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# THE ETHNOBOTANY OF THE TOPNAAR

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## Introduction

The Topnaar are the only inhabitants of the Namib desert. The name of this desert is derived from the Nama word for "endless expanse". The Namib is a long but narrow desert situated on the southwest coast of Africa and stretches from Mossamedes in Angola across the full length of Namibia to the mouth of the Olifants River in South Africa - a length of almost 2000 km. Its width varies from 90 to 120 km (see map 1). This desert is considered to be the oldest desert in the world. The climate of the area has been arid or semi-arid for at least the last 80 million years. During this long history, life has adapted to the harsh conditions. The result is a high percentage of endemism amongst plants and animals. The term endemic is used to describe species which occur only in one specific area.

Apart from two perennial rivers, the Kunene and Orange River, the Namib is crossed by several ephemeral rivers. Waterflow in these rivers is fairly rare and depends upon rainfall in their respective catchment areas. There is, however, a permanent subterranean waterflow, sufficient to maintain linear oases along the riverbed.

The Topnaar live along the Kuiseb river, one of these seasonal rivers, which forms the border between the northern stone desert and the southern sand dune sea. A second Topnaar community lives in Sesfontein, a village about 500 km north of the Kuiseb. Sesfontein is situated just outside the Namib, in the pro-Namib, the more humid area east of the Namib (see map 1).

From December 1991 to June 1992, an ethnobotanical survey was conducted in collaboration with the Topnaar. All Topnaar settlements of the Kuiseb area and Sesfontein were visited and all families interviewed. Special emphasis was placed on the older Topnaar, whose plant knowledge is the most extensive. For each plant mentioned, information on its use, the used parts and the preparation and processing method was collected. The plant specimens that could be collected in the field were identified by the authors. Because of extreme drought during this period, some plants could not be found in the field. Some of these could still be identified through literature research, relating them to the vernacular names and the plant descriptions given by the Topnaar. Others however remain unidentified to date.

Some people gave information on the use of non-plant material. This information is also included in this book.

# 1. The Topnaar People

## 1.1 The Topnaar Society

The Topnaar people belong to the Nama, who for their part, belong to the Khoi-Khoïn race. The Khoi-Khoïn were called Hottentots by the first European colonizers, probably because of their language Nama, a "click" language. The four clicks used in Nama are | "dental click", || "lateral click", ! "palatal click" and # "alveolar click". The Khoi-Khoïn, translated as 'men of men', were previously more widely dispersed in southern Africa. At present Khoi-Khoïn tribes are only found in Namibia where they consist of 3 groups: the Nama, the Oorlam and a number of Sān groups (see table 1).

The Nama are divided into 9 tribes, two of which are the Topnaar of the lower Kuiseb valley and the Topnaar of Sesfontein. The two areas they live in are shown on map 1. The name Topnaar is of Dutch origin, meaning 'people of the upperland' or 'those who are on top'. This is probably a translation of the traditional Nama name #*Aonin*. Etymologically #*Aonin* is derived from #*áob*, meaning top. There are different explanations of the name #*Aonin*: 'people on the top', living in the mountains (KÖHLER, 1969); 'people standing on top of the Nama people', superior to the other tribes (KÖHLER, 1969); 'people living in a marginal area', on the edge of the Nama territory (BUDACK, 1977) or 'people inhabiting the sea coast' (KÖHLER, 1969).

The Topnaar tribe is divided into sibs (clans) and the tribal government consists of a chief and his council. In the past the leadership was inheritable, but now also the people have a say in the elections of a new chief.

## 1.2 History

The Topnaar are among the oldest inhabitants of Namibia. Their history is not completely known. The earliest recorded presence of Topnaar in the Walvisbay area goes back to 1670 when the Dutch East India Company's ship, *Grundel*, first entered Sandwich Harbour, just south of Walvisbay (see map 2). The natives on the shore were recognized as Hottentots by the crew, but their language was noted to be slightly different to that of the Cape Hottentots (who were known from the first voyages of the Dutch East India Company to South Africa). At that time the Kuiseb still reached the sea at Sandwich Harbour. Seven years later, in 1677, the Dutch East India Company vessel *Boode* visited Sandwich Harbour and met

Hottenlots, which were herding cattle and collecting *inara* seeds. In 1973, Dr. Beatrice Sandelowsky discovered near Conception Bay (see map 2) some fragments of a Khoi clay pot, which were dated approximately 650 years back. This probably means that Khoi-Khoi were already living along the Namibian coast in the 14th century. It is not sure, however, whether these people were Topnaar people or belonged to another tribe.

