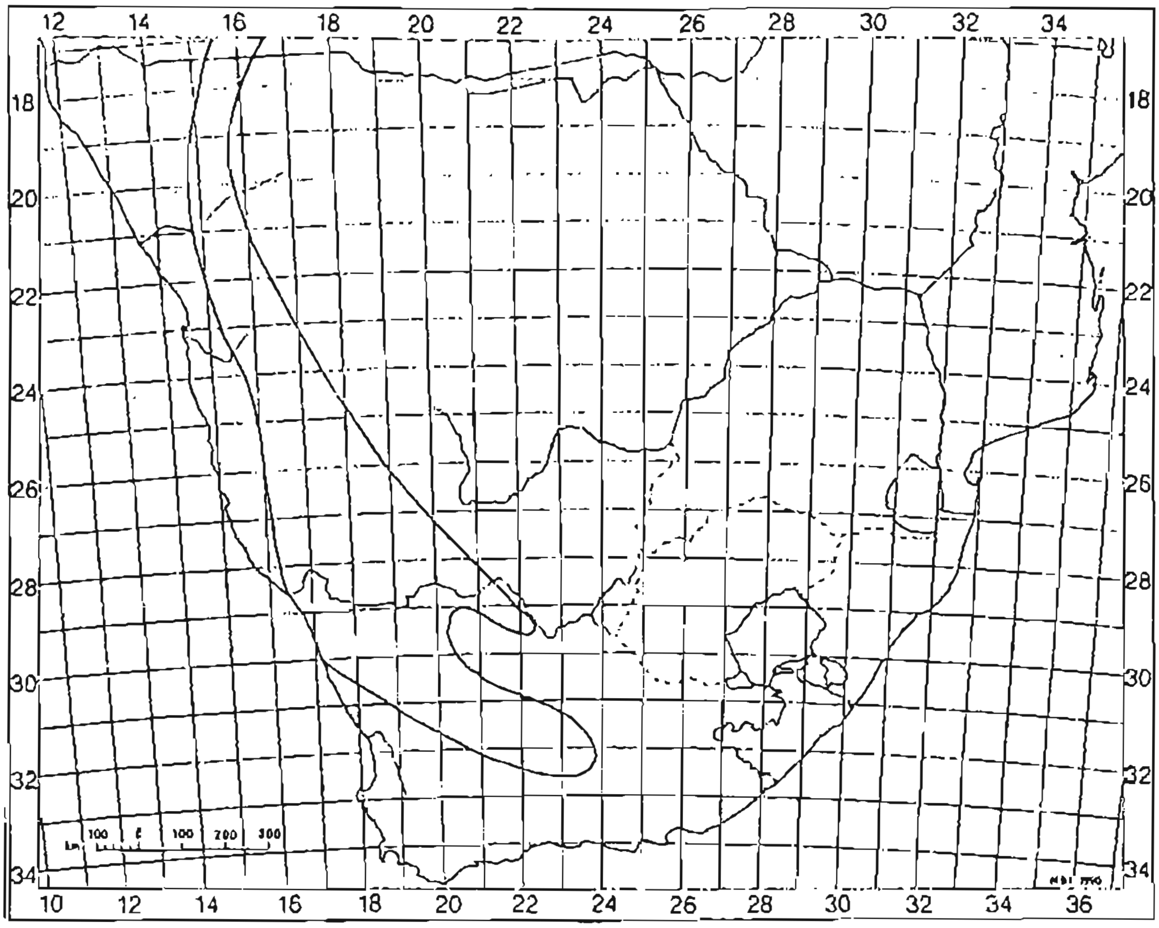
The leaves are aromatic, yet very bitter. Leaves steeped in boiling water make an excellent wash for wounds, and when drunk, a remedy used to bring down fevers, treat chicken pox and internal cancers.

A weak infusion of the leaf can be taken for influenza, rheumatism, liver ailments, haemorrhoides, bladder and uterus complaints, diarrhoea, stomach ailments and for backache.

A decoction of the roots and leaves is used as an eyewash in the treatment of eye troubeles. In spite of the bitterness of the leaves, Sutherlandia is relished by browsing sheep and cattle (Roberts:1990).

DISTRIBUTION:
Throughout southwest and southern Cape and in dry parts of South Africa (Bond & Goldblatt 1984;298.

Distribution

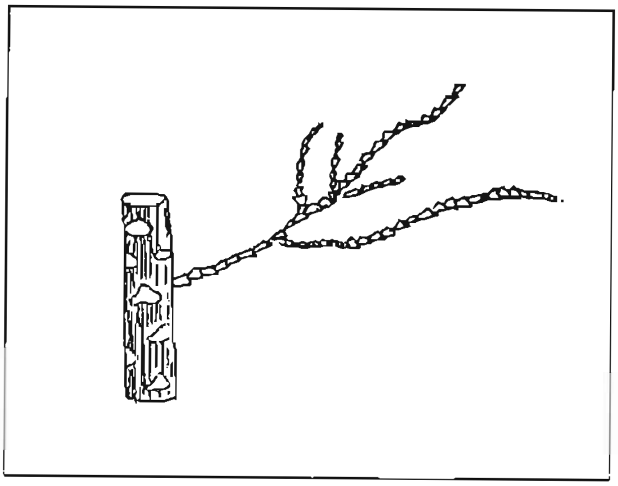


Grid references

1712AC	2215CC	2617CA	2817AC	2819DA	2920BB	3121DC	3324CA
1713CD	2314BA	2719AD	2818CD	2820CB	2924AC	3122BC	3324DA
1812BC	2314BD	2720AC	2818DC	2820DC	3018CA	3221BD	3418AD
1914DD	2417DB	2816BB	2819AB	2821CA	3018DA	3321DA	
2214DA	2517BA	2816BD	2819BB	2917DB	3019CA	3322AA	
2214DC	2616DA	2816DA	2819CB	2917DD	3119AD	3323BA	

Leaf detail of Tamarix usneoides

Namaqualand and Clanwilliam



Tamarix usneoides *E.Mey ex Bunge.*

TAMARICACEAE

COMMON NAMES:

Dabi-boom

HERBARIUM SPECIMEN:

F Archer 19

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ms	Mu	Da	Du	F
			x	x		

PART(S) USED:

roots branches

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Usually grows next to river.

USES & PREPARATION:
Branches are used fresh and are usually used temporarily.

The roots are boiled and the resultant steam is used to disinfect wounds inflicted by leopards.

A decoction of the roots is drunk to cure indigestion and diarrhoea and to relieve stomach pains (Van den Eynden:1992).

The leaves provide valuable fodder in areas where little else exists and the wood is used as fuel (Palgrave:1983).

The branches are used for the framework of houses and kraals - especially abundant at Sendelingsdrift.

DISTRIBUTION:
Dry parts of the Cape and Namibia, mainly along dry water courses and rivers (E van Jaarsveld: pers comm).

Grid references

1917BA	2017AD	2115DC	2429AA	2529AD			
1917CB	2115DA	2215AD	2430CD	2616CB			

Tapinanthus glaucocarpus *(Peyr.) Danser*

LORANTHACEAE

COMMON NAMES:

Namfire-nam

HERBARIUM SPECIMEN:

F Archer 223

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

fruits

SEASON COLLECTED:

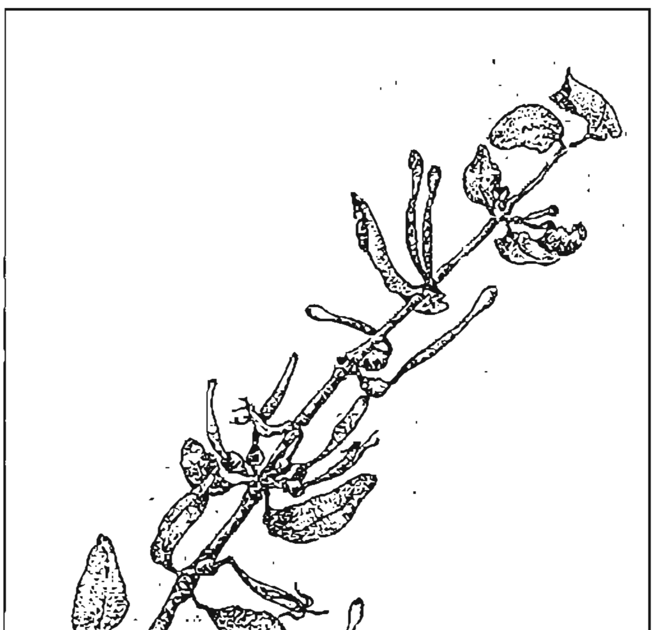
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							x	x			

RECOGNISED BY:
Red berries.

USES & PREPARATION:
Eaten raw.

Tapinanthus oleifolius

Heil- und Gift Pflanzen in Südwestafrika



Grid references

1713AA	2214CB	2620DC	2822CB
1713AC	2214DA	2622BC	2822DD
1714AD	2215CB	2631BA	2824BA
1715BD	2215CC	2716DC	2917CA
1719DD	2215DC	2716DD	2917DA
1722DC	2215DD	2717AD	2917DB
1724DD	2216AC	2717CB	2917DC
1725CC	2216CC	2718DA	2917DD
1812BA	2217CA	2719BC	2919AB
1812DD	2217CC	2722DD	2919BA
1813BB	2218AD	2723AD	2922AA
1813BC	2223CB	2816BD	2923BA
1816DD	2230CD	2816CB	3017BB
1821BA	2231CA	2816DB	3123BD
1821BD	2315CA	2817AA	3320DD
1917BA	2317AC	2817AC	
1917CA	2317CA	2817AD	
1918AD	2320BB	2817CC	
1918CA	2321DD	2817CD	
1920BC	2322AA	2817DC	
1921CA	2322AB	2818CD	
1922BB	2326BB	2818DD	
1923AA	2416CC	2819BB	
1923CA	2425DB	2819DB	
2017AC	2426BB	2820AB	
2020DB	2428DA	2820BA	
2022AB	2429AD	2820CB	
2114BA	2516DD	2820DA	
2115CC	2520BC	2820DB	
2115DA	2525CA	2821AC	
2116DD	2528CB	2821BD	
2120AA	2618CA	2821DD	
2124BA	2619DC	2822BD	

Tapinanthus oleifolius *(Wendl.) Danser*

LORANTHACEAE

COMMON NAMES:

Tee

HERBARIUM SPECIMEN:

F Archer 164

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

leaves
branches

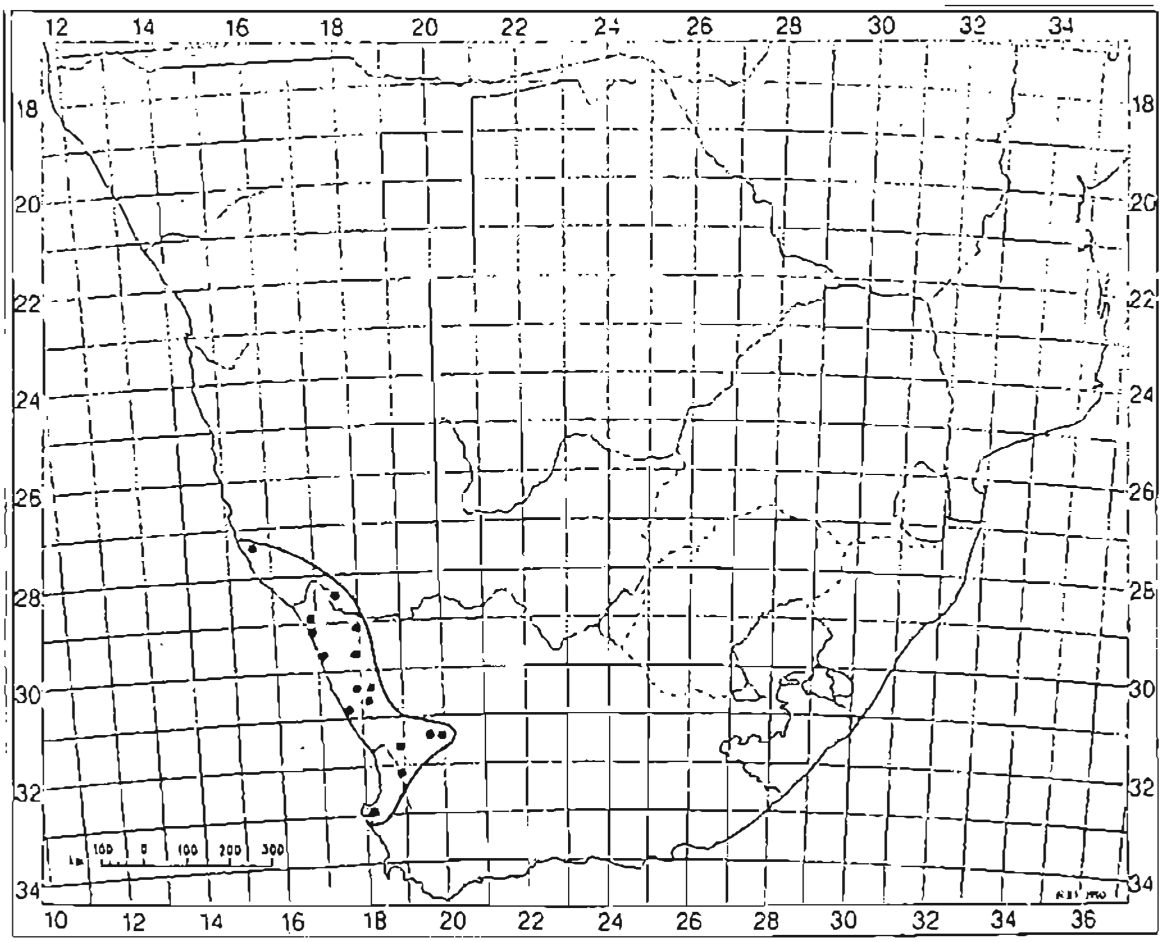
SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x	x	x		

RECOGNISED BY:
The dark green "shadows" it forms in the bushes where it grows.

USES & PREPARATION:
The leaves and branches are dried, pounded and used to make an infusion, this is then drunk as a tea.

Distribution



Grid references

2816DD	2917BB	3017BD	3018AC	3118DB	3119BD	3218BB
2916BB	2917DB	3017DC	3018CA	3119BC		3319DD

Trachyandra falcata

Namaqualand and Clanwilliam

Trachyandra falcata *(L.f.) Kunth*

ASPHODELACEAE

COMMON NAMES:

Bokkool / Wildekool

HERBARIUM SPECIMEN:

F Archer 388

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

young inflorescence

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
						x	x	x	x		

RECOGNISED BY:
Curved, leathery leaves. Pale mauve to white flowers, marked with brown.

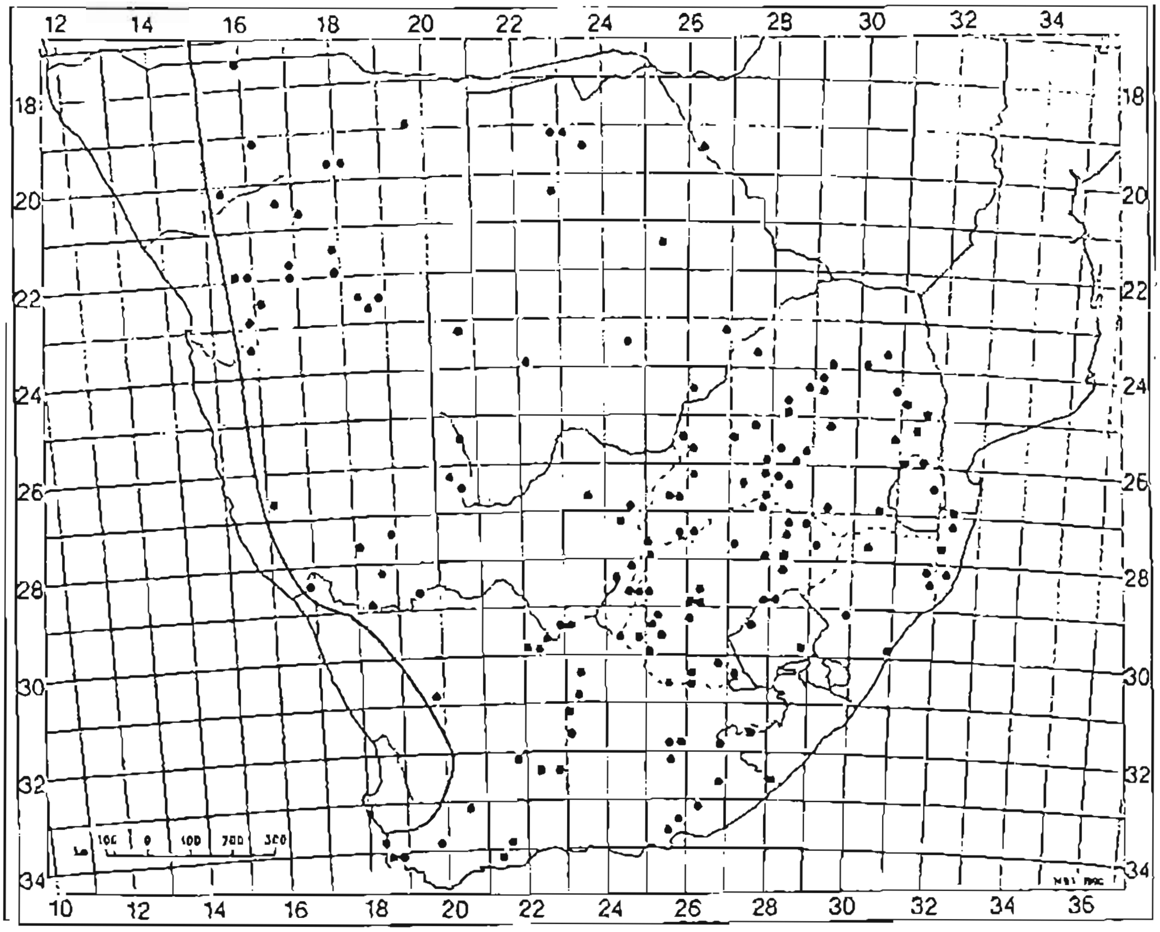
USES & PREPARATION:
The young, unopened flowers are boiled with meat and with *Oxalis spp.*

GENERAL:
This species is widespread and occurs abundantly next to roads.

DISTRIBUTION:
Klawer to Saldanha and in Namaqualand, the Western Karroo and Southern Namibia (Bond & Goldblatt 1984:35) Usually common in sandy soil (Obermeyer:1962).

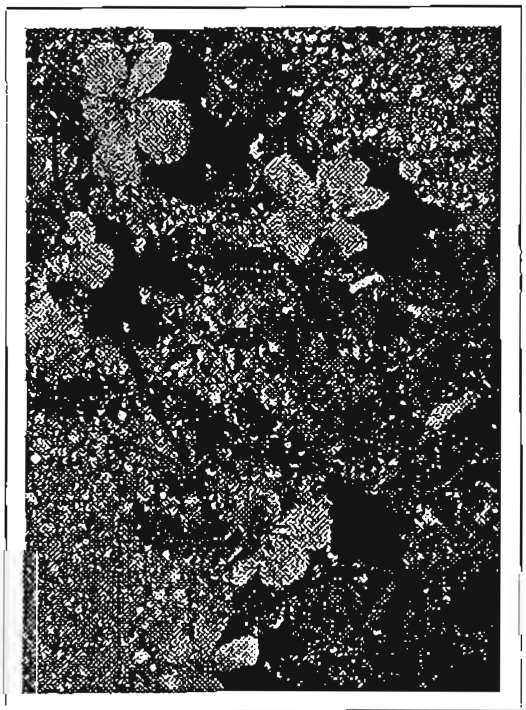
NUTRIENT ANALYSIS:
Refer to Table in Appendix.