According to oral tradition, the Topnaar came from the north prior to occupying the Walvisbay territory. The exact area where they came from was however not further specified.

The Topnaar were among the first traders in Namibia. As early as 1677 they bartered with European sailors beef, goats, milk, *inara* and fresh water in exchange for general supplies, clothes, weapons and alcohol.

A long time ago, the Topnaars' territory was more extensive and reached from the coast, eastwards along the lower Kuiseb as far as *iHu-daob*, and from Conception Bay in the south northwards to the Swakop river (BUDACK, 1977; KÖHLER, 1969; see map 2). They were driven from part of this area by the Herero migrating from the north and other Nama people migrating from the south.

There exist different opinions about how some Topnaar people migrated to Sesfontein, about 500 km north of the Kuiseb in the Kaokoveld. HOERNLE (1925) says the Topnaar told her that some of them returned to the north after having settled in the Walvisbay area. Other sources (KÖHLER 1969; Kooijie, personal comment) say that in the 1880's, during the wars between the Nama and Herero, a group of Topnaar joined Jan Jonker Afrikaner, headman of the Afrikaners, to fight the Herero, and thereafter remained in the north, in a place called *iAm-ehb*. Forced by drought they moved afterwards to Sesfontein, where at that moment already lived some other African tribes, Bushmen and Bergdama. Another group of Nama people, the Swartboois, followed them later.

### 1.3 Way of Life in the Lower Kuiseb Valley

The Topnaar of the lower Kuiseb valley traditionally live by herding cattle, gardening, and gathering the *inara* (*Acanthosicyos horridus*). The latter is a cucurbit which grows in the wild. It is endemic to the coast of Namibia and provides food and water to the Topnaar. The Topnaar are therefore also called *iNaranin*, people living off the *inara*. This however is a derogatory name to them as it stresses their dependency on "veldkos" (literally food from the field, referring to the use of

indigenous edible plants for food). The *!nara* grows abundantly in the sand dunes near Walvisbay. Each family possesses a number of *!nara* bushes. In this the Topnaar differ from the other Khoi-Khoin: the *!nara* bushes, not the land on which they grow, are private property, whereas normally possessions are common. This perpetual right to the *!naras* was approved by Queen Victoria herself. Each family can only harvest from its own *!nara* bushes. The property rights are hereditary. If the parents die, the *!nara* field is divided over the children that are interested in the *!nara*. The chief and his council may rule in disputes if necessary. During the harvesting season of the *!nara*, whole families move down to the coastal *!nara* fields and remain there until the end of the harvest. Only a few people stay behind in the villages to attend livestock.

In the past, the Topnaar of the Kuiseb area were split up into *Hurinin*, the hunter-gatherers and fishermen living along the coast, and *!Naranin*, those living more inland along the Kuiseb river. The latter were the dominant group. Now they have fused. Furthermore these Topnaar have also fused with some Herero, Ovambo, Damara and Eurafricans living in the same area.

The Khoi-Khoin are traditionally nomadic. The Kuiseb Topnaars' mobility, however, is restricted by the environmental conditions of the area: the people depend on the waterholes in the riverbed and the *!nara* fields. Another drastic influence on their mobility and general way of living is the fact that in 1907 a large area of the Namib desert was declared a National Park. This ruling prevents hunting and prohibits the herding of livestock or any other activity outside the riverbed. Following implementation of the South African Odendaalplan (the aim of this plan was to return all black people in South Africa and South West Africa (now Namibia) to their respective homelands), some farms were purchased further south, in Namaland, with the intention to move and resettle the Topnaar outside the Namib-Naukluft park. They refused, however, to leave their territory, which they claim as their traditional tribal area as they have already occupied it for several centuries. Their culture is linked to the *!nara* and they depend on the sea and its food resources. There also exist legal treaties respecting their traditional rights to the use of the *!nara* plants.

For years the presence of the Topnaar in the Namib-Naukluft park was a topic of dispute between the Ministry of Wildlife, Conservation and Tourism and the Topnaar people. A result of this was that under South African rule, few investments in the development of the area were made. Only in 1979 did the Department of Water Affairs improve the water supply in the villages by building windpumps,

dams, pipelines and watertaps.

The first known chief of the Kuiseb Topnaar was Frederik *Khaxab* (mid 19th century). After his death Piet II *Ebib* became chief of the Topnaar. When he died in 1910, leaving no son, two factions struggled for the leadership, but without result. For 66 years the Topnaar had no leader. This resulted in the loss of some of their traditions, culture and tribal unity. Only in 1976, when Namibian independence became a possibility, did the need for a Topnaar spokesman at national level emerge. A new leader, chief Esau *Kooitjie* was nominated. On his retirement in 1981, his 18 year old son Seth *Kooitjie* was elected his successor. Since then the Topnaar have again had someone to represent them and promote their interests on a national level.

At the time of this research about 400 Topnaar lived along the Kuiseb river, divided over 12 semi-permanent settlements, all located on the northern bank of the river, far enough from the river so that the occasional floods will not destroy the houses. The villages, from east to west, are Homcb, Oswater, Natab, Gobabeb, Soutvier, Klipneus, Swartbank, Eduseb, Urras, *Goatanab*, Dawe-draats and Arnstraat (see map 2). The 4 last villages belong to the Walvisbay-enclave (still belonging to the Republic of South Africa). One to ten families reside in each village. Another 400 Topnaar live in Walvisbay.

#### 1.4 Way of Life in Sesfontein

The Topnaar of Sesfontein are also called *Gomen*, "stupid people", speaking a strange, unintelligible dialect (KÖHLER, 1969). In 1906, the farm Sesfontein, so called because of the six perennial springs issuing in the area, was granted to the Topnaar and Swartboois by the German Government. Due to these springs, which provide water to this area, irrigated agriculture is possible in Sesfontein. Every male inhabitant owns a part of the irrigated fields. The major crops are wheat, corn and tobacco. Gathering of wild food plants is still important to these people as well as some goat farming.