Distribution



Tribulus terrestris

Namaqualand & Clanwilliam



Grid references

1518DA	2320BA	2624DC	2824AD	3025DA
1819DC	2322CC	2625DA	2824BA	3026AC
1916AA	2324BC	2625DB	2824CA	3026BB
1917DB	2326BB	2626AA	2824DA	3026CA
1918CA	2327DA	2627AD	2824DB	3027AC
1922BB	2329CD	2627BB	2825CA	3123AA
1923AA	2330CC	2627CA	2826CB	3123CA
1923BC	2330DA	2627DB	2826CC	3125DC
1926AD	2426AC	2627DD	2826CD	3125DD
2015AB	2428BD	2628AA	2827DD	3126DD
2016BC	2428CB	2628A	2828AB	3127DA
2017AC	2428CD	2629CD	2828CC	3221BB
2022BD	2429AA	2630DC	2831BB	3222AD
2115DC	2429AC	2631BD	2831BD	3222BD
2115DD	2430BD	2632CD	2832AA	3225BA
2116DB	2431CA	2718BD	2922BD	3226DB
2116DD	2431DC	2718CA	2922CC	3228CA
2117BD	2520BC	2724AB	2922CD	3318CD
2117DD	2525BD	2725BD	2922DA	3319DD
2125AD	2526CA	2725CA	2923AC	3320BA
2215DD	2527AC	2725CC	2924CB	3321DC
2216AC	2527BA	2726AC	2924DB	3325BD
2218AD	2527DD	2727CA	2925AB	3325DA
2218BD	2528CA	2727DD	2925AC	3326AB
2218DA	2528CB	2728AB	2925CB	3418BA
2225BC	2528DC	2728AD	2925CC	3418BB
2227CA	2529AB	2728BB	2926AA	3421AB
2229AB	2530BD	2728CD	2927BC	
2229BA	2531AB	2729CA	2928CB	
2229BC	2531CC	2730CB	2928DD	
2229CD	2531DC	2732AB	2929BB	
2229DD	2616CA	2732CA	2930DD	
2230AC	2620AB	2818BA	3019DD	
2230BD	2620BC	2818CD	3023AD	
2315BD	2623DA	2819DA	3023CD	

Tribulus terrestris *L.*

ZYGOPHYLLACEAE

COMMON NAMES:

Dubbeltjie

HERBARIUM SPECIMEN:

F Archer 42

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

leaves

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			x	x	x						

RECOGNISED BY:
Trailing stems

USES & PREPARATION:
Boiled with milk and meat.

Also eaten by goats.

GENERAL:
Can cause illness in sheep (Vahrmeijer:1981).

DISTRIBUTION:
Widespread in South Africa in rocky areas, common on cultivated lands (E van Jaarsveld: pers comm).

Trachyandra sp.

ASPHODELACEAE

COMMON NAMES:

Kool / Bloukool (370) / Wyfiekool (374)

HERBARIUM SPECIMEN:

F Archer 211, 216, 217, 370, 374, 378

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

flowers

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x				

RECOGNISED BY:

USES & PREPARATION:
The flowers are boiled when in bud and an *Oxalis sp.* is added.

GENERAL:
Difficulty in identification. People interviewed feel that there are at least three different spp.

DISTRIBUTION:
Widespread in Namaqualand and southern Namibia.

Grid references

2817AC

Trichocaulon alstonii *N.E.Br*

ASCLEPIADACEAE

COMMON NAMES:

!oba

HERBARIUM SPECIMEN:

F Archer s.n.

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

fleshy stems

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
				x	x	x	x	x			

RECOGNISED BY:
Fleshy stems with small yellow flowers.

USES & PREPARATION:
Young green juicy stems are pealed and eaten raw.

A favourite in the Sendelingsdrift area, where it is seen to be especially abundant.

GENERAL:
Occasionally cultivated in South Africa and abroad.

It has been noticed that an inhabitant in Eksteenfontein, Richtersveld is growing the plant.

DISTRIBUTION:
Usually found in stony fields, 600m in elevation. Occurs in Little Namaqualand and Steinkopf areas (White & Sloane:1937) Species found in the Orange River Valley on rocky ridges.

Grid references

2917BC	3017BB	3119AD	3119BD	3320AC			

Tulbaghia dregeana *Kunth.*

ALLIACEAE

COMMON NAMES:

Wilde knoffel

HERBARIUM SPECIMEN:

F Archer 363

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
		x	x			

PART(S) USED:

leaves corms

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x	x				

RECOGNISED BY:
The inner leaves have a characteristic garlic smell

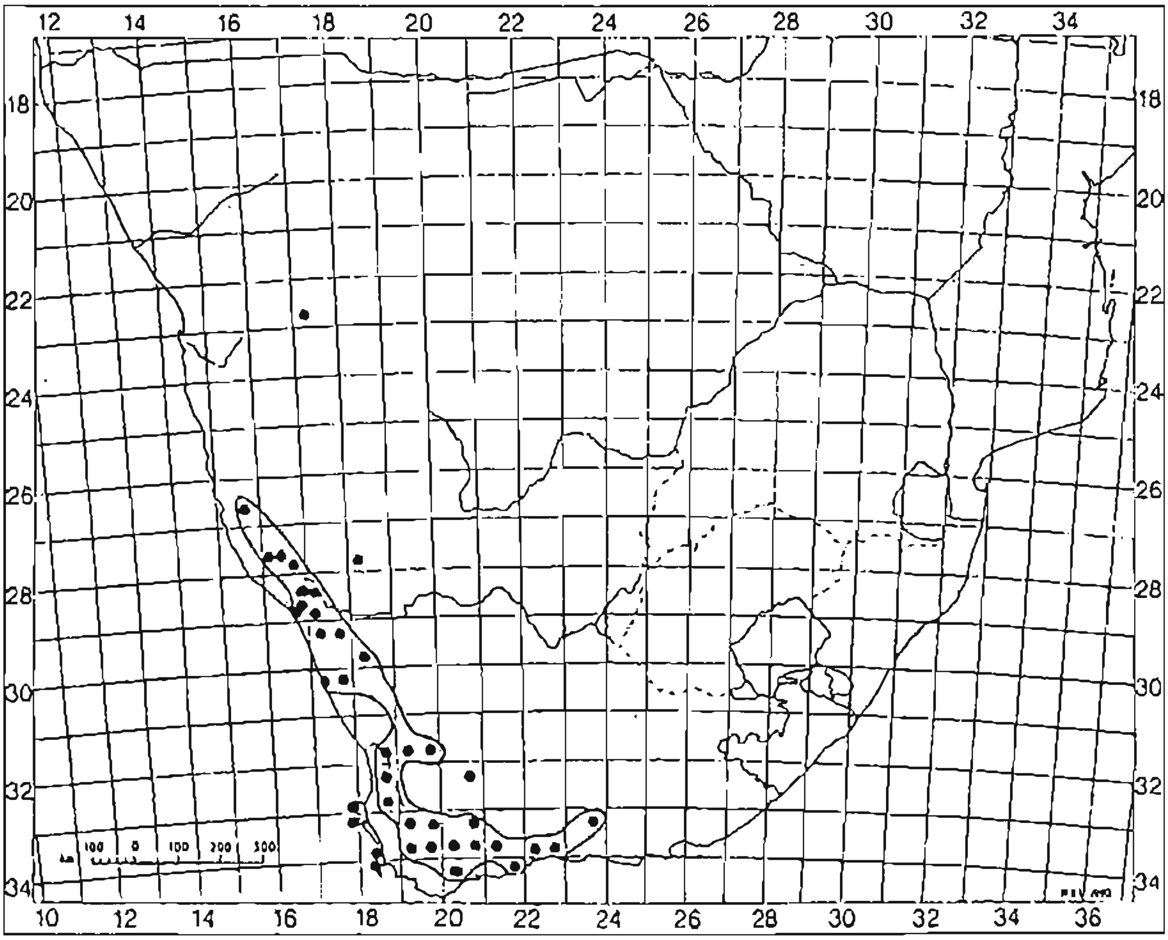
USES & PREPARATION:
The corm is chewed as a cure against colds.
A mixture of the pulped corm and other plants - such as leaves of *Salvia dentata* - is used as an infusion.

GENERAL:
Problematic identification - see distribution

DISTRIBUTION:
On well-drained gravelly slopes in succulent Karoo and western and north western Cape. Common on the lower slopes of Cornellsberg (E van Jaarsveld: pers comm).

Western Cape Province, also Vanrhynsdorp, Springbok, Komaggas, Botterkloof and Wuppertal (Vosa:1975).

Distribution

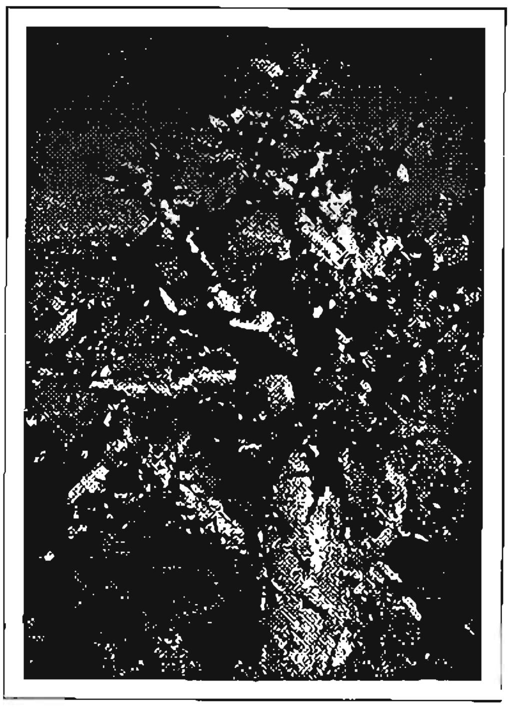


Grid references

2217CA	2916DD	3118DC	3218DB	3319CB	3320BA	3322CD
2217CA	2917BB	3119BD	3218DC	3319CB	3320BA	3322DA
2718CA	2917BD	3119CD	3219BB	3319CB	3320BA	3322DA
2718CA	2917BD	3119DD	3220BC	3319DA	3320DB	3418AB
2816BB	2917DA	3119DD	3319AD	3320BA	3320DD	3418AD
2816BD	2917DC	3218BB	3319CB	3320BA	3322CA	

Tylecodon paniculatus

Namaqualand and Clanwilliam



Tylecodon paniculatus *(L.f.) Toelk.*

CRASSULACEAE

COMMON NAMES:

t'kabadda / Botterboom / Botterbos

HERBARIUM SPECIMEN:

Information supplied by Ernst van Jaarsveld

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

stem

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

RECOGNISED BY:
Thickset shrubby stem succulent up to 2 m tall with peeling smooth brown bark. Leaves oblanceolate, flowers spreading, reddish, tubular and visited by sunbirds.

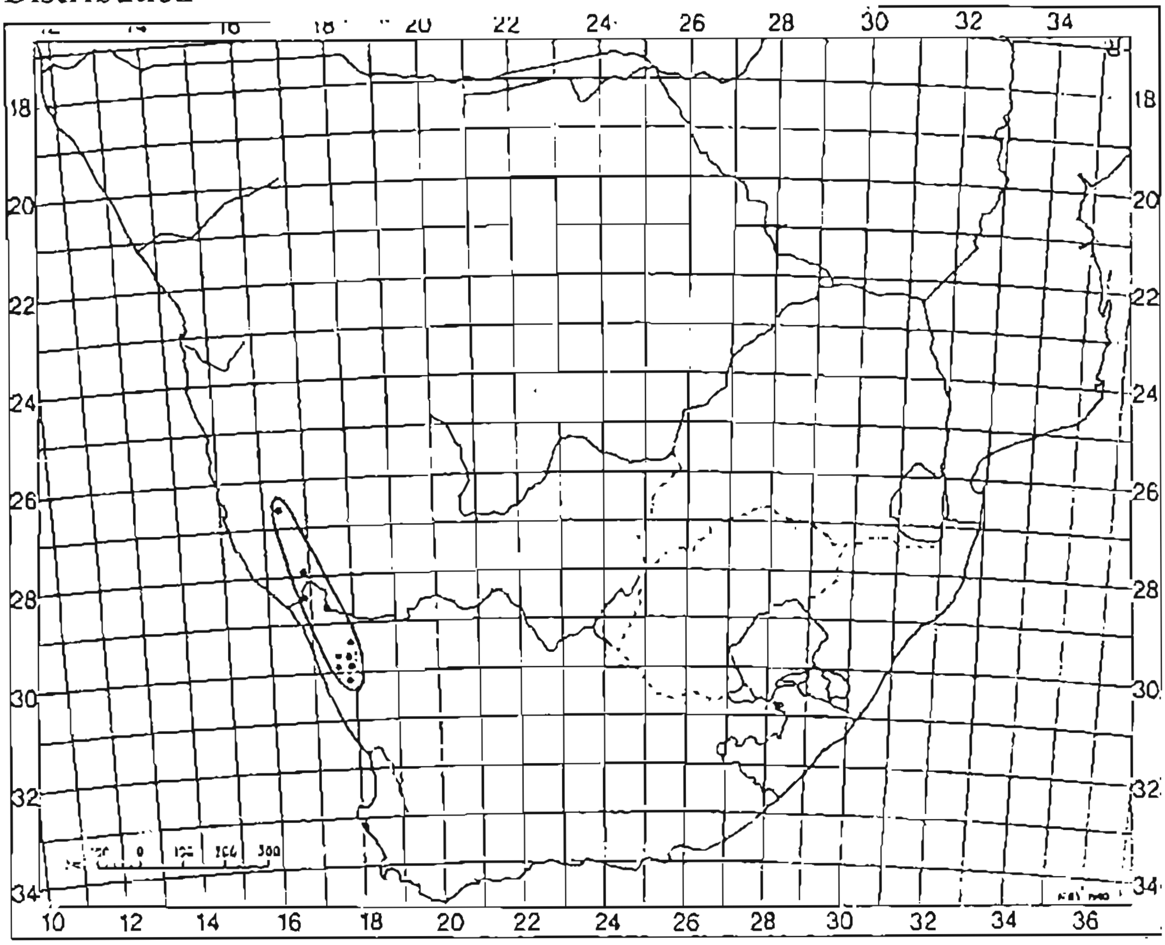
USES & PREPARATION:
The stem is cut on the one side to make it more slippery.

The slippery damaged stems were used by boer and Hottentot children for sliding down hillsides, clinging to the side branches.

GENERAL:
A common species frequently cultivated for its ornamental value. There are about 40 species in the genus of which *T. paniculatus* is the largest. According to Smith (1966) it has not been proved that it causes krimpsiekte and some farmers say cattle and ostriches thrive on it in the Klipplaat district. Wallace 1895 reports animals and hottentots draw a portion of their food supply form it. While Le Roux and Schelpe (1988:100) write "this plant, though not often eaten by stock and then mostly eaten in summer while flowering, causes severe stomach cramps ('krimpsiekte') and even death."

DISTRIBUTION:
Widely distributed in Succulent Karoo from Graaf Reinet in the east to southern Namibia in the north. It is often locally common.

Distribution



Grid references

2816BD	2817CB	2917BD	2917DA	2917DB	2917DC	2917DD	3017BB

Tylecodon wallichii *(Harv.) Toelken*

CRASSULACEAE

COMMON NAMES:

Xhom / !kome ganna / Kokerbos / Poppebossie

HERBARIUM SPECIMEN:

F Archer s.n.

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

bark

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

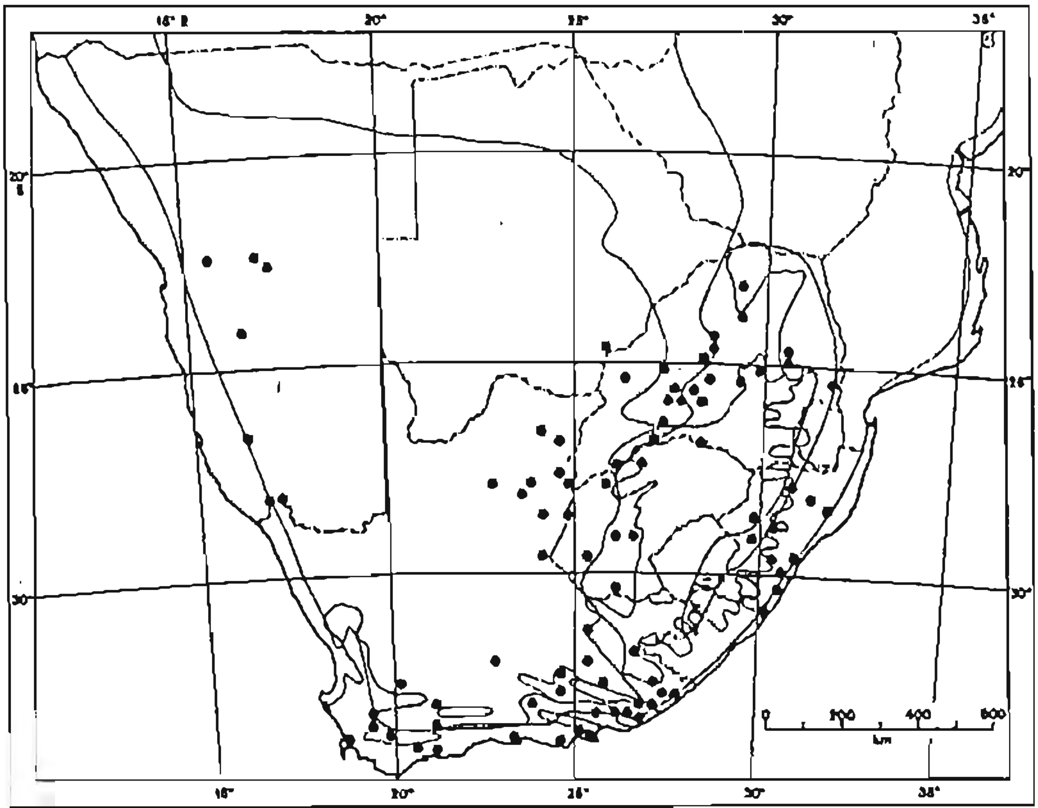
RECOGNISED BY:
Grey succulent stems with long, yellow flowers

USES & PREPARATION:
The stony bark was used in the making of quivers by the Khoi and the San in areas of the Karoo where the Kokerboom (*Aloe dichotoma*) does not occur (Smith: 1966).