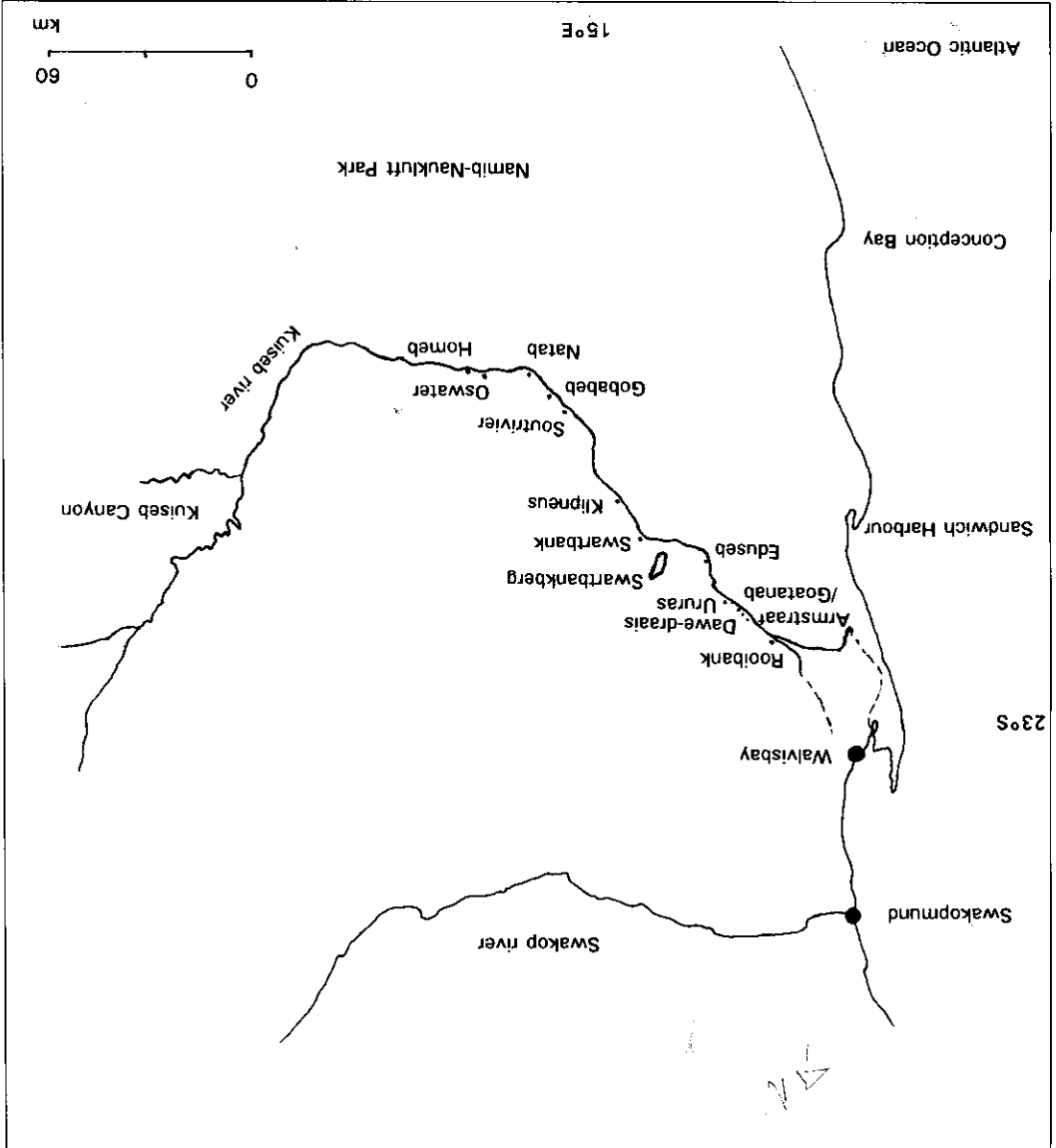
About 100 Topnaar presently live in Sesfontein. The earliest chief the Sesfontein Topnaar can remember was *Uichah*. Under him they still lived in the south. Only during the leadership of his son, Arwab Hendrik *Uichamah*, did the Topnaar actually come to Sesfontein.

A. NAMA			
no.	Nama name	European name	Tribal centre
1.	<i>Gai-  khaun</i>	Red Nation	Hoachanas
2.	<i>!Gami-ḱnūn</i>	Bondelswarts	Warmbaths
3.	<i>ḱAonin</i>	Southern Topnaar	Rooibank
4.	<i>!Gomen</i>	Northern Topnaar	Sesfontein
5.	<i>!Khara-khoen</i>	Simon Kopers	Gochas
6.	<i>  Haboben</i>	Velskoendraers	Koës
7.	<i>  O-gain*</i>	Groot Doden	Schlip
8.	<i>  Khu-!gōan</i>	Swartboois	Franzfontein
9.	<i>Kharo-!oan</i>	Keetmanshoppers	Keetmanshoop
B. "OORLAM" TRIBES			
no.	Nama name	European name	Tribal centre
10.	<i>!Aman</i>	Bethaniers	Bethanien
11.	<i>Gai-!khauan*</i>	Amraal Lamberts	Naosanabes
12.	<i>Hai-!khauan</i>	Berseba people	Berseba
13.	<i>!Hōa-laran*</i>	Afrikaners	Windhoek
14.	<i>!Khobesen</i>	Witboois	Gibeon
C. SĀN GROUPS			
no.	Nama or proper name	European name	Area
15.	<i>Nami-sān*</i>	Namib Bushmen	Southern Namib desert
16.	<i>Kai-  omn</i>	Keikum Bushmen	Outjo & Tsumeb districts, Etosha Pan area, Owambo
17.	<i>Naron (!Ai-khoen)</i>	Naron Bushmen	Ghanzi & Gobabis districts
18.	<i>Koe (Kwengo)</i>	Black Bushmen	Kavango, western Caprivi

\* : Tribes marked with an asterisk have nearly died out.