GENERAL:
Causes "krimpsiekte" in livestock when eaten (caused by an alkaloid "Cotyledontoxin" which immobilizes the animal, the neck becomes pulled over to the side, and death follows.) (Smith: 1966)

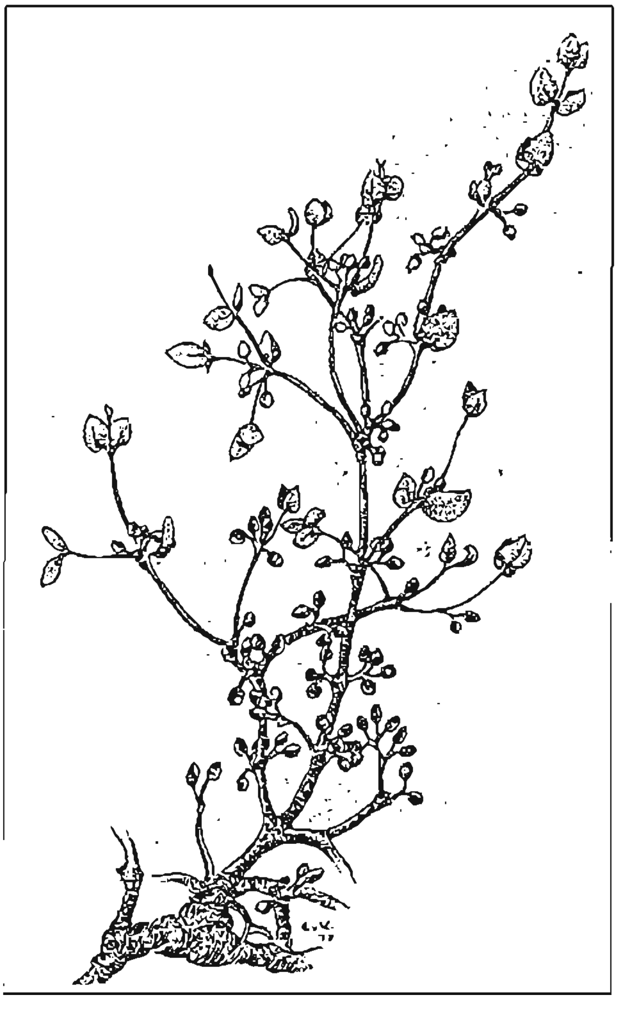
DISTRIBUTION:
Winter rainfall karoo region of South Africa and Namibia, common on rocky slopes, increased growth in areas of over-grazing.

Distribution



Viscum rotundifolium

Heil- und Giftpflanzen in Südwestafrika



Grid references

2116DD	2527DA	2823BA	3224AD
2216BD	2527DC	2823DC	3224BC
2216DA	2527DD	2824CA	3224DC
2217CA	2528AA	2824DA	3227DB
2229AB	2528AB	2824DB	3318DC
2229AC	2528CA	2824DC	3318DD
2229BD	2528CB	2826BC	3319DD
2229DD	2528CC	2826CD	3321BD
2230AC	2528CD	2826DC	3322BA
2230CC	2529AD	2829DD	3322CA
2329BD	2529CA	2830CB	3322CB
2329CD	2616CB	2830CC	3322DA
2416AA	2618DD	2830CD	3323AD
2425AD	2623DB	2831AB	3323DB
2425DB	2624CC	2831AC	3323DC
2426AC	2627BB	2918BB	3325BB
2427BC	2627CC	2924CA	3325BD
2428AD	2628AA	2926AA	3325CA
2428BC	2628CA	2927BC	3325CB
2428CD	2628CB	2930CB	3325CD
2428DA	2631CD	3023BA	3325DC
2429AA	2719CA	3026AC	3326XB
2429CD	2722DD	3026CA	3326AD
2430DA	2724AA	3030AB	3326BA
2430DC	2724BD	3030CC	3326BB
2431DC	2724DA	3125AB	3326BC
2525BD	2725CC	3126DD	3326DB
2526DA	2726AC	3221BB	3420AD
2527AA	2732AC	3222AA	3421AD
2527AB	2816BB	3222AD	3421BC
2527AD	2816BD	3222BC	3422AA
2527BA	2817AA	3222CD	
2527BC	2818DB	3223DD	

Viscum rotundifolium *L.F.*

VISCACEAE

COMMON NAMES:

Voelent

HERBARIUM SPECIMEN:

F Archer 21, 143

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x						

PART(S) USED:

berries

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					x	x					

RECOGNISED BY:
Bright red fruits.

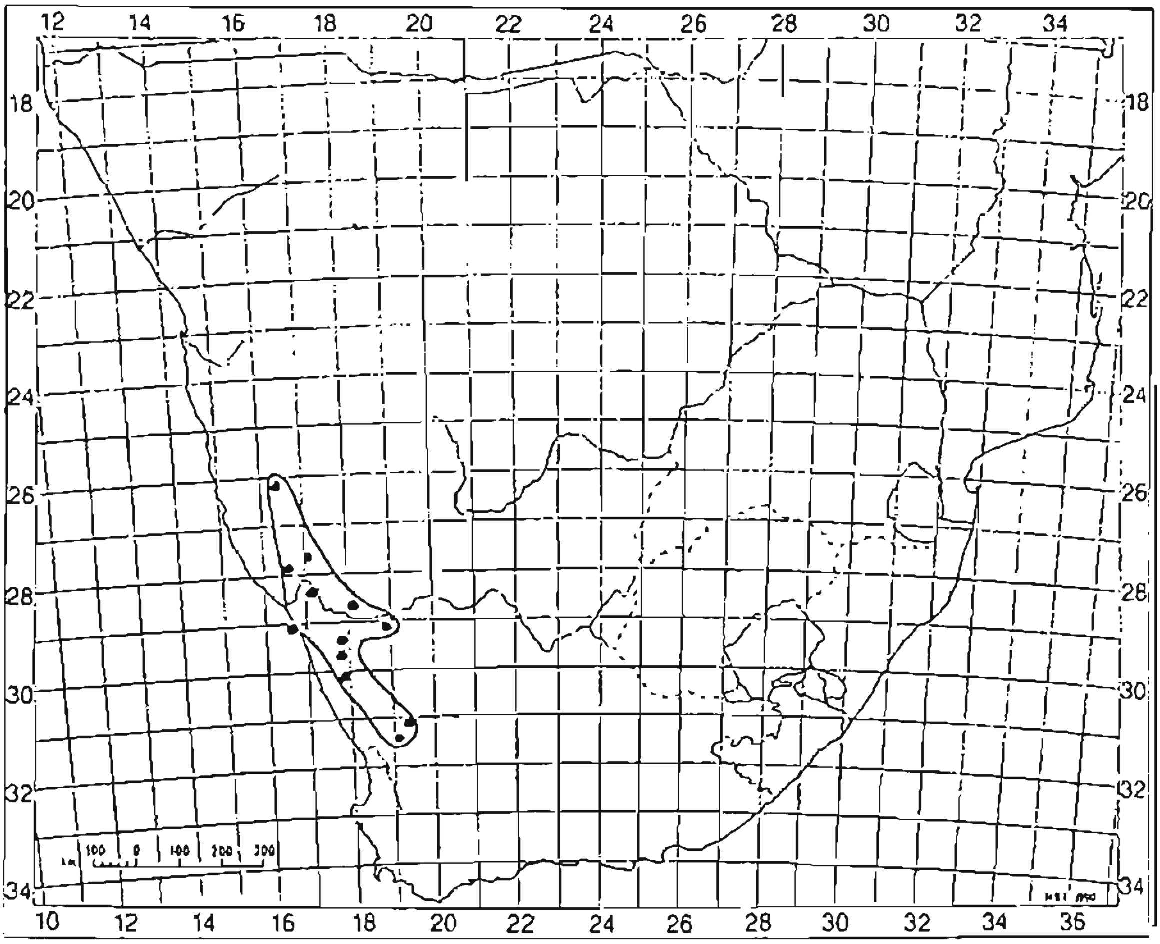
USES & PREPARATION:
Eaten raw.

This parasite grows on various species, including Acacia, Antidesma, Boscia, Brachylaena, Buddleia, Cadaba, Carissa, Colpoon, Combretum, Diospyros, Dodonea, Ehretid,Euclea, Guryops, Grewia, Maerua, Maytenus, Olea, Passerina and others.

DISTRIBUTION:

TYPE OCCUR:
Parasite, especially in *Euclea pseudebenus*

Distribution

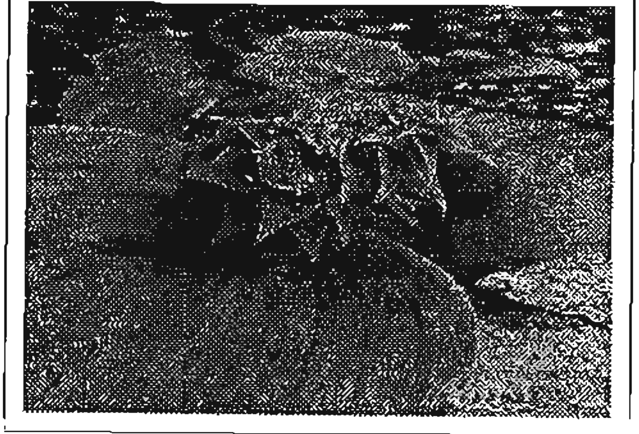


Grid references

2717CA	2818CA	2917BD	2918BB	3119AB			
2817AC	2916BA	2917DB	3017BB	3119AC			

Whiteheadia bifolia

Namaqualand and Clanwilliam



Whiteheadia bifolia *(Jacq). Bak.*

HYACANTHACEAE

COMMON NAMES:

Naro

HERBARIUM SPECIMEN:

F Archer 174

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
	x					

PART(S) USED:

tuber

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							x	x			

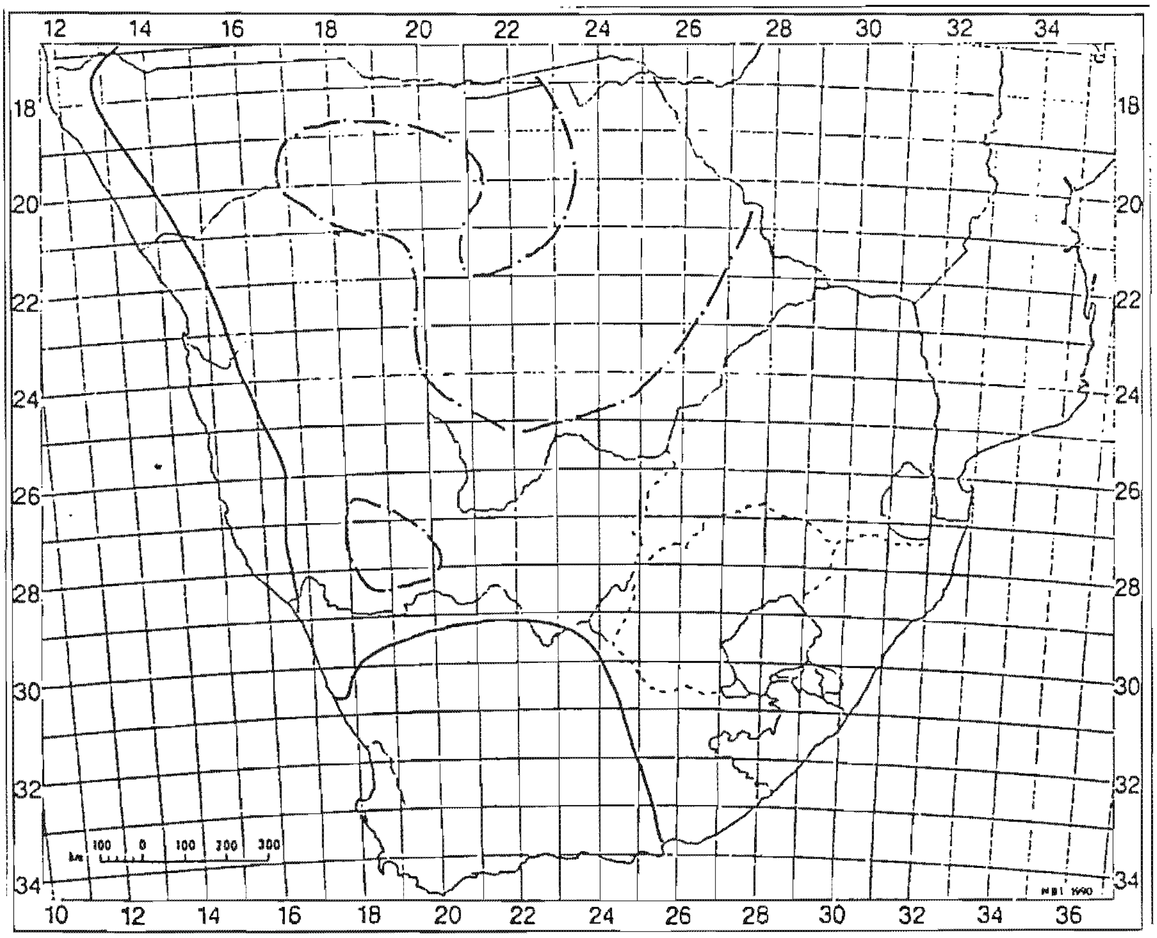
RECOGNISED BY:
Large oval leaves, opposite. Greenish cup-shaped flowers.

USES & PREPARATION:
Always cooked with brain.

Recipe from one interview only

DISTRIBUTION:
Occurring in the protection of rocky boulders from the Gifberg northwards to the Orange River. (E van Jaarsveld: pers comm)

Distribution



Grid references

1721CC	2230CD	2430CA	2528AC	2625DA	2731CD	283ICB	3226BC
1724AD	2231CA	2430CC	2528BB	2626AA	2732AA	2831DD	3226DD
1724CB	2326BB	2430CD	2528BC	2627AD	2732BC	2832AA	3227CA
1823AB	2327DA	2430DB	2528CA	2627BB	2732CA	2832AB	3227DA
1823BC	2327DB	2431AA	2528CB	2628AA	2732CD	2832AC	3227DB
1915BB	2327DD	2431AD	2528CC	2628AD	2817AA	2832AD	3318CD
1917CB	2328CB	2431CD	2528CD	2628CA	2817AC	2920BB	3326BB
1920DC	2329BB	2431DC	2528DA	2630CA	2817AD	2921CD	3326BC
1922AC	2329CD	2525BD	2529AC	2631AC	2817DA	2922DB	
1923AA	2330AA	2525DC	2529AD	2631AD	2819DA	2926AB	
1923AC	2330CA	2526AB	2529CB	2631DC	2820CB	2930CB	
2016BC	2330CC	2526AD	2530AD	2632CC	2823AC	2930CC	
2116AC	2330DA	2526CA	2530BC	2717DA	2824AD	2930DA	
2116DD	2421AA	2526CB	2530BD	2719AD	2824BA	2930DC	
2117AA	2421DD	2526CD	2530CB	2724BD	2824DA	2930DD	
2124BA	2425DD	2526DA	2530DB	2724DA	2824DB	2931CA	
2125AD	2427DA	2526DD	2531BD	2725CB	2825BD	3023BA	
2215CB	2428BA	2527AA	2531CB	2725CC	2825CA	3024AD	
2218AD	2428BC	2527AD	2531CC	2726AC	2826BC	3024BB	
2220AC	2428CD	2527BA	2531DC	2726BC	2826CD	3029BD	
2225BC	2428DA	2527CC	2616CB	2727CA	2826DC	3030BB	
2229BC	2428DB	2527DA	2618CA	2727DC	2827AD	3030CA	
2229CC	2429AA	2527DC	2623DA	2730CB	2827CA	3030CB	
2229DD	2429AC	2527DD	2624DC	2731AC	2829DB	3125BC	
2230BD	2429CD	2528AA	2625CB	2731BC	2831AC	3126DD	
2230CC	2430AB	2528AB	2625CC	2731CA	2831BD	3225DA	

Ziziphus mucronata *Willd.*

RHAMNACEAE

COMMON NAMES:

Hakiesdoring / Blinkblaar wag 'n bietjie / Buffalo Thorn

HERBARIUM SPECIMEN:

F Archer 53, 128, 147

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
x		x	x	x		x

PART(S) USED:

berries		leaves bark	roots	young branches		

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	x	x									
x	x	x	x	x	x	x	x	x	x	x	x

2-3: berries 1-12: branches/leaves

RECOGNISED BY:
Branches with tiny thorns (hooked spines)

USES & PREPARATION:

In spite of its rather acrid taste the berries were eaten in the past by Nama people. Today berries are not used in this wPeople commented on jackal on the Orange river which consume the berries. The round fleshy fruits are eaten raw or boiled, while the Ovambo traditionally brew an alcoholic beverage from the fruits. Pounded fruits are roasted and ground as a coffee substitute.

A mixture of leaves with cold water is drunk to cure diarrhoea, fever and malaria. Sore eyes are washed with an infusion of the leaves. A root decoction is a treatment for dysentery and snakes bites. (Van den Eynden: 1992) Boils and other skin infections are treated with a leaf paste, and this together with a root decoction, is used as a treatment for tubercular gland-swellings.(Palgrave: 1983) The roots, baked then crushes and powdered, are widely used as a remedy for pain. The powder is made into a poultice, held in place with bandages, and this believed to draw out the pain. To ensure that the pain does not return the whole poultice is eaten after a time by some, while others bury the poultice and make a fresh one each day. (Roberts:1990).

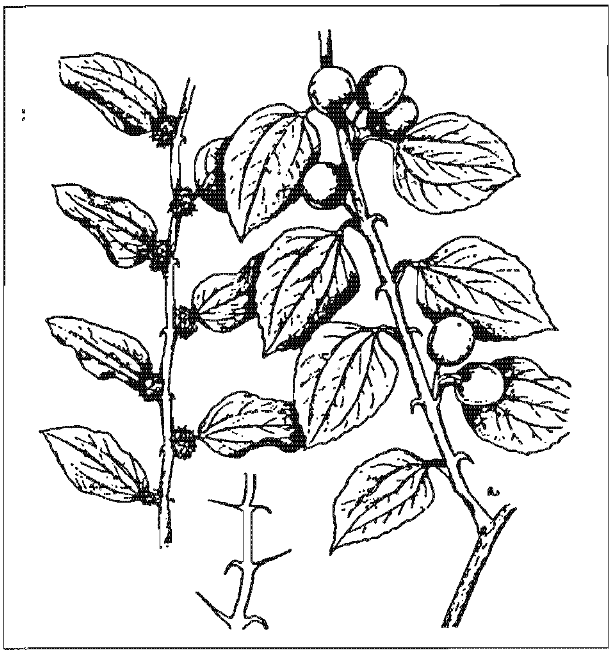
The wood is most popularly used to make the framework from the matjieshouses. It is said that the wood lasts for longer than any other species and that the natural growthform of young branches are ideal ly sized for the poles. Branches growing out of the trees which have fallen over are particularly useful as these are easy to harvest.

Illustration of the different uses of Ziziphus mucronata

Tony Hül

The wood is carved into bowels, spoons and yokes, the flexible branches are peeled of their bark and thorns for oxwhips, and the thick branches are used for fening posts, root struts, grain mortars and gates. (Roberts:1990)

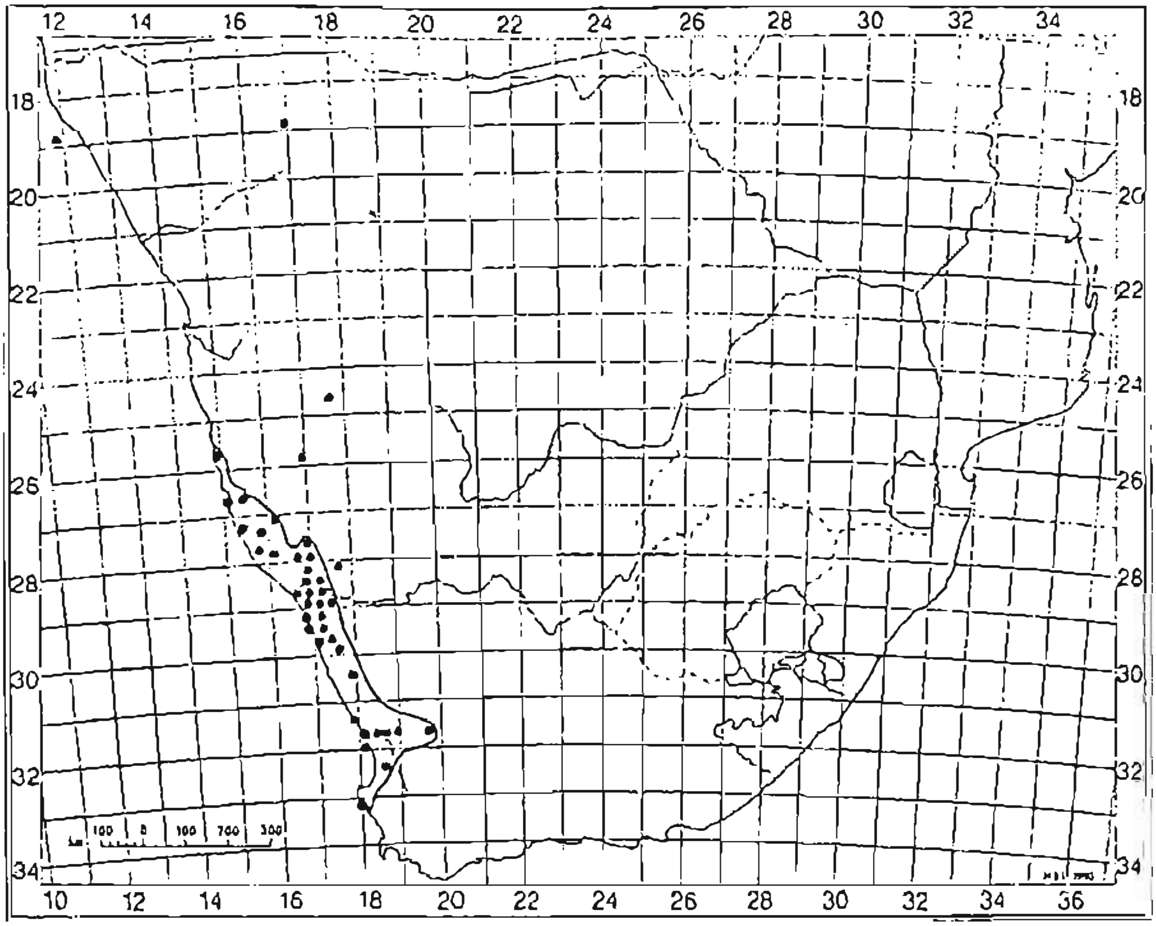
DISTRIBUTION:
Widely distributed in SA, occurring in the east, north and north-west Cape, Transkei, Natal, Swaziland, the OFS, almost the whole of the Transvaal, Botswana, Nambia (Fox & Norwood Young:1982).



Leaf and fruit detail of Ziziphus mucronata

Food from the Veld

Distribution



Grid references

2417DA	2716DB	2816BD	2817CA	2917AC	3117BD	3118DB
2514DB	2716DC	2816DA	2817CD	2917CA	3118CA	3119DA
2516DD	2716DD	2816DC	2916BD	2917DC	3118CC	3317BB
2615CA	2816BB	2816DD	2917AA	3017BD	3118DA	3321BC

Zygophyllum cordifolium L.f.

ZYGOPHYLLACEAE

COMMON NAMES:

!Ghambos / Sjielingbos

HERBARIUM SPECIMEN:

F Archer 32

IDENTIFICATION:

Compton

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

grazing

SEASON COLLECTED:

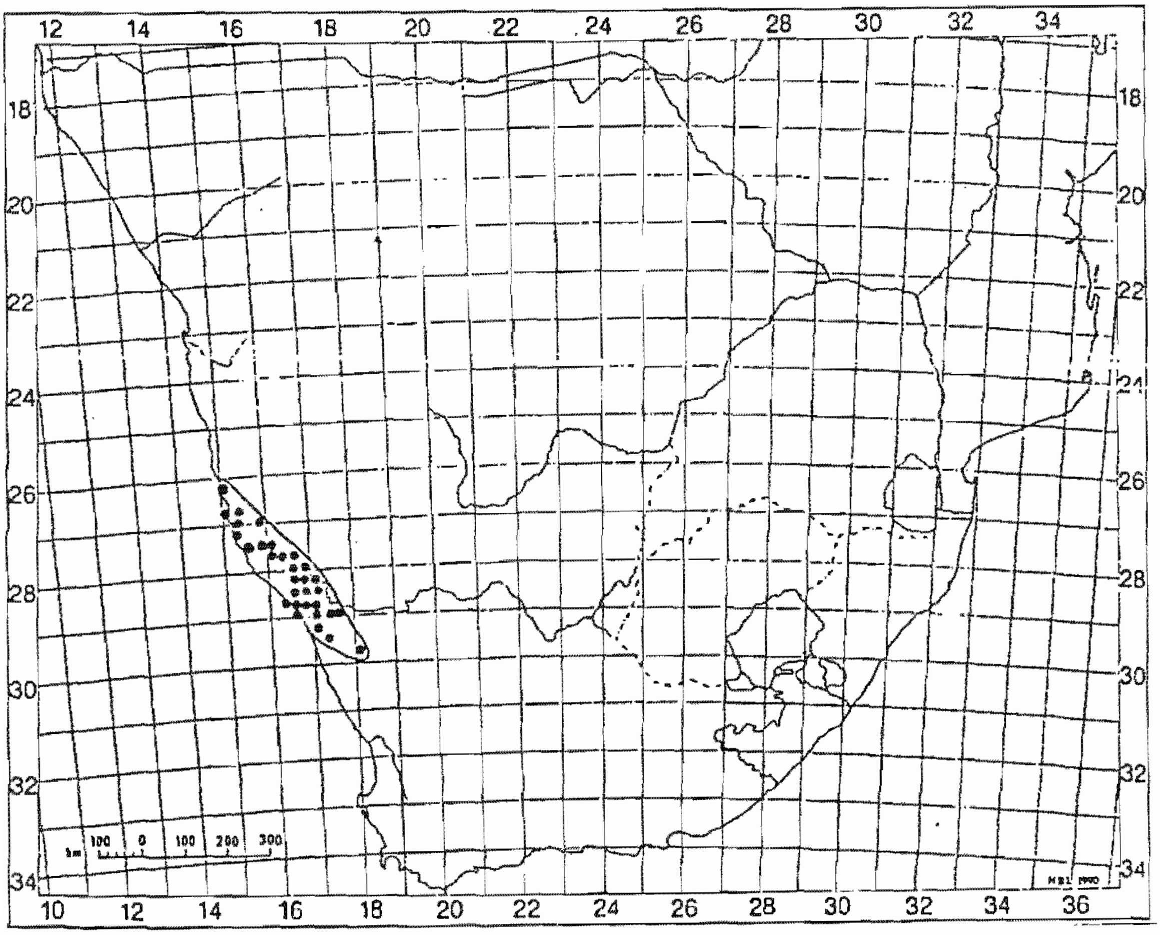
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

RECOGNISED BY:
Perennial shrub, succulent blue-green leaves, yellow flowers. The oblong fruits have four prominent wings.

USES & PREPARATION:
Important grazing for stock.

DISTRIBUTION:
Found in Namaqualand along the coast, the Sandveld and the Knersvlakte in flat, sandy places and also south to Malmesbury and in Namibia (Le Roux & Schelpe:1988).

Distribution



Zygophyllum prismatocarpum is a popular firewood.
Tony Hül

Grid references

1811DD	2816DD
2317DB	2817AA
2615AA	2817AC
2615CA	2817AC
2615CB	2817AC
2715BC	2817AC
2715BC	2817AC
2715BC	2817CC
2715BD	2817DC
2716DC	2917AA
2716DC	2917AD
2716DD	2918CA
2716DD	3418AD
2716DD	
2716DD	
2716DD	
2816BA	
2816BA	
2816BA	
2816BD	
2816BD	
2816BD	
2816BD	
2816BD	
2816CB	
2816DA	
2816DB	
2816DC	
2816DC	

Zygophyllum prismatocarpum

ZYGOPHYLLACEAE

COMMON NAMES: **HERBARIUM SPECIMEN:**

Geelhout

IDENTIFICATION:

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
						x

PART(S) USED:

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
x	x	x	x	x	x	x	x	x	x	x	x

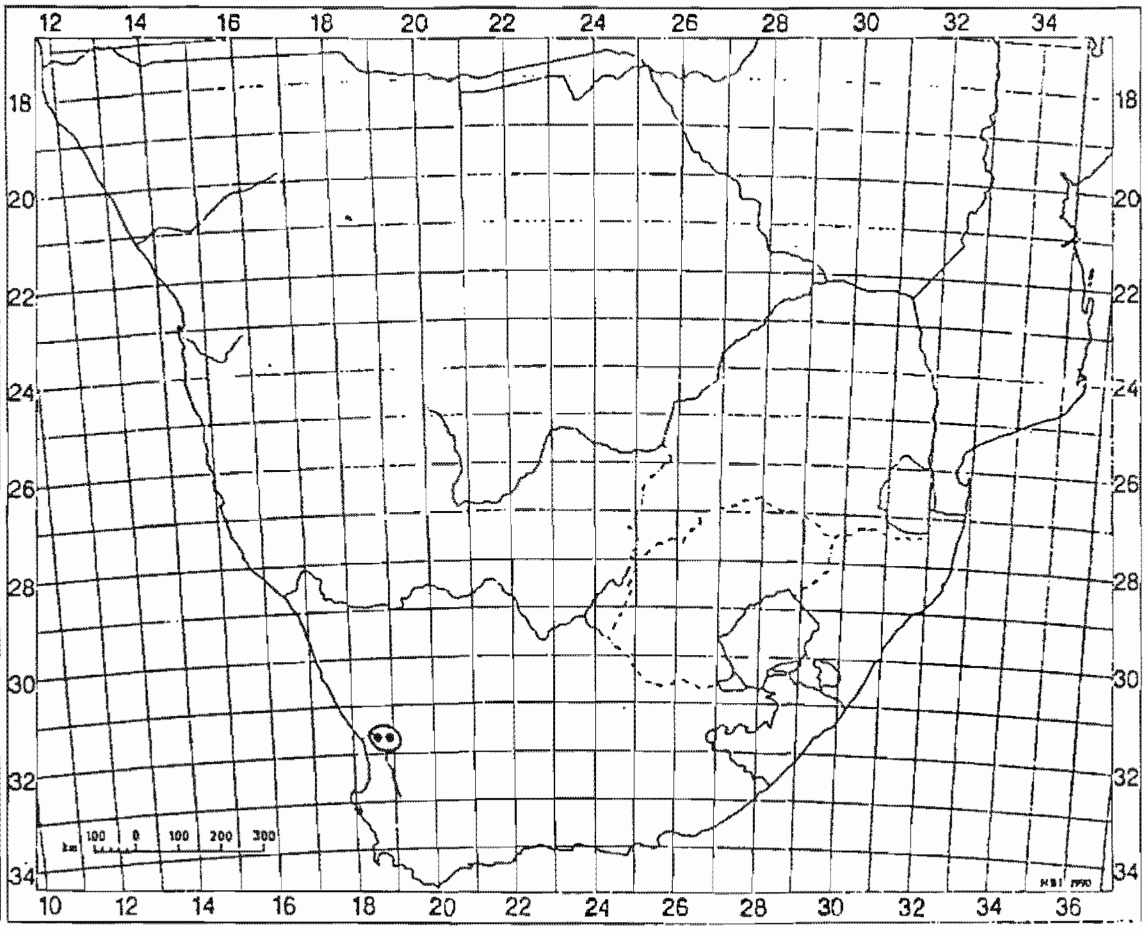
RECOGNISED BY:
The yellow wood and characteristic leaves.

USES & PREPARATION:
This is one of the most popular firewood species. The wood has a strong smell and a characteristic yellow colour.

GENERAL:
This bush is palatable and in heavily grazed areas the plant remains small and stunted.

DISTRIBUTION:
Northern Cape and southern Namibia.

Distribution



Grid references

3118DA	3118DB						

Zygophyllum sonderi *H J Eichler*

ZYGOPHYLLACEAE

COMMON NAMES:

Seepbos

HERBARIUM SPECIMEN:

F Archer 348

IDENTIFICATION:

Bolus

CLASSIFICATION:

Ea	Eu	Ma	Mu	Da	Du	F
				x		

PART(S) USED:

leaves

SEASON COLLECTED:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							x	x	x		

RECOGNISED BY:
Reddish leaves.

USES &PREPARATION:
The leaves and branches are used with water as a soap.

DISTRIBUTION:
Usually found in the western Cape. This may be a new locality - and the plant may be more widespread than thought before.

BIBLIOGRAPHY

Adams, J. 1976. *Wild Flowers of the Northern Cape.* Cape Town: Department of Nature and Environmental Conservation.

Archer, F.M. 1988. *Customary Plant Use in Namaqualand: A. karroo Hayne.* Veld & Flora vol 74:3

Archer, F.M. 1993. *A discussion of Customary Plant Use in the Richtersveld.* In Prep.

Bond, P and P. Goldblatt. 1982. *Plants of the Cape Flora.*

Burchell, W.J. 1968. Woodcut Vignettes from *"Travels in the Interior of Southern Africa".* Cape Town: Struik.

Codd, L.E. 1977. *Rhus viminalis - a plea for greater populairty.* Veld & Flora - vol 63:4

Codd, L.E. 1985. *Lamiaceae* in Leistner, O.A. (ed) *Flora of southern Africa* - vol 28:4

Cornell, F. 1920. *The Glamour of Prospecting.* Cape Town: David Philip.

Dean, R. and S Milton. 1991. *Galium tomentosum - a yarn for the birds.* Veld & Flora vol 77:3

Fox, F.W. and M.E. Norwood-Young. 1982. *Food from the Veld.* Cape Town: SA Institute for Medical Research.

Raper, P.E. & M Boucher. (eds) 1988. Gordon, R.J. 1770. Cape Travels 1777 to 1786 - Volumes 1 & 11.

Hoff, J.A. 1990. *Die Tradisionele Wêreldbeskouing van die Khoekhoen.* Unpublished D. phil Thesis: University of Pretoria.

Hutchinson, J. 1917. *A revision of the genus Pteronia (Compositae).* Annals of the SA Museum vol 9 : 1

Jürgens, N. 1993 - in prep *Vegetation der Namib. Ein Beitrag zur ökologischen Gliedering, Phytochorologie und Florengeschichte einer afrikanischen Trokengebiedsflora.* Mitt. Inst. Allg. Bot. Hamburg.

Le Roux, A & E.A.C.L.E. Schelpe. 1981 / 1988. *Namaqualand and Clanwilliam: SA Wildflower Guide.* Cape Town: Botanical Society.

Malherbe, C. 1983. *Men of Men.* Pietermaritzburg: Shuter & Shooter.

Metelerkamp, W & J Sealy. 1983. *Some Edible and Medicinal Plants of the Doorn Karoo.* Veld & Flora vol 69: 7.

Moffett, R.O. 1982. *Paterson's Bushmen Candles.* Veld & Flora vol 68:1

Obermeyer, A.A. 1962. *A revision of the SA species of Anthericum, Chlorophytum and Trachyandra.* Bothalia 7 (4)

Palmer, E & N Pitman. 1961. *Trees of South Africa.* Vol 1-111. Cape Town: A A Balkema.

Puff, C.H. 1978. *The Genus Galium L. (Rubiaceae) in southern Africa.* Journal of South African Botany.44 (3).

Roberts, M. 1990. *Indigenous Healing Plants.* Johannesburg: Southern Book Publishers.

Ross, J.H. 1975. *Flora of Southern Africa.* Vol 16: Part 1.

Rudner, I. 1982. *Khoisan Pigments and Paints and their relationship to Rock Painting.* Annals of the SA Museum.

Scott, G. 1983. *Preliminary Revision of Cyanella.* Unpublished Honours Thesis: University of Cape Town.

Smith, C.A. 1966. *Common Names of SA Plants.* Botanical Survey Memoir No 35. Department of Agricultural Technical Services.

Story, R. 1958. *Some Plants used by the Bushmen in obtaining food and water.* Botanical Survey Memoir No 30.

Thiselton-Dyer, W.T. 1904. Flora capensis vol 4: section 1. *Hydrophyllaceae to Pedalineae.* London: Lovell Reeve & Co. Ltd.

Vahrmeijer, J. 1981. *Poisonous Plants of SA Africa that cause stock losses.* Cape Town: Travelberg Publishers.

Van den Eynden, V. & P Vernemmen, P van Damme. 1992. *The Ethnobotany of the Topnaar.* Universiteit Gent.

Van der Walt, J.J.A. 1977. *Pelargoniums of Southern Africa: vol 1.* Cape Town: Purnell.

Van der Walt, J.J.A. & P.J. Vorster. 1981. *Pelargoniums of Southern Africa: vol 2.* Cape Town: Juta.

Van der Walt, J.J.A. & P.J. Vorster. 1988. *Pelargoniums of Southern Africa: vol 3.* Cape Town: National Botanic Gardens.

Van Koenen, E. 1977. *Heil- und Giftpflanzen in Südwestafrika.* Windhoek: Akademischer Verlag.

Verdoorn, I.C. 1980. *Revision of Hermannia subgenus Hermannia in southern Africa.* Bothalia 13, 1 & 2.

Visser, J.H. & L.J. Musselman. 1986. *The Strangest Plant in the World.* Veld & Flora. Vol 72: 4.

Von Breitenbach, F. 1990. *National List of Indigenous Trees.* Pretoria: Dendrological Foundation.

Vosa, C.G. 1975. *The cryotaxonomy of the genus Tulbaghia.* Roma: Annali di Botanica vol XXXIV.

Watt, J.M. & M.G. Breyer-Brandwijk. 1962. *Medicinal and Poisonous Plants of southern and eastern Africa.* 2nd Ed.

Webley, L.E. 1991. *Prehistoric Land and Resource Use in the Richtersveld.* Unpublished Report: HNRE.