Table 1: The structure and localisation of the Khoi-khoi (Hottentots) in Namibia

Map 2: The Topnaar villages of the Kuiseb Valley





## 2.1 Natural Environment

The residential area of the Topnaar of the Kuisseb valley is limited to a number of settlements in the lowest part of the Kuisseb. Communities are situated along the linear oasis which is the Kuisseb's riverbed. South of the river the sand sea of the Southern Namib extends towards Lüderitz. North of the river the gravel plain of the Central Namib, strewn with a number of mountains, extends towards the Ugab.

### 2.1.1 Climate

The climate of the Namib is characterized by a low and very variable rainfall, an evaporation that exceeds precipitation, high insolation, cool to extremely high temperatures and the frequent occurrence of fog and stratus clouds.

The climate is strongly influenced by the Benguela Current, a branch of the Westerly Wind Drift Current. The Benguela Current flows northwards along the south-west coast of Africa. Along the western margin of the Benguela Current part of the surface water flows westwards into the Atlantic Ocean and is replaced by upwelling cold bottom water from the Antarctic Intermediate Current. The result is a mass of cold water along the coast with a mean annual sea temperature of about 15°C. This current of cold water is one of the major reasons for the aridity of the Namib. The anticyclone of the south Atlantic Ocean causes movement of warm air towards the west coast of Southern Africa. There it comes in contact with the cooled air above the Benguela Current resulting in condensation of moisture, producing fog. Inland, strong insolation results in low pressure cells, producing sea-breezes. As the cool, moist air comes inland it is warmed and relative humidity decreases. During the night when the temperature inland drops dramatically a reverse situation is created: dry, cool land-breezes predominate. The overall result is a nearly continuous high relative humidity along the coast and inland a decreasing relative humidity with increasing distance from the sea.

Fog and low stratus clouds are very common and extend sometimes more than 50 km inland. The condensation of the water, originating from fog and low stratus clouds, on plants is the most important water source for these plants in the coastal belt and on the mountain ranges up to about 50 km from the coast.

Precipitation by rain is very low. The reason is that due to the cool ocean water a strong, stable temperature inversion is created (immediately above the surface a layer of cool air is formed due to the cooling effect of the ocean water; above this

layer the air has the normal (high) temperature, whereas normally temperature decreases with increasing height). Circulation of the air around the anticyclone of the South Atlantic leads to a flow of air more or less parallel to the coast. The cool, moist air is warmed up when entering the warm land, resulting in an increase of the water holding capacity of the air. Every drop of water evaporates and rain cannot occur in such conditions. The influence of this climatic system decreases with increasing distance from the sea. As a result the amount of rain increases along this gradient.

Temperatures along the coast are cool and show little diurnal variation, due to the influence of the cold sea water and the frequent occurrence of fog and/or stratus clouds. Inland, maximum temperatures increase (up to more than 40°C) with distance from the sea. Sometimes a strong warm anticyclone is situated on the central plateau of Southern Africa. This air mass can then descend towards the coast. As a result of increased atmospheric pressure, adiabatic heating (without adding or reducing heat) occurs and results in strong, extremely hot and dry winds (the dreaded "east" or "berg winds").

The full establishment of the Benguela Current and its associated cold water upwelling system in the Late Miocene (somewhat over 5 million years ago) promoted the development of the current Namib Desert Regime. During the Quaternary, the level of the riverbed of the Kuiseb varied a lot, depending on the climatic conditions; the course of the Kuiseb also changed. In the beginning of the Quaternary, the Kuiseb course extended from the Klein Klipneus/Klipneus area westwards to the northern half of Sandwich Bay. Later on during the Quaternary the course of the lower Kuiseb shifted towards the north. Subsequently, a delta was formed, south of Walvisbay. This displacement may have been caused primarily by the northward encroachment of dunes from the main Namib sand sea. The shift in the lower course was only possible because here the Kuiseb did not flow in a canyon but rather in a broad valley with low banks.