Illustrations and photographs were obtained from the following sources:

1. Acacia erioloba	Von Breitenbach, F. 1990. **National List of Indigenous Trees.**
2. Acacia karroo	Tony Hül
3. Albuca altissima	
4. Aloe dichotoma	Tony Hül
5. Aloe pearsonnii	
6. Anacampseros papyraceae	
7. Anacampseros sp.	Adams, J. 1976. **Wild Flowers of the Northern Cape.**
8. Annesorrhiza altiscapa	Tony Hül
9. Antizoma miersiana	
10. Arctotls aspera	
11. Asclepias fruticosa	Adams, J. 1976. **Wild Flowers of the Northern Cape.**
12. Ballota africana	Roberts, M. 1990. **Indigenous Healing Plants.**
13. Boscia albitrunca	Fox, F W & M E Norwood Young. 1982. **Food from the Veld.**
14. Bulbine praemorsa	
15. Caralluma mamillaris	Metelerkamp, W. 1982. Veld & Flora vol 69:1
16. Carissa haematocarpa	Palgrave, K C. 1983. **Trees of Southern Africa.**
17. Ceraria namaquensis	
18. Cheilanthes capensis	
19. Codon royenii	Le Roux, A & E Schelpe. 1981. **Namaqualand and Clanwilliam.**
20. Commiphora capensis	Palgrave, K C. 1983. **Trees of Southern Africa.**
21. Cotyledon orbiculata var. orbiculata	Van Koenen, E. 1977. **Heil- und Giftpflanzen in Südwestafrika.**
22. Crassula atropurpurae var. watermeyeri	
23. Crassula columnaris ssp. prolifera	
24. Crassula elegans var. elegans	
25. Crassula muscosa var. muscosa	
26. Cucumis myriocarpus	Fox, F W & M E Norwood Young. 1982. **Food from the Veld.**
27. Cucurbitaceae	
28. Cyanella hyacinthoides	Tony Hül
29. Cyperus esculentus	Roberts, M. 1990. **Indigenous Healing Plants.**
30. Cyperus longus var. longus	
31. Cyperus marginatus	
32. Cyphia crenata var. crenata	
33. Cyphia digitata ssp. digitata	
34. Cyphia phyteum	
35. Cyphia sp.	Fiona Archer
36. Cyphia sp.	
37. Cyphia volubilis	
38. Deverra denudata ssp. aphylla	
39. Dicoma capensis	
40. Diospyros lycioides	Fox, F W & M E Norwood Young. 1982. **Food from the Veld.**
41. Diospyros ramulosa	Palgrave, K C. 1983. **Trees of Southern Africa.**
42. Euclea pseudebenus	Palgrave, K C. 1983. **Trees of Southern Africa.**
43. Euphorbia dregeana	Le Roux, A & E Schelpe. 1981. **Namaqualand and Clanwilliam.**
44. Euphorbia hamata	Le Roux, A & E Schelpe. 1981. **Namaqualand and Clanwilliam.**
45. Euphorbia hottentota	
46. Euphorbia mauretanica	Le Roux, A & E Schelpe. 1981. **Namaqualand and Clanwilliam.**
47. Euphorbia sp.	
48. Ficus cordata	Von Breitenbach, F. 1990. **National List of Indigenous Trees.**
49. Ficus ilicina	Von Breitenbach, F. 1990. **National List of Indigenous Trees.**
50. Fockea gracilis	
51. Galium tomentosum	
52. Gasteria pillansii	
53. Gorteria diffusa	Le Roux, A & E Schelpe. 1981. **Namaqualand and Clanwilliam.**
54. Grielum grandiflorum	Le Roux, A & E Schelpe. 1981. **Namaqualand and Clanwilliam.**
55. Grielum humifusum	Le Roux, A & E Schelpe. 1981. **Namaqualand and Clanwilliam.**
56. Hermannia macra	
57. Hermannia stricta	
58. Hermbstaedtia glauca	
59. Hydnora africana	Fiona Archer
60. Hypertelis salsoloides	Le Roux, A & E Schelpe. 1981. **Namaqualand and Clanwilliam.**
61. Juncus rigidus	Tony Hül
62. Karroochloa tenella	
63. Limonium dregeanum	
64. Lycium oxycarpum	

66. Manulea cephalotes	Fiona Archer
67. Maytenus linearis	Palgrave, K C. 1983. **Trees of Southern Africa.**
68. Mentha longifolia	Roberts, M. 1990. **Indigenous Healing Plants.**
69. Mesembryanthemum pellitum	
70. Mesembryanthemum squamulosum	
71. Microloma calycinum ssp. calycinum	
72. Microloma sagittatum ssp. sagittatum	
73. Moraea fugax	Fiona Archer, Veld & Flora vol 68:2, Le Roux, A & E Schelpe. 1981. **Namaqualand and Clanwilliam**
74. Nicotiana glauca	Van Koenen, E. 1977. **Heil- und Giftpflanzen in Südwestafrika.**
75. Nymania capensis	Von Breitenbach, F. 1990. **National List of Indigenous Trees.**
76. Olea europaea ssp. africana	Van Koenen, E. 1977. **Heil- und Giftpflanzen in Südwestafrika.**
77. Orbea namaquense	
78. Oxalis copiosa	
79. Oxalis obtusa	
80. Oxalis pes-caprae	Roberts, M. 1990. **Indigenous Healing Plants.**
81. Oxalis sp.	
82. Ozoroa dispar	Von Breitenbach, F. 1990. **National List of Indigenous Trees.**
83. Parkinsonia africana	Von Breitenbach, F. 1990. **National List of Indigenous Trees.**
84. Pelargonium antidysentricum	Roberts, M. 1990. **Indigenous Healing Plants.**
85. Pelargonium carnosum	Van der Walt, J J A. 1977. **Pelargoniums of Southern Africa.**
86. Pelargonium tenuicaule	Van der Walt, J J A. & P J Vorster. 1988. **Pelargoniums of Southern Africa.**
87. Polemaniopsis marlothii	
88. Prenia sladeniana	
89. Psilocaulon sp.	
90. Psilocaulon subnodosum	
91. Pteronia lucilioides	
92. Rhus burchelli	Von Breitenbach, F. 1990. **National List of Indigenous Trees.**
93. Rhus populifolia	Tony Hül
94. Rhus viminalis	Tony Hül, Palgrave, K C. 1983. **Trees of Southern Africa.**, Deacon, J. 1976. **Where Hunters gathered.**
95. Ricinus communis	Van Koenen, E. 1977. **Heil- und Giftpflanzen in Südwestafrika.**, Tony Hül.
96. Salix mucronata	Von Breitenbach, F. 1990. **National List of Indigenous Trees.**
97. Salvia dentata	Le Roux, A & E Schelpe. 1981. **Namaqualand and Clanwilliam.**
98. Sarcocaulon crassicaule	Le Roux, A & E Schelpe. 1981. **Namaqualand and Clanwilliam.**
99. Sarcocaulon patersonii	Ellaphie Ward-Hillhorst. **Veld & Flora.**
100. Sarcostemma viminale	Van Koenen, E. 1977. **Heil- und Giftpflanzen in Südwestafrika.**
101. Schotia afra var. afra	Von Breitenbach, F. 1990. **National List of Indigenous Trees.**, Palgrave, K C. 1983. **Trees of Southern Africa.**
102. Scirpus inanis	Malherbe, C. 1983. **Men of Men.**, Fiona Archer - **Sagittarius 4:4.**
103. Scirpus nodosus	Burchell, W J. 1968. Woodcut Vignettes from **"Travels in the Interior of Southern Africa."**, Tony Hül.
104. Solanum tomentosum	
105. Stoeberia beetzii var. arborescens	
106. Sutherlandia frutescens	Roberts, M. 1990. **Indigenous Healing Plants.**
107. Tamarix usneoides	Le Roux, A & E Schelpe. 1981. **Namaqualand and Clanwilliam.**
108. Tapinanthus glaucocarpus	
109. Tapinanthus oleifolius	Van Koenen, E. 1977. **Heil- und Giftpflanzen in Südwestafrika.**
110. Trachyandra falcata	Le Roux, A & E Schelpe. 1981. **Namaqualand and Clanwilliam.**
111. Trachyandra sp.	
112. Tribulus terrestris	Le Roux, A & E Schelpe. 1981. **Namaqualand and Clanwilliam.**
113. Trichocaulon alstonii	
114. Tulbaghia dregeana	
115. Tylecodon paniculatus	Le Roux, A & E Schelpe. 1981. **Namaqualand and Clanwilliam.**
116. Tylecodon wallichii	
117. Viscum rotundifolium	Van Koenen, E. 1977. **Heil- und Giftpflanzen in Südwestafrika.**
118. Whiteheadia bifolia	Le Roux, A & E Schelpe. 1981. **Namaqualand and Clanwilliam.**
119. Ziziphus mucronata	Fox, F W & M E Norwood Young. 1982. **Food from the Veld.**
120. Zygophyllum cordifolium	
121. Zygophyllum prismatocarpum	
122. Zygophyllum sonderi	
123. Zygophyllum sp.	

APPENDIX II

LIST OF PLANTS OF THE RICHTERSVELD

A PRELIMINARY PLANT SPECIES LIST OF THE RICHTERSVELD NATIONAL PARK

January 7, 1993

BRYOPHYTA

■ RICCIACEAE

1016 Riccia cf. concava Bisch.	J. Bessler (139) PRE
1016 Riccia villosa Steph.	J. Bessler (33) PRE

PTERIDOPHYTA

■ OPHIOGLOSSACEAE

60 Ophioglossum polyphyllum A. Br. ex Seub.	E. v J. (11656) NBG

■ ADIANTACEAE

340 Cheilanthes capensis (Thunb.) Swartz	G. Williamson (3295) BOL
340 Cheilanthes deltoidea Kunze	NJ 1986
340 Cheilanthes rawsonii (Pappe) Mett. ex Kuhn	L. Smook (7995) PRE
340 Cheilanthes robusta (Kunze) R. Tryon	G. Williamson (3269) BOL

■ ASPLENIACEAE

530 Ceterach cordatum (Thunb.) Desv.	L. Smook (7906) PRE

ANGIOSPERMAE

MONOCOTYLEDONAE

■ POACEAE

9901 Leucophrys mesocoma (Nees) Rendl	L. Smook (8007) PRE
9901 Ehrharta calycina J.E. Sm. var. calycina	L. Smook (7961) PRE
9901 Ehrharta delicatula (Nees) Stapf	G. Williamson (3098) BOL
9901 Ehrharta longiflora J.E. Smith	G. Williamson (2982) BOL
9901 Ehrharta triandra Nees ex Trin.	L. Smook (7922) PRE
9902 Karroochloa schismoides (Stapf ex Conert) Conert & Turpel.	Smook (7942) PRE
9902 Pentaschistis airoides (Nees) Stapf subsp. airoides	L. Smook (7936) PRE
9902 Phragmites australis (Cav.) Steud.	PC Zietsman (2134) NMB
9902 Polypogon monspeliensis (L.) Desf. *	PC Zietsman (2122) NMB
9902 Stipagrostis anomala De Winter	L. Smook (7958) PRE
9902 Stipagrostis ciliata (Desf.) De Winter var. capensis (Trin. & Rupr.) De Winter	L. Smook (7945) PRE
9902 Stipagrostis namaquensis (Nees) De Winter	L. Smook (8005) PRE
9902 Stipagrostis obtusa (Del.) Nees	G. Williamson (3031) BOL
9902 Aristida adscensionis L.	L. Smook (7877) PRE
9902 Aristida parvula (Nees) De Winter	L. Smook (7892) PRE
9902 Diandrochloa namaquensis (Nees) De Winter	L. Smook (7888) PRE
9902 Eragrostis homomalla Nees	L. Smook (7895) PRE
9902 Eragrostis sarmentosa (Thunb.) Trin.	L. Smook (7894) PRE
9902 Cynodon dactylon (L.) Pers.	L. Smook (7890) PRE
9903 Odyssea paucinervis (Nees) Stapf	L. Smook (8026) PRE
9903 Enneapogon desvauxii Beauv.	L. Smook (7904) PRE
9903 Enneapogon scaber Lehm.	L. Smook (7893) PRE
9903 Fingerhutia africana Lehm.	H. Bezuidenhout (397) NMB
9904 Tribolium acutiflorum (Nees) Renvoize	NJ 1986
9904 Tribolium utriculosum (Nees) Renvoize	PC Zietsman (2108) NMB
9904 Schismus barbatus (Loefl. ex L.) Thell.	PC Zietsman (2041) NMB
9904 Bromus pectinatus Thunb.	L. Smook (7988) PRE

■ CYPERACEAE

0459 Cyperus laevigatus L.	L. Smook (7898) PRE
0459 Cyperus marginatus Thunb.	E. v J. (11743) NBG
0471 Fimbristylis bisumbellata (Forssk.) Bub.	L. Smook (7897) PRE

▪ RESTIONACEAE

0804 Ischyrolepis sieberi (Kunth) Linder	EvJ (11642) NBG

▪ JUNCACEAE

0936 Juncus acutus L. subsp. leopoldii (Parl.) Snog.	E. vJ. (11744) NBG

▪ COLCHICACEAE (LILIACEAE)

0969 Androcymbium vogelii V. & D. Muller-Doblies	G. Williamson (3595) NBG
0973 Ornithoglossum undulatum Sweet	G. Williamson (3524) NBG
0973 Ornithoglossum viride (L.f.) Ait.	NJ 1986
0973 Ornithoglossum vulgare B. Nord.	PC Zietsman (2114) NMB

▪ ASPHODELACEAE (LILIACEAE)

0985 Bulbine frutescens (L.) Willd.	G. Williamson (3701) NBG
0985 Bulbine sedifolia Schltr. ex V. Poelln.	NJ 1986
0985 Trachyandra adamsonii (Compton) Oberm.	E. vJ. (11548) NBG
0985 Trachyandra aridimontana J.C.Manning	G. Williamson (3702) NBG
0985 Trachyandra bulbinifolia (Dinter) Oberm.	E. vJ. (11758) NBG
0985 Trachyandra involucrata (Bak.) Oberm.	E. vJ. (11549) NBG
0985 Trachyandra laxa (N.E. Br.) Oberm. var. laxa	L. Smook (7969) PRE
0985 Trachyandra muricata (L.f.) Kunth	G. Williamson (2955) BOL
0990 Chlorophytum lewisiae Oberm.	PC Zietsman (2210) NMB

▪ HYACINTHACEAE (LILIACEAE)

1010 Schizobasis intricata (Bak.) Bak.	NJ 1986
1011 Bowiea gariepensis v. Jaarsveld	E. vJ. (11731) NBG

▪ ASPHODELACEAE (LILIACEAE)

1026 Aloe dichotoma Mass.	E. vJ. (6252a) NBG
1026 Aloe gariepensis Pillans	E. vJ. (8485) NBG
1026 Aloe melanacantha Berger	E. vJ. (6972) NBG
1026 Aloe meyeri v Jaarsveld	E. vJ. (11605) NBG
1026 Aloe pearsonii Schonl.	E. vJ. (8183) NBG
1026 Aloe pillansii Guth.	NJ 1986
1026 Aloe ramosissima Pillans	E. vJ. (12067) NBG
1026 Aloe striata Haw. subsp. karasbergensis (Pillans) Glen & Hardy	G. Williamson (5848) BOL
1027 Gasteria pillansii Kensit. var. pillansii	E. vJ. (11560)
1029 Haworthia venosa (Lam.) Haw. subsp. recurva (Haw.) Breyer	NJ 1986

▪ HYACINTHACEAE (LILIACEAE)

1079 Albuca spiralis L.f.	NJ 1986
1079 Albuca viscosa L.f.	NJ 1986
1083 Rhadamanthus platyphyllus B. Nord.	G. Williamson (3641) NBG
1089 Ornithogalum deltoideum Bak.	G. Williamson (3615) NBG
1089 Ornithogalum geniculatum Oberm.	PC Zietsman (2180) NMB
1089 Ornithogalum pruinosum Leighton	PC Zietsman (2013) NMB
1089 Ornithogalum suaveolens Jacq.	L. Smook (7990) PRE
1089 Ornithogalum zebrinum (Bak.) Oberm.	NJ 1986
1097 Pseudogaltonia clavata (Mast. ex Bak.) Phill.	G. Williamson (3870) NBG
1097 Veltheimia capensis (L.) DC.	E. vJ. (8555) NBG
1098 Lachenalia nordenstamii W.F. Barker	G. Williamson (3261) NBG
1098 Lachenalia undulata Masson ex Bak.	G. Williamson (3525) NBG

▪ ASPARAGACEAE (LILIACEAE)

1113 Protasparagus capensis (L.) Oberm.	PC Zietsman (2209) NMB
1113 Protasparagus exuvialis (Burch.) Oberm.	NJ 1986
1113 Myrsiphyllum asparagoides (L.) Willd.	NJ 1986

▪ AMARYLLIDACEAE

1168 Boophane cf. haemanthoides Leighton	G. Williamson (3870) STE
1186 Gethyllis namaquensis (Schonl.) Oberm	G. Williamson (3627) NBG
1191 Cyrtanthus herrei (Leighton) R.A. Dyer	E. vJ. (11837) NBG

▪ HYPOXIDACEAE

1230 Spiloxene scullyi (Bak.) Garside	PC Zietsman (2182) NMB

▪ TECOPHILAEACEAE

1233 Cyanella ramosissima (Engl. & Krause) Engl. & Krause	G. Williamson (3728) NBG

▪ IRIDACEAE

1265 Moraea saxicola Goldbl.	PC Zietsman (9204) NMB

1272 Ferraria divaricata Sweet subsp. divaricata	NJ 1986
1272 Ferraria ferrariola (Jacq.) Willd.	G. Williamson (3614) NBG
1306 Tritonia marlothii de Vos	G. Williamson (3591) NBG
1311 Anomalesia saccata (Klatt) Goldbl.	E. vJ. (6220) NBG
1314 Lapeirousia dolomitica Dinter subsp. dolomitica	NJ 1986
1314 Lapeirousia plicata (Jacq.) Diels subsp. plicata	G. Williamson (3543) NBG
1316 Anomatheca fistulosa (Spreng. ex Klatt) Goldbl.	G. Williamson (3674) NBG
1316 Anomatheca viridis (Ait.) Goldbl. subsp.crispifolia Goldbl.	G. Williamson (3526) NBG

DICOTYLEDONAE

▪ **SALICACEAE**	
1873 Salix mucronata Thunb. subsp. mucronata	L. Smook (8023) PRE
▪ **MORACEAE**	
1961 Ficus cordata Thunb. subsp. cordata	E. vJ. (5512) NBG
1961 Ficus ilicina (Sond.) Miq.	E. vJ. (11579) NBG
▪ **URTICACEAE**	
2012 Forsskaolea candida L.f. var. candida	G. Williamson (3629) NBG
2012 Forsskaolea hereroensis Schinz	NJ 1986
▪ **LORANTHACEAE**	
2074 Tapinanthus oleifolius (Wendl.) Danser	L. Smook (8022) PRE
2074 Septulina ovalis (E. Mey. ex Harv.) V. Tieghem	G. Williamson (3863) NBG
▪ **VISCACEAE**	
2093 Viscum capense L. f. subsp. capense	Germishuizen (5369) PRE
2093 Viscum rotundifolium L.f.	G. Williamson (4081) NBG
2093 Viscum schaeferi Engl. & Krause	PC Zietsman (2140) NMB
▪ **SANTALACEAE**	
2118 Thesium lineatum L.f.	NJ 1986
▪ **HYDNORACEAE**	
2182 Hydnora africana Thunb.	NJ 1986
▪ **POLYGONACEAE 2**	
201 Polygonum plebeium R. Br.	L. Smook (7980) PRE
▪ **CHENOPODIACEAE**	
2223 Chenopodium album L. *	PC Zietsman (2077) NMB
2223 Chenopodium murale L.	E. vJ. (11734) NBG
2229 Atriplex eardleyae Aell. *	PC Zietsman (2112) NMB
2229 Manochlamys albicans (Ait.) Aell.	PC Zietsman (2199) NMB
2261 Suaeda fruticosa (L.) Forssk.	E. vJ. (11738) NBG
2269 Salsola zeyheri (Moq.) Schinz	NJ 1986
▪ **AMARANTHACEAE**	
2293 Hermbstaedtia glauca (Wendl.) Reichb. ex Steud.	E. vJ. (8342) NBG
2305 Sericocoma heterochiton Lopr.	NJ 1986
2309 Nelsia quadrangula (Engl.) Schinz	H. Bezuidenhout (265) NMB
2325 Calicorema capitata (Moq.) Hook. f.	L. Smook (7881) PRE
▪ **AIZOACEAE**	
2376 Limeum aethiopicum Burm. subsp. namaense Friedr. var. namaense	NJ 1986
2388 Glinus lotoides L. var. lotoides	L. Smook (7982) PRE
2390 Hypertelis salsoloides (Burch.) Adamson	PC Zietsman (2088) NMB
2390 Hypertelis spergulacea E.Mey. ex Fenzl	L. Smook (7941) PRE
2394 Sesuvium portulacastrum (L.) L.	PC Zietsman (2158) NMB
2394 Sesuvium sesuvioides (Fenzl) Verdc.	E. vJ. (11739) NBG
2395 Trianthema triquetra Willd. subsp. parvifolia (Sond.) Jeffrey	NJ 1986
2395 Trianthema triquetra Willd. subsp. triquetra	G. Williamson (3868) NBG
2395 Trianthema parvifolia E. Mey. ex Sond. var. rubens (Sond.) Adamson	PC Zietsman (2073) NMB
2399 Galenia dregeana Fenzl ex Sond.	G. Williamson (3630) NBG
2399 Galenia fruticosa (L. f.) Sond. var. fruticosa	PC Zietsman (2094) NMB
2399 Galenia meziana K. Mueller	NJ 1986
2403 Tetragonia acanthocarpa Adamson	PC Zietsman (2092) NMB
2403 Tetragonia cf. echinata Ait.	NJ 1986
2403 Tetragonia reduplicata Welw. ex Oliv.	NJ 1986

2403 Tetragonia schenkii (Schinz) Engl.	E. vJ. (8535) NBG
2403 Tetragonia verrucosa Fenzl	NJ 1986
2404 Cheiridopsis acuminata L. Bol.	G. Williamson (3102) BOL

▪ MESEMBRYANTHEMACEAE

2405 Aspazoma amplectens (L. Bol.) N.E. Br.	G. Williamson (3996) NBG]
2405 Astridia hallii L. Bol.	E. vJ. (11773) NBG
2405 Astridia speciosa L. Bol.	NJ 1986
2405 Astridia velutina Dinter	E. vJ. (8549) NBG
2405 Cephalophyllum numeesense H.E.K. Hartm.	NJ 1986
2405 Cheiridopsis robusta (Haw.) N.E. Br.	G. Williamson (3472) BOL
2405 Conophytum angelicae (Dinter & Schwant.) N.E. Br.	Williamson (4448) Na S. Hammer.
2405 Conophytum bilobum (Marloth) N.E. Br.	G. Williamson (3423) BOL
2405 Conophytum gratum (N.E. Br.) N.E. Br.	E. vJ. (8560) NBG
2405 Conophytum loeschianum Tischer	G. Williamson (3446) BOL
2405 Conophytum rostratum Tischer	E. vJ. (11598) NBG
2405 Conophytum wettsteinii (Berger) N.E. Br. var. speciosum (Tischer) Tischer	E. vJ.(11592) NBG
2405 Conophytum ernstii S. Hammer	E. vJ. (8512) NBG
2405 Delosperma pergamentaceum L. BOL. var. pergamentaceum	E. vJ. (8547) NBG
2405 Dracophilus dealbatus (N.E. Br.) Walg.	NJ 1986
2405 Drosanthemum hispidum (L.) Schwant. var. hispidum	E. vJ. (11775) NBG
2405 Hereroa hesperantha (Dinter) Dinter & Schwant.	E. vJ. (8545) NBG
2405 Juttadinteria albata L. Bol.	E. vJ (5493a) NBG
2405 Leipoldtia cf. constricta (L. Bol.) L. Bol.	NJ 1986
2405 Leipoldtia frutescens (L. Bol.) H.E.K. Hartm.	E. vJ. (4161) NBG
2405 Lithops herrei L. Bol. var. herrei	E. vJ. (8185) NBG
2405 Mesembryanthemum pellitum Friedr.	NJ 1986
2405 Mesembryanthemum squamulosum (L. Bol.) L. Bol.	NJ 1986
2405 Mitrophyllum clivorum (N.E.Br.) Schwant.	NJ 1986
2405 Mitrophyllum dissitum (N.E.Br.) Schwant.	NJ 1986
2405 Opophytum aquosum (L.Bol.) N.E.Br.	NJ 1986
2405 Prenia sladeniana (L.Bol.) L.Bol.	G. Williamson (3125) BOL
2405 Psilocaulon fimbriatum L. Bol.	NJ 1986
2405 Psilocaulon subnodosum (Berger) N.E.Br.	NJ 1986
2405 Ruschia schneideriana (Berger) L. Bol.	E vJ. (11777) NBG
2405 Ruschia senaria L. Bol.	E. vJ. (12060) NBG
2405 Ruschia velutina L. Bol.	E. vJ. (11781) NBG
2405 Ruschianthemum gigas (Dinter) Friedr.	G. Williamson (3340) BOL
2405 Schlechteranthus hallii L. Bol.	E. vJ. (4168) NBG
2405 Schwantesia herrei L. Bol. var. herrei	G. Williamson (3418) NBG
2405 Sphalmanthus deciduus (L.Bol.) L. Bol.	NJ 1986
2405 Sphalmanthus decurvatus (L Bol.) L.Bol.	NJ 1986
2405 Sphalmanthus scintillans (Dinter) Dinter & Schwant	NJ 1986
2405 Sphalmanthus tetragonus (Thunb.) L. Bol.	G. Williamson (3976) NBG
2405 Stoeberia beetzii (Dinter) Dinter & Schwant. var. arborescens Friedr.	NJ 1986
2405 Brownanthus schlichtianus (Sonder) Ihlenf. & Bittrich	NJ 1986
2405 Pseudobrownanthus nucifer Ihlenf. & Bittrich	E. vJ. (11840) NBG

▪ PORTULACACEAE

2412 Anacampseros baeseckii Dinter	E. vJ. (11606) NBG
2412 Anacampseros herreana V. Poelln.	G. Williamson (3620) NBG
2412 Anacampseros karasmontana Dinter ex V. Poelln.	G. Williamson (3623) NBG
2412 Anacampseros papyraceae E. Mey. ex Fenzl. subsp. namaensis Gerbaylet	E. vJ. (8186) NBG
2412 Anacampseros retusa V. Poelln.	G. Williamson (3621) NBG
2412 Anacampseros namaquensis Pearson & Stephens	E. vJ. (11785) NBG
2419 Portulacaria armiana E. J. van Jaarsveld	E. vJ. (11852) NBG
2419 Portulacaria pygmaea Pillans	NJ 1986
2419 Ceraria fruticulosa Pearson & Stephens	G. Williamson (3240) BOL
2419 Ceraria namaquensis (Sond.) Pearson & Stephens	G. Williamson (2934) BOL

▪ CARYOPHYLLACEAE

2450 Spergularia media (L.) Presl	E. vJ. (11779) NBG

▪ ILLECEBRACEAE

2467 Pollichia campestris Ait.	NJ 1986
2490 Silene clandestina Jacq.	G. Germishuizen (5560) PRE
2502 Dianthus namaensis Schinz var. namaensis	G. Williamson (3738) NBG

▪ MENISPERMACEAE

2573 Antizoma angustifolia (Burch.) Miers ex Harv.	NJ 1986
2573 Antizoma miersiana Harv.	E. vJ. (1721) NBG

▪ PAPAVERACEAE

2852 Argemone ochroleuca Sweet subsp. ochroleuca	PC Zietsman (2135) NMB
2852 Argemone subfusiformis G.B. Ownbey	G. Williamson (3137) BOL

▪ BRASSICACEAE

2875 Heliophila cornellsbergia Pienaar & Nicholas	Oliver, Tölken & Venter (302)PRE
2875 Heliophila deserticola Schltr. var. deserticola	L. Smook (7957) PRE
2875 Heliophila pendula Willd.	NJ 1986
2875 Heliophila trifurca Burch. ex DC.	E. vJ. (11778) NBG
2875 Heliophila variabilis Burch. ex DC.	PC Zietsman (2019) NMB
2884 Coronopus integrifolius (DC.) Spreng *	PC Zietsman (2120) NMB

▪ CAPPARACEAE

3082 Cleome foliosa Hook. f. var. lutea (Sond.) Codd & Kers	G. Williamson (3097) BOL
3082 Cleome foliosa Hook. f. var. namibensis (Kers) Codd	G. Germishuizen (5554) PRE
3082 Cleome gynandra L.	H. Bezuidenhout (268) NMB
3106 Boscia albitrunca (Burch.) Gilg & Ben. var. albitrunca	PC Zietsman (2150) NMB
3106 Boscia foetida Schinz subsp. foetida	E. vJ. (6218a) NBG
3109 Cadaba aphylla (Thunb.) Willd.	H. Bezuidenhout (266) NMB
3112 Maerua gilgii Schinz	E. vJ. (3494a) NBG
3112 Maerua schinzii Pax	PC Zietsman (2152) NMB

▪ CRASSULACEAE

3164 Cotyledon orbiculata L. var. orbiculata	E. vJ. (11586) NBG
3164 Tylecodon buchholzianus (Schuldt & Stephens) Toelken	E. vJ. (8529) NBG
3164 Tylecodon ellaphieae E. v Jaarsveld	E. vJ. (11591) NBG
3164 Tylecodon hallii (Toelken) Toelken	E. vJ. (8526) NBG
3164 Tylecodon kritzingeri E.J. van Jaarsveld	E. vJ. (11590) NBG
3164 Tylecodon paniculatus (L.f.) Toelken	NJ 1986
3164 Tylecodon pearsonii (Schonl.) Toelken	NJ 1986
3164 Tylecodon racemosus (Harv.) Toelken	G. Williamson (4437) NBG
3164 Tylecodon reticulatus (L.f.) Toelken subsp. reticulatus	NJ 1986
3164 Tylecodon rubrovenosus (Dinter) Toelken	E. vJ. (11563) NBG
3164 Tylecodon schaeferianus (Dinter) Toelken	NJ 1986
3164 Tylecodon similis (Toelken) Toelken	E. vJ (11552) NBG
3164 Tylecodon viridiflorus (Toelken) Toelken	E. vJ (11701) NBG
3164 Tylecodon wallichii (Harv.) Toelken subsp. ecklonianus (Harv.) Toelken	NJ 1986
3168 Crassula atropurpurea (Haw.) Dietr. var. watermeyeri (Compton) Toelken	E. vJ. (11666) NBG
3168 Crassula brevifolia Harv. subsp brevifolia	NJ 1986
3168 Crassula columnaris Thunb. subsp. prolifera Friedr.	NJ 1986
3168 Crassula cotyledonis Thunb.	E. vJ. (11556) NBG
3168 Crassula deceptor Schonl. & Bak. f.	NJ 1986
3168 Crassula elegans Schonl. & Bak. f. subsp. elegans	NJ 1986
3168 Crassula expansa Drynand subsp. expansa	NJ 1986
3168 Crassula fusca Herre	G. Williamson (4058) NBG
3168 Crassula garibina Marloth & Schonl. subsp. garibina	G. Williamson (3571) BOL
3168 Crassula grisea Schonl.	NJ 1986
3168 Crassula macowaniana Schonl. & Bak. f.	PC Zietsman (2192) NMB
3168 Crassula muscosa L. var. muscosa	PC Zietsman (2062) NMB
3168 Crassula muscosa L. var. obtusifolia (Harv.) Rowley	E. vJ. (11582) NBG
3168 Crassula muscosa var. polpodacea (Eckl. & Zeyh.) Rowley	E. vJ. (11581) NBG
3168 Crassula namaquensis Schonl. & Bak. f. subsp. namaquensis	G. Williamson (3264) BOL
3168 Crassula nemorosa (Eckl. & Zeyh.) Endl. ex Walp.	G. Williamson (4485) NBG
3168 Crassula pseudohemisphaerica Friedr.	PC Zietsman (2189) NMB
3168 Crassula rupestris Thunb. subsp. commutata (Friedr.) Toelken	E. vJ. (11583)
3168 Crassula sericea Schonl. var. hottentotta (Marloth & Schonl.) Toelken	G. Williamson (4059) NBG
3168 Crassula sericea Schonl. var. sericea	E. vJ. (11726) NBG

3168 Crassula sericea Schonl. var. velutina (Friedr.) Toelken	E. vJ. (11551) NBG
3168 Crassula sladenii Schonl.	NJ 1986
3168 Crassula subacaulis Schonl. & Bak. f. subsp erosula (N.E.Br.) Toelken	G. Williamson (4060) NBG
3168 Crassula cf. subaphylla (Eckl. & Zeyh.) Harv. var. subaphylla	NJ 1986
3168 Crassula tenuipedicellata Schonl. & Bak. f.	L. Smook (7924) PRE
3168 Crassula tomentosa Thunb. var. tomentosa	PC Zietsman (2142) NMB
3168 Crassula umbellata Jacq.	G. Williamson (4484) NBG
3175 Adromischus alstonii (Schonl. & Bak. f.) C.A. Smith	E. vJ. (11571) NBG
3175 Adromischus filicaulis (Eckl. & Zeyh.) C.A. Smith subsp. filicaulis	E. vJ. (11565) NBG
3175 Adromischus marianiae (Marloth) Berger var. kubusensis (Uitew.) Toelken	NJ 1986

▪ VAHLIACEAE

3201 Vahlia capensis (L.f.) Thunb. subsp. vulgaris Bridson var. vulgaris	G. Germishuizen (5345) PRE

▪ MONTINIACEAE

3238 Montinia caryophyllacea Thunb.	E. vJ. (11716) NBG

▪ ROSACEAE

3391 Grielum humifusum Thunb.	NJ 1986

▪ FABACEAE

3444 Calliandra redacta (J.H. Ross) Thulin & Hunde	G. Williamson (2939) BOL
3446 Acacia erioloba E. Mey.	PC Zietsman (2147) NMB
3446 Acacia karroo Hayne	E. vJ. (8539) NBG
3506 Schotia afra (L.) Thunb. var. angustifolia (E. Mey.) Harv.	G. Williamson (3310) BOL
3528 Adenolobus garipensis (E. Mey.) Torre & Hillc.	G. Williamson (2938) BOL
3551 Parkinsonia africana Sond.	H. Bezuidenhout (269) NMB
3657 Lotononis brachyloba Benth.	NJ 1986
3657 Lotononis falcata (E. Mey.) Benth.	G. Germishuizen (5520) PRE
3657 Lotononis cf. rabenaviana Dinter & Harms	L. Smook (7943) PRE
3660 Lebeckia multiflora E. Mey.	PC Zietsman (2030) NMB
3665 Melolobium adenodes Eckl. & Zeyh.	G. Germishuizen (5445) PRE
3669 Crotalaria meyerana Steud.	L. Smook (7974) PRE
3687 Trigonella hamosa L. *	PC Zietsman (2119) NMB
3702 Indigofera argyroides E. Mey.	G. Williamson (3637) NBG
3702 Indigofera hololeuca Benth. ex Harv.	G. Germishuizen (5338) PRE
3702 Indigofera incana Thunb.	G. Williamson (3636) NBG
3702 Indigofera pungens E. Mey.	PC Zietsman (2036) NMB
3702 Indigofera nigromontana Eckl. & Zeyh.	NJ 1986
3703 Cullen obtusifolia (DC.) C.H. Stirton	G. Germishuizen (5344) PRE
3718 Tephrosia dregeana E. Mey.	H. Bezuidenhout (264) NMB
3754 Sutherlandia frutescens R. Br.	NJ 1986
3756 Lessertia incana Schinz.	NJ 1986
3756 Lessertia spinescens E. Mey.	G. Germishuizen (5460) PRE
3897 Rhynchosia emarginata Germishuizen	L. Smook (7965) PRE
3897 Rhynchosia schlechteri Bak. f.	NJ 1986

▪ GERANIACEAE

3925 Monsonia luederitziana Focke & Schinz	G. Williamson (3131) BOL
3926 Sarcocaulon crassicaule Rehm	PC Zietsman (2202) NMB
3928 Pelargonium antidysentericum (Eckl. & Zeyh.) Kostel.	E. vJ. (11610) NBG
3928 Pelargonium carnosum (L.) L'Herit.	E. vJ. (4139)
3928 Pelargonium crithmifolium J. E. Smith	G. Germishuizen (5447) PRE
3928 Pelargonium dasyphyllum E. Mey. ex Knuth	G. Williamson (3640) STE
3928 Pelargonium desertorum Vorster	Drijfhout (1454) PRE
3928 Pelargonium echinatum Curtis	PC Zietsman (2214) NMB
3928 Pelargonium hispidum (L. f.) Willd.	E. vJ. (11689) NBG
3928 Pelargonium klinghardtense Knuth	NJ 1986
3928 Pelargonium paniculatum Jacq.	E vJ. (4157) NBG
3928 Pelargonium praemorsum (Andr.) F. Dietr.	E. vJ. (11659) NBG
3928 Pelargonium cf. sulphyreus Knuth	G. Williamson (3094) BOL
3928 Pelargonium spinosum Willd.	PC Zietsman (2047) NMB
3928 Pelargonium tenuicaule Knuth	E. vJ. (4309) NBG
3928 Pelargonium xerophyton Schltr. ex Knuth	E. vJ. (11572) NBG