## 2.1.2 Geography and Geology

In the Kuiseb area, the following geographical and geological entities can be recognized:

### 2.1.2.1 River Valley of the Kuiseb

The Kuiseb is the largest and most important river of the Central Namib. It has a large catchment area (14,700 km<sup>2</sup>) which extends for a great deal over the

mountainous area of Khomas Hochland, a zone with an annual rainfall of about 300 mm. Its source can be found near Windhoek. About 230 km downstream it leaves Khomas Hochland and enters a canyon that is about 130 km long. Nearly every year floods pass through the narrow canyon. Near Homeb the depth of the canyon decreases while the riverbed widens. About 50 km downstream from Homeb, the riverbed is more than 1.5 km wide.

Downstream from Rooibank, at about 27 km from the coast, a bifurcation of the riverbed is caused by a granite outcrop. The southern branch goes westerly towards the coast. This branch has, with time, been nearly completely overblown by dunes and as a result the superficial flowing water of the Kuiseb can not reach the sea. The subterranean waterflow, however, is still sufficient to support plant growth. Large parts of this area form the main *inara* field, used by the Kuiseb Topnaar. The northern arm once formed a very wide delta which reached the ocean at Walvisbay Lagoon. Since 1837 the river has reached the coast only 15 times. Due to the building of a 7.3 km long flood retaining dam in the early sixties to protect Walvisbay, no superficial water can now enter this northern arm. As the dam is built on a granite subsoil, also the subterranean water flow is blocked. This has resulted in a steady deterioration of the vegetation, including the *inara* fields in this area over the last 3 decades.

The Kuiseb forms the northern border of the Southern Namib dune sea. A study of the wind regime and its related sand dune movement has revealed that to the west of Rooibank there is a high-energy, dominantly SSW wind regime while inland from Rooibank a low to intermediate energy, complex wind regime occurs. Generally a SSW to SW wind predominates in summer, while during winter, east winds that have a high velocity but low frequency occur. This results in the net movement of dune sand in a NNE - NE direction into the Kuiseb. The greatest rates of movement are measured west of Rooibank. Between Rooibank and Swartbank the movement is limited by both large stands of *Stipagrostis sabulicola* (PILGER) DE WINTER (Poaceae) and the wind regime.

The occasional flooding of the Kuiseb is probably the most important factor in checking the migration of the dunes. The floods transport huge amounts of silt and sand from both upstream and the dunes that have moved into the riverbed. However, due to evaporation, lower rainfall, drainage through the soil of the riverbed and the smaller gradient of the river, the energy and quantity of flood water decreases towards the coast. As a result, floods usually end somewhere in the lower Kuiseb.

The effect of these floods is of considerable importance for the ecosystem. Sand, blown into the riverbed from the dunes, is scoured away, preventing the dunes from crossing the Kuiseb and advancing northwards onto the gravel plain of the Central Namib. A large amount of fruit and seed material coming from Khomas Hochland and other areas are transported, germinate and thus enrich the flora of the valley. The subterranean water supply, which maintains the riverine woodland on the riverbanks, is replenished. On the other hand, the colonization of the riverbed by trees and other perennials is restricted because floods uproot and wash away virtually all plants hit by the stream of water.

The drought conditions that have been in existence since the beginning of the eighties, and the construction of many farm dams on the tributaries of the Kuiseb have reduced the number and the strength of floods considerably. Together with the dominant high-energy SSW-SW winds, this allows the Southern Namib sand sea to cross the Kuiseb west of Rooibank.

In the eastern part of the Kuiseb area the Kuiseb formation (Damara sequence, late Precambrium) is the main exposed lithographic unit. In this area schists are the most abundant geological formation (e.g. Khomas Hochland, Kuiseb Canyon). Parts of the Kuiseb formation (especially in the western part of the Kuiseb area) are covered with recent layers of sand, gravel, calcrete and alluvium of the Cenozoicum (Tertiary and Quaternary).