OXALIDACEAE	
3936 Oxalis copiosa F. Bol.	L. Smook (7923) PRE
3936 Oxalis purpurea L.	G. Williamson (2966) NBG
ZYGOPHYLLACEAE	
3963 Fagonia capensis Hadidi	G. Williamson (4176) NBG
3965 Zygophyllum cordifolium L.f.	NJ 1986
3965 Zygophyllum longicapsulare Schinz	NJ 1986
3965 Zygophyllum macrocarpon Retief	PC Zietsman (2185) NMB
3965 Zygophyllum microcarpum Licht. ex Cham. & Schlechtd.	L. Smook (7885) PRE
3965 Zygophyllum prismatocarpum E. Mey. ex. Sond.	E vJ. (8537) NBG
3965 Zygophyllum retrofractum Thunb.	PC Zietsman (2212) NMB
3965 Zygophyllum simplex L.	C Zietsman (2137) NMB
3976 Sisyndite spartea E. Mey. ex Sond.	PC Zietsman (2164) NMB
3978 Tribulus cristatus Presl	L. Smook (8001) PRE
3978 Tribulus terrestris L.	G. Williamson (3867) NBG
BURSERACEAE	
4151 Commiphora capensis (Sond.) Engl.	L. Smook (7917) PRE
4151 Commiphora cervifolia Van der Walt	NJ 1986
MELIACEAE	
4168 Nymania capensis (Thunb.) Lindb.	E vJ. (11713) NBG
POLYGALACEAE	
4273 Polygala lasiosepala Levyns	NJ 1986
4273 Polygala leptophylla Burch.	L. Smook (7960) PRE
4273 Polygala pallida E. Mey.	L. Smook (8021) PRE
4273 Polygala virgata Thunb. var. virgata	NJ 1986
EUPHORBIACEAE	
4424 Ricinus communis L.	E. vJ. (8487) NBG
4433 Jatropha orangeana Dinter ex P.G. Mey.	E. vJ. (8470) NBG
4498 Chamaesyce inequilatera (Sond.) Sojak	L. Smook (7981) PRE
4498 Euphorbia chersina N.E. Br.	NJ 1986
4498 Euphorbia dregeana E. Mey. ex Boiss.	PC Zietsman (2049) NMB
4498 Euphorbia ephedroides E. Mey. ex Boiss. var. ephedroides	PC Zietsman (2167) NMB
4498 Euphorbia gariepina Boiss. subsp. gariepina	E. vJ. (8552) NBG
4498 Euphorbia gregaria Marloth	G. Williamson (3679) NBG
4498 Euphorbia guerichiana Pax.	E. vJ. (5498) NBG
4498 Euphorbia gummifera Boiss.	E. vJ. (8531) NBG
4498 Euphorbia hamata (Haw.) Sweet	PC Zietsman (2211) NMB
4498 Euphorbia mauritanica L. var. mauritanica	L. Smook (7909) PRE
4498 Euphorbia peltigera E. Mey. ex Boiss.	E. vJ. (8554) NBG
4498 Euphorbia phylloclada Boiss.	E. vJ. (8461) NBG
ANACARDIACEAE	
4589 Ozoroa dispar (Presl.) R. & A. Fernandes	PC Zietsman (2022) NMB
4594 Rhus pendulina Jacq.	L. Smook (8024) PRE
4594 Rhus populifolia E. Mey. ex Sond.	E. vJ. (11722) NBG
CELASTRACEAE	
4626 Maytenus linearis (L. f.) Marais	PC Zietsman (2125) NMB
MELIANTHACEAE	
4854 Melianthus pectinatus Harv. subsp. pectinatus	PC Zietsman (2175) NMB
RHAMNACEAE	
4861 Ziziphus mucronata Willd. subsp. mucronata	G. Williamson (4062) NBG
MALVACEAE	
4983 Abutilon pycnodon Hochr.	E. vJ. (8478) NBG
STERCULIACEAE	
5056 Hermannia boraginiflora Hook.	NJ 1986
5056 Hermannia comosa Burch. ex DC.	G. Germishuizen (5564) PRE
5056 Hermannia cuneifolia Jacq. var. cuneifolia	PC Zietsman (2105) NMB
5056 Hermannia cf. scabra Cav.	D.J. MacDonald (686) PRE
5056 Hermannia stricta (E. Mey. ex Turcz.) Harv.	PC Zietsman (2029) NMB
ELATINACEAE	
5230 Bergia anagalloides E. Mey. ex Fenzl	G. Germishuizen (5541) PRE

▪ **FRANKENIACEAE**	
5233 Frankenia pulverulenta L.	PC Zietsman (2121) NMB
▪ **TAMARICACEAE**	
5239 Tamarix usneoides E. Mey. ex Bunge	PC Zietsman (2039) NMB
▪ **LOASACEAE**	
5388 Kissenia capensis Endl.	E. vJ. (75533) NBG
▪ **PLUMBAGINACEAE**	
6345 Dyerophytum africanum (Lam.) Kuntze	E. vJ. (8460)
▪ **EBENACEAE**	
6404 Euclea pseudebenus E. Mey. ex A. DC.	PC Zietsman (2052) NMB
6406 Diospyros ramulosa (E. Mey. ex A. DC.) De Winter	PC Zietsman (2174) NMB
▪ **OLEACEAE**	
6438 Menodora juncea Harv.	G. Williamson (3974) NBG
▪ **LOGANIACEAE**	
6470 Gomphostigma virgatum (L. f.) Baill.	G. Germishuizen (5354) PRE
▪ **GENTIANACEAE**	
6481 Sebaea pentandra E. Mey. var. pentandra	PC Zietsman (2123) NMB
▪ **APOCYNACEAE**	
6559 Carissa haematocarpa (Eckl.) A. DC.	G. Williamson (4084) NBG
6681 Pachypodium namaquanum (Wyley ex Harv.) Welw.	NJ 1986
6735 Ectadium virgatum E. Mey.	E. vJ. (4308) NBG
▪ **PERIPLOCACEAE**	
6739 Curroria decidua Planch. ex Hook. f. & Benth.	H. Bezuidenhout (267) NMB
▪ **ASCLEPIADACEAE**	
6752 Microloma calycinum E. Mey. subsp. calycinum	L. Smook (7907) PRE
6752 Microloma incanum Decne.	G. Williamson (3632) NBG
6791 Asclepias buchenaviana Schinz.	NJ 1986
6791 Asclepias fruticosa L.	PC Zietsman (2048) NMB
6849 Sarcostemma viminale (L.) R. Br.	NJ 1986
6877 Notechidnopsis columnaris (Nel) Lavranos & Bleck	E. vJ. (2538) NBG
6879 Trichocaulon cactiforme (Hook.) N. E. Br.	E. vJ. (8524) NBG
6879 Trichocaulon felinum Cole	G. Williamson (3642) Na G. Leach
6879 Trichocaulon kubusense Nel	G. Williamson (2492) Na G. Leach
6884 Quaqua incarnata (L.f.) Bruyns subsp. incarnata var. incarnata	PC Zietsman (2018) NMB
6885 Stapelia gariepensis Pillans	PC Zietsman (2099) NMB
6885 Stapelia similis N.E. Br.	E. vJ. (11573) NBG
6885 Stapeliopsis neronis Pillans	E. vJ. (11587) NBG
6885 Orbea namaquensis (N.E. Br.) Leach	PC Zietsman (2213) NMB
6885 Tridentea longipes (Luckhoff) Leach	NJ 1986
▪ **HYDROPHYLLACEAE**	
7032 Codon royenii L.	NJ 1986
7032 Codon schenckii Schinz	PC Zietsman (2075) NMB
▪ **BORAGINACEAE**	
7052 Heliotropium ciliatum Kaplan	G. Williamson (3966) NBG
7052 Heliotropium ovalifolium Forssk.	PC Zietsman (2126) NMB
7052 Heliotropium tubulosum E.Mey. ex DC.	PC Zietsman (2031) NMB
7056 Trichodesma africanum (L.) Lehm.	PC Zietsman (2100) NMB
7131 Wellstedia dinteri Pilg.	G. Williamson (3762) NBG
▪ **VERBENACEAE**	
7148 Plexipus garipensis (E. Mey.) R. Fernandes	G. Williamson (3590) NBG
7148 Plexipus namaquanus (H. Bol. ex H. Pearson) R. Fernandes	NJ 1986
7148 Plexipus pumilus (E. Mey.) R. Fernandes	NJ 1986
▪ **LAMIACEAE**	
7236 Acrotome pallescens Benth.	NJ 1986
7279 Ballota africana (L.) Benth.	G. Germishuizen (5573) NBI
7281 Stachys lamarckii Benth.	G. Williamson (3628) NBG
7281 Stachys rugosa Ait.	L. Smook (7912) PRE
7290 Salvia dentata Ait.	G. Germishuizen (5572) PRE
7290 Salvia garipensis E. Mey. ex Benth.	E. vJ. (11730) NBG

▪ SOLANACEAE

7379 Lycium cinereum Thunb. (sens. lat.)	PC Zietsman (2076) NMB
7379 Lycium pilifolium C.H. Wr.	PC Zietsman (2206) NMB
7407 Solanum burchellii Dun.	PC Zietsman (2014) NMB
7407 Solanum namaquense Damm.	NJ 1986
7407 Solanum villosum Mill.	G. Germishuizen (5348) PRE
7434 Nicotiana glauca R.C. Grah. *	PC Zietsman (2143) NMB

▪ SCROPHULARIACEAE

7466 Anthicaris scoparia (E. Mey. ex Benth.) Hiern ex Schinz	G. Williamson (3674) NBG
7467 Aptosimum spinescens (Thunb.) Weber	NJ 1986
7467 Aptosimum tragacanthoides E. Mey. ex Benth.	L. Smook (7884) PRE
7468 Peliostomum leucorrhizum E. Mey. ex Benth. var. leucorrhizum	L. Smook (8020) PRE
7468 Peliostomum oppositifolium Engl.	G. Williamson (3664) NBG
7468 Peliostomum cf. viscosum E. Mey. ex Benth.	NJ 1986
7470 Diascia nodosa K.E. Steiner	K.E Steiner (1930) NBG
7476 Nemesia anisocarpa E. Mey. ex Benth.	NJ 1986
7476 Nemesia viscosa E. Mey. ex Benth.	G. Germishuizen (5516) PRE
7517 Manulea cheiranthus L.	NJ 1986
7517 Manulea gariepina Benth. subsp. gariepina	L. Smook (7956) PRE
7519 Sutera atropurpurea (Benth.) Hiern	NJ 1986
7519 Sutera cf. canescens (Benth.) Hiern	L. Smook (7882) PRE
7519 Sutera fruticosa (Benth.) Hiern	PC Zietsman (2095) NMB
7519 Sutera ramosissima Hiern	G. Williamson (3599) NBG
7519 Sutera tomentosa (Thunb.) Hiern	NJ 1986
7519 Sutera tristis (L.f.) Hiern	PC Zietsman (2065) NMB
7523 Zaluzianskya villosa (Thunb.) F.W. Schmidt	PC Zietsman (2043) NMB

▪ SELAGINACEAE

7566 Hebenstretia dentata L.	PC Zietsman (2110) NMB
7566 Hebenstretia parviflora E. Mey.	L. Smook (7950) PRE
7568 Selago robusta Rolfe	NJ 1986

▪ PEDALIACEAE

7776 Rogeria longiflora (Royen) Gay ex DC.	E. vJ. (8476) NBG

▪ ACANTHACEAE

7934 Petalidium setosum C.B. Cl. ex Schinz	E. vJ. (8464) NBG
7973 Barleria rigida Nees	E. vJ. (8479) NBG
7980 Blepharis furcata (L.f.) Pers.	PC Zietsman (2061) NMB
7982 Acanthopsis disperma Nees	PC Zietsman (2130) NMB
7982 Acanthopsis hoffmannseggiana (Nees) C.B.Cl.	NJ 1986
8094 Justicia cuneata Vahl subsp. cuneata	E. vJ. (12056) NBG
8094 Justicia cuneata Vahl subsp. latifolia (Nees) Immelman	PC Zietsman (2089) NMB
8094 Monechma divaricatum (Nees) C.B. Cl.	G. Germishuizen (5538) PRE
8094 Monechma mollissimum (Nees) P.G. Mey.	H. Bezuidenhout (263) NMB
8094 Monechma spartioides (T. Anders.) C.B. Cl.	G. Williamson (3767) NBG

▪ PLANTAGINACEAE

8116 Plantago cafra Decne.	PC Zietsman (2111) NMB

▪ RUBIACEAE

8136 Kohautia caespitosa Schnizl. subsp. brachyloba (Sond.) D. Mantell	L. Smook (7994) PRE
8438 Anthospermum dregei Sond. subsp. dregei	NJ 1986
8449 Crocyllis anthospermoides E. Mey. ex K. Schum.	PC Zietsman (2127) NMB

▪ CUCURBITACEAE

8599 Cucumis meeusei C. Jeffrey	NJ 1986
8599 Cucumis rigidus E. Mey. ex Naud.	E. vJ. (8477) NBG

▪ CAMPANULACEAE

8668 Wahlenbergia annularis A. DC.	L. Smook (7953) PRE
8668 Wahlenbergia cf. oxyphylla A. DC.	L. Smook (7962) PRE
8668 Wahlenbergia patula A. DC.	PC Zietsman (2183) NMB
8668 Wahlenbergia subumbellata Markg.	L. Smook (7952) PRE

■ ASTERACEAE

8862 Pteronia ciliata Thunb.	E. vJ. (12057) NBG
8862 Pteronia divaricata (Berg.) Less.	L. Smook (7915) PRE
8862 Pteronia incana (Burm.) DC.	G. Williamson (3972) NBG
8862 Pteronia lucilioides DC.	PC Zietsman (2139) NMB
8887 Amellus nanus DC.	PC Zietsman (2078) NMB
8919 Felicia merxmuelleri Grau	PC Zietsman (2205) NMB
8929 Nolletia gariepina (DC.) Mattfd.	NJ 1986
8930 Chrysocoma puberula Merxm.	NJ 1986
8967 Ifloga molluginoides (DC.) Hilliard	L. Smook (7951) PRE
8967 Ifloga paronychioides (DC.) Fenzl	NJ 1986
8987 Lasiopogon glomerulatus (Harv.) Hilliard	NJ 1986
8992 Gnaphalium confine Harv.	L. Smook (7886) PRE
9006 Helichrysum alsinoides DC.	G. Williamson (3803) NBG
9006 Helichrysum argyrosphaerum DC.	G. Williamson (3073) BOL
9006 Helichrysum gariepinum DC.	G. Williamson (3757) NBG
9006 Helichrysum leontonyx DC.	PC Zietsman (2113b) NMB
9006 Helichrysum litorale H. Bol.	NJ 1986
9006 Helichrysum obtusum (S. Moore) Moeser	PC Zietsman (2050) NMB
9006 Helichrysum roseo-niveum Marloth & O. Hoffm.	E. vJ. (11829) NBG
9052 Leysera gnaphalodes (L.) L.	E. vJ. (11756) NBG
9052 Leysera tenella DC.	L. Smook (7902) PRE
9061 Pentatrichia petrosa Klatt	L. Smook (7920) PRE
9073 Pegolettia oxyodonta DC.	E. vJ. (8496) NBG
9073 Pegolettia retrofracta (Thunb.) Kies	NJ 1986
9090 Geigeria vigintisquamea O. Hoffm.	PC Zietsman (2151) NMB
9320 Eriocephalus pubescens DC.	NJ 1986
9320 Eriocephalus scariosus DC.	PC Zietsman (2045) NMB
9351 Cotula anthemoides L.	PC Zietsman (2118) NMB
9366 Pentzia argentea Hutch.	NJ 1986
9366 Pentzia lanata Hutch.	PC Zietsman (2107) NMB
9366 Oncosiphon piluliferum (L.f.) Kallersjo	NJ 1986
9366 Oncosiphon suffruticosum (L.) Kallersjo	NJ 1986
9366 Myxopappus acutilobus (DC.) Kallersjo	L. Smook (7900) PRE
9366 Foveolina albida (DC.) Kallersjo	E. vJ. (11751) NBG
9366 Foveolina dichotoma (DC.) Kallersjo	PC Zietsman (2084) NMB
9411 Senecio abruptus Thunb.	NJ 1986
9411 Senecio arenarius Thunb.	NJ 1986
9411 Senecio cardaminifolius DC.	NJ 1986
9411 Senecio cephalophorus (Compton) Jacobs.	E. vJ. (4129) NBG
9411 Senecio corymbiferus DC.	E. vJ. (11576) NBG
9411 Senecio eenii (S. Moore) Merxm.	L. Smook (7901) PRE
9411 Senecio longiflorus (DC.) Sch. Bip.	NJ 1986
9411 Senecio piptocoma O. Hoffm.	PC Zietsman (2090) NMB
9411 Senecio sisymbriifolius DC.	NJ 1986
9417 Euryops dregeanus Sch. Bip.	G. Williamson (3735) NBG
9417 Euryops namibensis (Merxm.) B. Nord.	PC Zietsman (2028) NMB
9417 Euryops tenuissimus (L.) DC. subsp. tenuissimus	G. Germishuizen (5466) PRE
9420 Othonna arbuscula (Thunb.) Sch. Bip.	NJ 1986
9420 Othonna cyclophylla Merxm.	E. vJ.(5525) NBG
9420 Othonna cylindrica (Lam.) DC.	NJ 1986
9420 Othonna herrei Pillans	NJ 1986
9420 Othonna opima Merxm.	E. vJ. (8518) NBG
9420 Othonna cf. perfoliata Thunb.	NJ (88) PRE
9425 Dimorphotheca pluvialis (L.) Moench	PC Zietsman (2163) NMB
9425 Dimorphotheca polyptera DC.	E. vJ. (11767) NBG
9425 Dimorphotheca sinuata DC.	G. Williamson (3638) NBG
9427 Osteospermum amplectens (Harv.) T. Norl.	NJ 1986
9427 Osteospermum armatum T. Norl.	NJ 1986
9427 Osteospermum breviradiatum T. Norl.	PC Zietsman (2096) NMB
9427 Osteospermum clandestinum (Less.) T. Norl.	NJ 1986
9427 Osteospermum karrooicum (H. Bol.) T. Norl.	PC Zietsman (2109) NMB

9427 Osteospermum microcarpum (Harv.) T. Norl. ssp. septentrionale (T. Norl.) T. Norl.	NJ 1986
9427 Osteospermum oppositifolium (Ait.) T. Norl.	NJ 1986
9427 Osteospermum pinnatilobatum T. Norl.	G. Germishuizen (5395) NBI
9427 Osteospermum pinnatum (Thunb.) T. Norl.	NJ 1986
9427 Osteospermum pinnatum (Thunb.) T. Norl. var. breve T. Norl.	PC Zietsman (2204) NMB
9427 Osteospermum polycephalum (DC.) T. Norl.	PC Zietsman (2080) NMB
9431 Ursinia cakilefolia DC.	NJ 1986
9431 Ursinia calenduliflora (DC.) N.E.Br.	NJ 1986
9431 Ursinia speciosa DC.	E. vJ. (11749) NBG
9432 Arctotis fastuosa Jacq.	L. Smook (7972) PRE
9432 Arctotis hirsuta (Harv.) Beauv.	PC Zietsman (2053) NMB
9433 Gorteria diffusa Thunb. subsp. diffusa	PC Zietsman (2079) NMB
9434 Gazania lichtensteinii Less.	G. Williamson (3593) NBG
9435 Hirpicium echinus Less.	NJ 1986
9438 Berkheya canescens DC.	E. vJ. (12061) NBG
9438 Berkheya fruticosa (L.) Ehrh.	E. vJ. (11789) NBG
9438 Berkheya spinosissima (Thunb.) Willd. subsp. namaensis Roessl. var. argentifolia Roessl.	E. vJ. (11709) NBG
9439 Didelta carnosa (L.f.) Ait. var. carnosa	NJ 1986
9439 Didelta carnosa (L.f.) Ait. var. tomentosa (Less.) Roessl.	PC Zietsman (2081) NMB
9439 Didelta spinosa (L.f.) Ait.	PC Zietsman (2203) NMB
9501 Dicoma capensis Less.	G. Williamson (3740) NBG

H. Bezuidenhout

National Parks Board Scientific Services:
Kimberley P O Box 110040 Hadison Park Kimberley 8306

APPENDIX III

NUTRIENT ANALYSIS OF PLANTS

NUTRIENT ANALYSIS TABLE

Description of Material	District	g/100 g						kj/100 g	mg/100g											
		Moisture	Ash	Protein	Fat	Crude Fibre	Carbohydrate	Energy Value	Ca	Mg	Fe	Na	K	Cu	Zn	P	Thiamin	Riboflavin	Nicotinic Acid	Vit C
Albuca altissima (Slymstok)	Van Rhynsdorp	92.1	0.6	0.4	0.1	0.2	6.6	121	16.9	22.4	0.47	14.3	168	0.05	0.12	10.1				7.1
	Unknown	94.5	0.4	0.2	0.1	0.1	4.7	86	25.3	16.6	0.61	20.5	76.9	0.17	0.17	8.4				
Caralluma mammillaris (Aroena)	Van Rhynsdorp	80.8	2.4	1.2	0.7	5.0	9.9	213	290	88.3	3.3	242	321	0.09	0.77	26.9	0.14	0.01	0.80	53.7
	Richtersveld	90.0	0.9	0.5	0.1	1.1	7.4	137	98.3	80.1	1.15	69.1	76.1	0.48	0.49	10.4	0.08	0.06	1.90	45.2
	Doringkloof, Richters	91.9	1.2	0.7	0.1	1.2	4.9	98	223	48.1	0.64	81.1	180	0.54	0.42	25.2	0.09	0.03	2.00	8.1
	Boesmanland	91.0	0.8	0.2	0.1	0.4	7.5	133	50.6	32.3	1.16	87.4	125	0.11	0.12	9.8				
Trichocaulon sp. (Ioba)	Richtersveld	94.2	0.7	0.2	0.02	0.8	4.1	73	167	13.7	0.24	42.6	49.5	0.26	0.28	4.6				7.4
Moraea fugax (Sanduintjie/duinuintjie)	Van Rhynsdorp	41.1	0.7	1.3	0.6	0.7	55.6	979	56.6	27.5	0.92	8.40	244	0.14	0.22	70.7				49.8
	Loeriesfontein	46.8	0.6	2.0	0.3	0.7	49.6	878	73.5	31.1		17.1	189	0.18	0.10	71.0	0.20		0.63	28.7
	Unknown	53.0	1.1	1.8	0.1	0.5	43.5	765	50.3	25.1	0.48	8.30	394	0.63	0.77	66.3				69.3
	Richtersveld	51.1	0.9	2.6	0.1	0.9	44.4	793	62.6	26.1	1.11	10.3	266	0.17	0.77	64.6	0.16	0.04	0.93	
Anacampseros sp. (Skilpadpote)	Richtersveld	73.3	4.6	1.1	0.8	1.2	19.0	351	868	266		6.50		537	0.52	0.53	81.8			
(=oa / harus)	Unknown	94.3	2.3	0.3	0.03	0.9	2.2	43	721	33.4	0.25	28.0	58.0	0.20	0.13	2.1	0.03	0.002	0.77	
Diospyros austroafricana var. microphylla (Kanoebeebessie)	Kamieskroon	82.2	0.5	0.7	0.1	1.0	15.5	278	20.7	8.70	0.43	14.9	197	0.05	1.06	8.0	0.01	0.02	0.21	195
	Unknown	71.2	1.0	0.8	0.3	2.5	24.2	433	61.4	18.0	0.86	3.80	304	0.21	0.29	19.6	0.02	0.004	0.21	86.0
Hydnora africana (Kannie)	Loeriesfontein	66.5	2.8	2.3	1.9	9.4	17.1	398	10.4	38.0	1.30	68.4	1054	0.62	0.76	116	0.11	0.15	0.80	
	Unknown	73.2	1.6	1.2	2.0	2.9	19.1	417	6.80	17.9	0.61	87.9	472	0.22	0.46	65.6	0.12	0.02	0.72	11.7
(!Wa !Wa)	Doringkloof	77.8	2.2	1.6	0.1	1.3	17.0	316	135	124	1.59	167	428	0.50	0.72	63.8				7.9
Stapelia ? (!Wa !Wa)	Unknown	88.3	1.3		0.6	1.3			293	53.9	3.81	83.5	169	0.64	1.04	21.4				
Stapelia namaquensis (Gunu)	Richtersveld	95.3	0.4	0.5	0.1	0.3	3.5	71	27.7	30.1	1.39	26.1	86.0	0.21	0.19	11.0				13.9
Oxalis sp. (Suringblare)	Richtersveld	92.7	0.8	1.7					83.4	54.5	7.02	71.1	181	0.71	0.65	34.8				
Oxalis sp. (Suringknolle)	Richtersveld	94.5	0.2	0.2	0.04	0.7	4.4	82	7.66	6.60	2.50	6.15	63.5	0.08	0.09	9.70	0.01	0.01	0.09	5.6

Description of Material	District	%/100 g						kj/100 g	mg/100g											
		Moisture	Ash	Protein	Fat	Crude Fibre	Carbohydrate	Energy Value	Ca	Mg	Fe	Na	K	Cu	Zn	P	Thiamin	Riboflavin	Nicotinic Acid	Vit C
Cyanella hyacinthoides Raap / Raaptol	Kotzesrus	46.2	0.8	2.7	0.7	0.5	49.1	897	34.2	32.8	1.41	8.0	241	0.54	2.14	116				24.0
	Van Rhynsdorp	55.2	0.8	3.1	0.3	0.6	40.0	729	88.7	31.5	0.80	15.6	226	0.30	0.16	37.4				
	Garies	67.9	0.5	2.5	0.1	0.4	28.6	526	50.2	15.8	0.39	6.55	134	0.15	0.43	30.0	0.09	0.03	0.67	53.0
	Nouriver	50.9	0.5	4.5	0.3	0.6	43.2	813	88.4	21.4	2.19	4.9	109	0.40	0.71	59.0	0.18	0.38	1.34	11.2
	Spoegriver	57.5	0.7	3.5	0.3	0.5	37.5	700	65.5	21.3	1.66	12.7	163	0.35	0.63	60.6	0.15	0.03	1.37	32.2
Trachyandra falcata Hotnotskool stem + flowers	Van Rhynsdorp	81.0	2.9	1.8	0.6	3.9	9.8	218	65.0	54.4	3.00	242	333	0.26	0.37	39.3				96.7
stem + flowers	Loeriesfontein	77.2	2.7	3.1	0.8	3.2	15.4	341	280	76.4	6.1	140	529	0.37	0.55	91.4				56.9
stem below flowers	Loeriesfontein	90.1	1.1	0.8	0.1	2.0	5.9	116	67.9	22.5	2.0	129	212	0.16	0.10	22.5				75.1
stem + flowers		88.9	1.5	1.8	0.3	2.9	4.6	119	176	42.9	4.09	23.7	232	0.27	0.50	34.5	0.04	0.01	0.42	
stem below flowers		89.1	1.3	0.7	0.1	2.5	6.3	121	72.8	30.2	2.01	119	260	0.43	0.37	19.3	0.02	0.01	0.14	
stem + flowers		92.3	1.2	2.0	10.4	1.1	3.0	99	96.4	38.6	2.5	41.4	315		0.66	47.0				90.1
Grielum humifusum Pietsnot/Duikerwortel	Van Rhynsdorp	76.4	1.7	1.5	0.4	1.8	18.2	346	277	86.3	0.29	72.8	271	0.11	0.14	28.4				10.3
	Loeriesfontein	73.2	2.0	0.6	0.2	1.4	22.6	428	457	79.4	8.8	99.0	280	0.37	0.30	61.7	0.03	0.03	0.75	3.6
loeibie	Richtersveld	68.2	2.1	2.4	0.4	1.6	25.3	481	324	94.0	0.86	43.2	364	0.17	0.38	91.5	0.08	0.08	0.74	16.2
Microloma saggitatum Bokhoring/Kannetjie pods	Loeriesfontein	65.3	2.4	4.9	0.4	3.3	23.4	491	184	103	2.23	34.4	779	0.29	0.82	225				132
	Garies	75.8	2.0	4.1	0.4	3.1	14.6	329	91.6	70.6	2.09	7.34	623	0.29	1.04	42	0.21	0.14	0.80	
	Unknown	81.7	1.6	3.6	0.5	3.0	9.6	241	105	53.2	2.10	12.5	504	0.62	1.07	66.4	0.21	0.15	0.66	75.4

APPENDIX III A

METHOD USED FOR ANALYSES OF PLANT NUTRIENTS

The following analytic methods were used in determining properties of edible plants. See Appendix III for results of these analyses.

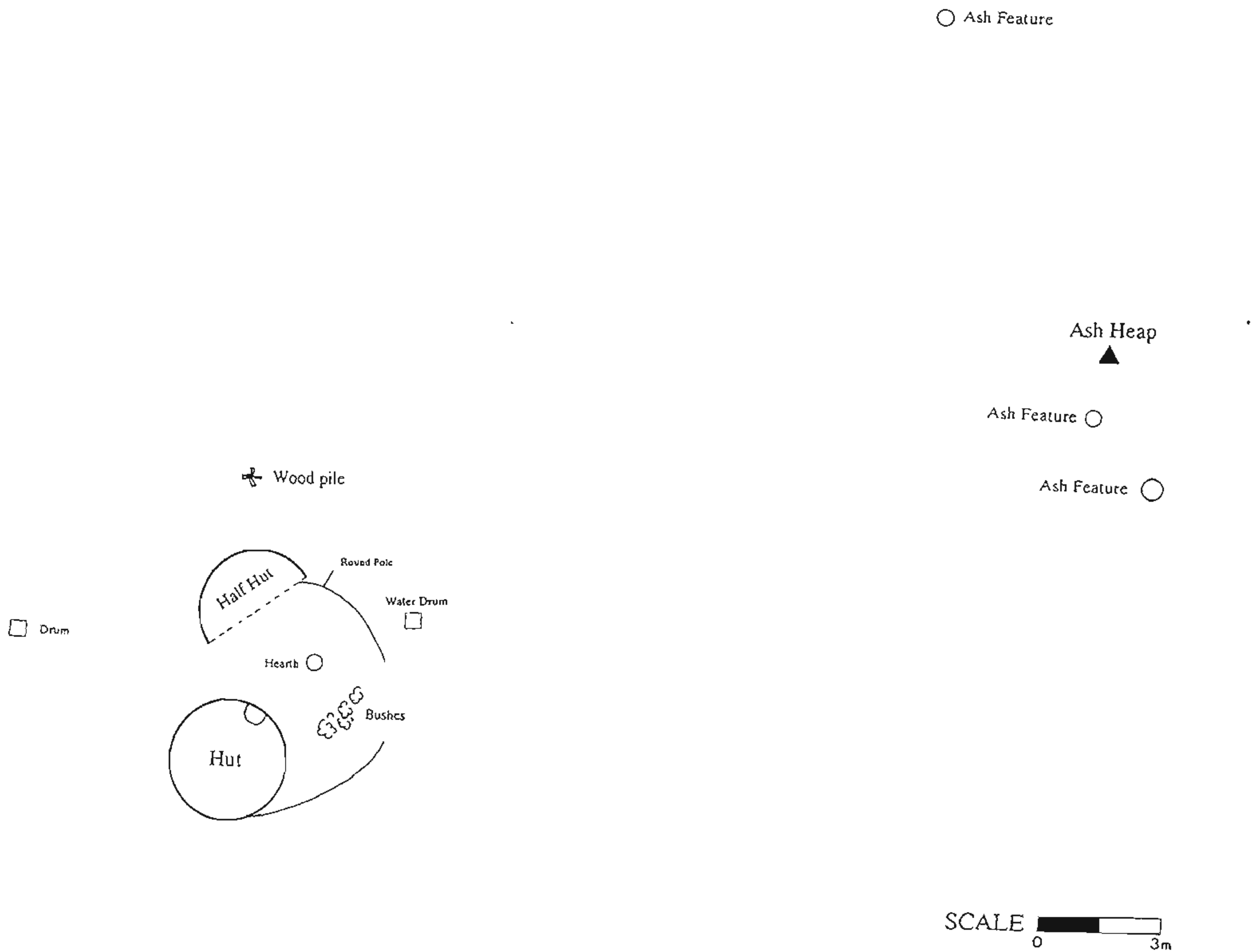
Moisture	Sample dried overnight in an aluminium dish under vacuum at 70'C. The loss of mass was calculated as percentage moisture.
Fat:	Extraction with petroleum ether in soxhlet apparatus.
Protein:	Kjeldahl method using Merck selenium reaction mixture as catalyst. Nitrogen was converted to protein with the factor 6,25.
Crude fibre:	Weende method - residue remaining after digestion of sample with dilute sulphuric acid and dilute sodium hydroxide solutions.
Carbohydrate:	By difference using the formula:
	100 - (moisture (edible plants) +fat+crude protein+crude fibre+ash percentages.)
Calorific Value:	Bomb Calorimeter. (in firewood)
Ash & minerals:	Samples ashed in silica dishes at 550°C in a (edible plants) muffle furnace until grey or white ash was obtained. This ash was dissolved in dilute hydrochloric acid and used for determination of minerals by means of atomic absorption spectrometry (Perkin-Elmer atomic absorption spectrophotometer).
Ash (wood):	Mass after 600°C for 16 hours.

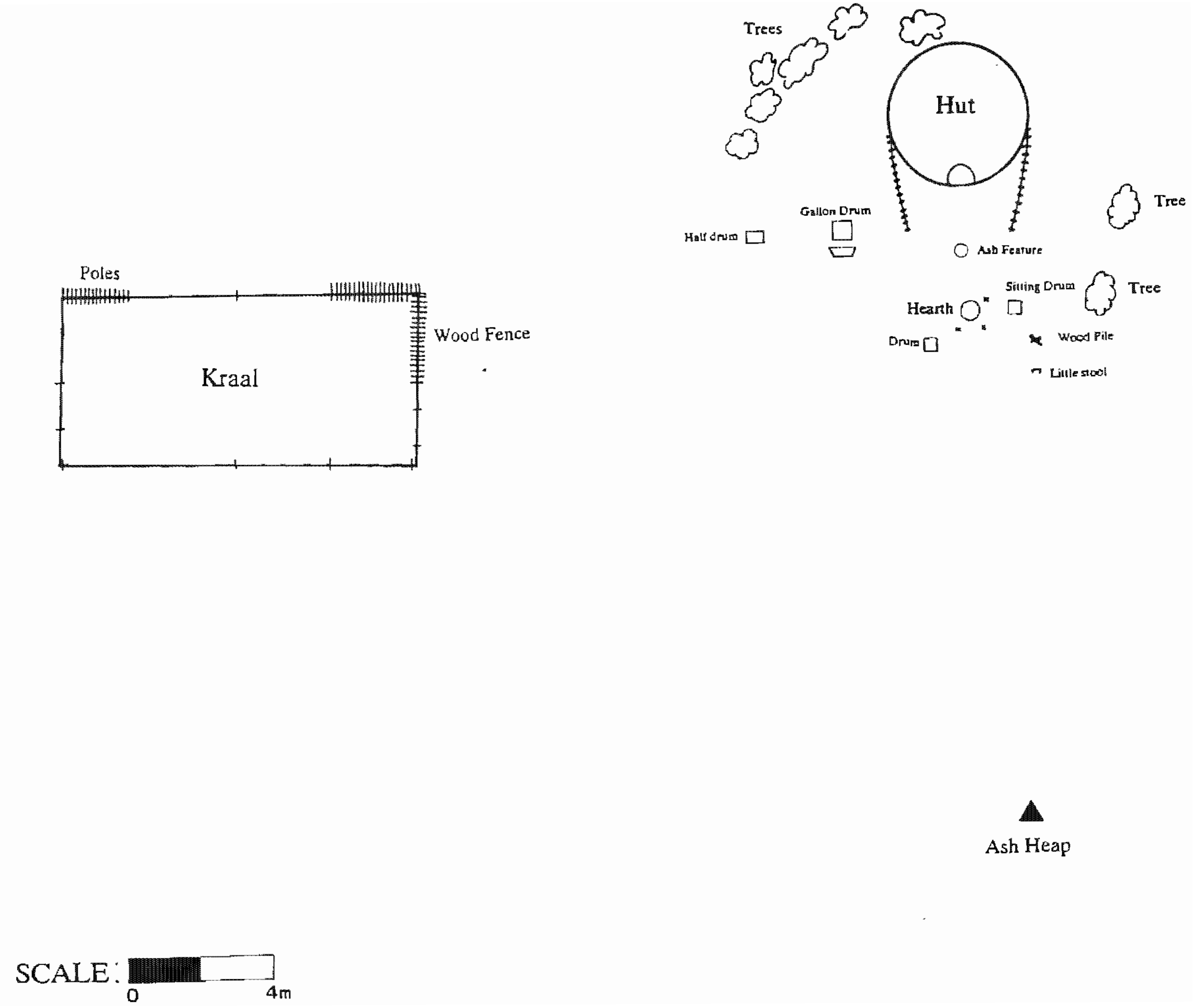
The methods used for the determination of these nutrients are based on methods described below.

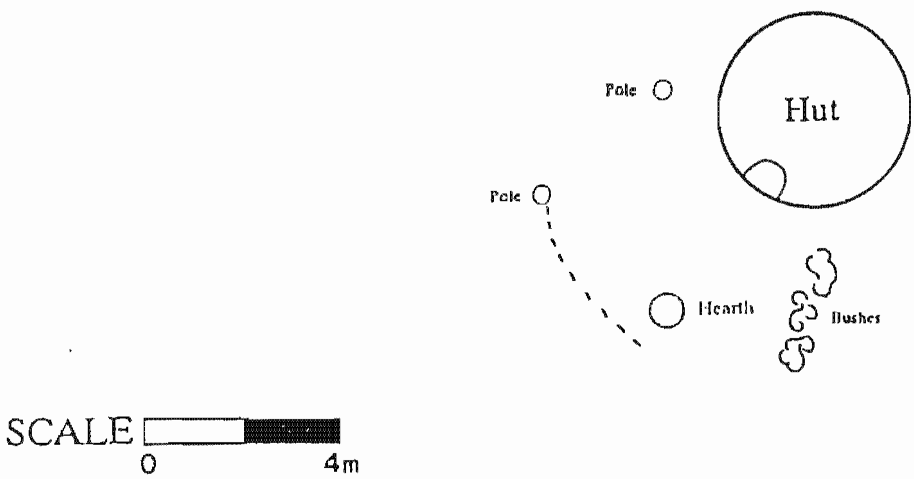
Phosphorus:	Determined on the same ash solution by means of molybdenum blue calorimetric method using hydrazine sulphate as reducing agent.
Thiamine	Fluorometric method.
Riboflavin:	Fluorometric method.
Nicotinic acid:	Microbiological method.
Vitamin C:	Microfluorometric method
Energy value	Calculated using factors: protein and carbohydrate (% x 16,8) and fat (% x 37,8).
	(This energy value was for edible plants)

APPENDIX IV

DIAGRAMS OF STOCKPOSTS


Ash Feature
Ash Heap
Ash Feature
Ash Feature
Wood pile
Roved Pole
Half Hut
Water Drum
Drum
Hearth
Bushes
Hut
SCALE
0
3m


Trees
Hut
Tree
Gallon Drum
Half drum
Ash Feature
Poles
Sitting Drum
Tree
Hearth
Wood Fence
Drum
Wood Pile
Little stool
Kraal
Ash Heap
SCALE:
0
4m


Pole
Hut
Pole
Hearth
Bushes
SCALE
0
4m