#### 2.1.2.2 Gravel Plain of the Central Namib

The gravel plain of the Central Namib covers a vast area north of the Kuiseb. The altitude of the plain gradually increases from the coast towards the east (up to 800-900 m) and in several places granite mountains (inselbergs or bornhardts) occur. In the west there exists a calcrete mountain range (Swartbankberg-Hamiltonberge-Witpoortberge). On the plain itself numerous washes form small depressions in which some water accumulates after a rain shower, sufficient to maintain a vegetation different from that which occurs on the rest of the plain.

As in the Kuiseb area, the gravel plain is covered by Cenozoic layers of sand, gravel, etc....

#### 2.1.2.3 Coastal Plain, South of Walvisbay

In the Walvisbay area between the coastal dune row and the dunes which cross the Kuiseb there is a depression. This flat plain (called Dorob) extends from the

Walvisbay Lagoon towards the border with Namibia. The soil contains mainly sand and silt and a high amount of salt. Due to its low altitude (just above sea level) and its short distance from the sea, sea water seeps into the soil, and in several places salt crusts appear.

#### 2.1.2.4 Inselbergs

Inselbergs were formed by magmatic intrusions in the Cambrium, which were sometimes later transected by dolomite dykes. These granite rocks, which can surface due to erosion of the surrounding (softer) material, contain, due to their morphology, a large number of habitats for plants, in crevices, gullies, depressions, cracks and at the foot of these inselbergs. Some inselbergs (e.g. Vogeliederberg) receive a considerable amount of water through fog.

#### 2.1.2.5 Swartbankberg

This mountain belongs to a range of calcareous mountains extending northwards from the Kuiseb and crossing the Swakop (Swartbankberg, Hamilton Range or Hamiltonberge and the Witpoortberge). This entity belongs to the Karibib formation (Damara sequence, late Precambrium). Their calcium ion rich conditions, together with their height which allows the interception of fog, offers a quite different vegetation in comparison with neighbouring inselbergs (e.g. *Aloe asperifolia*). A. BERGER is a typical plant for these mountains).

#### 2.1.2.6 Sand Sea of the Southern Namib

This dune area extends from the Kuiseb, southwards to Lüderitz.

Along the coast, between Sandwich Bay and Walvisbay plants of *Salsola nolothenis* AELLEN trap windblown sand. This is the first stage in the formation of the typical coastal dunes. These dunes can reach heights of more than 10 m.

The sand sea of the Southern Namib as well as the coastal dunes were formed largely during the Quaternary. In some dune valleys older formations (mainly Tertiary) can be found: calcareous and red, partially consolidated, dune deposits. Only at a few places do intrusive rocks, of various ages, surface.

### 2.1.3 Vegetation of the Kuiseb area

The variation of geographical and geological entities in the Kuiseb area creates a number of very different biotopes which gives rise to a considerable diversity in plant communities.

#### 2.1.3.1 River Valley of the Kuiseb

The riverine communities of the Kuiseb are of considerable importance to the Central Namib biome since they provide shelter and food for many species of animals. It is also the most important residential area of the Topnaar.

In the riverbed ephemeral species germinate and grow after a flood or heavy rain. The number of species occurring in a certain area of the riverbed in any given year is determined by the following factors:

##### 1. Flood:

- Affluents of the Kuiseb coming from different regions. The species composition can be different depending on which affluents were flowing.
- The point in the riverbed where the flood stopped and deposited seeds and fruits.
- Duration of the flood. The longer the flood continues the deeper the water can penetrate into the soil of the riverbed. Sometimes the amount of water, thus drained into the soil, is too little to support the full development of seedlings.

##### 2. Riverbed:

- The water-holding capacity of the soil can be a selective factor. For complete growth and development different plants need different amounts of water.
- Availability of suitable places for germination.

##### 3. Grazing:

- The game and the livestock of the Topnaar are selective consumers of germinating and growing plants. The composition of plant communities is influenced to a certain extent by the grazing habits of these animals.

The number of species occurring decreases towards the coast due to the smaller number of floods. The vegetation in the riverbed near Topnaar villages is very poor due to overgrazing.

The vegetation on and immediately above the flood mark is characterized by *Nicotiana glauca* GRAHAM (an alien) and *Acacia alba* DEL. At some places *Cladoraphis spinosa* (L.F.) S.M. PHILLIPS is very abundant. *Pechuel-Loeschea leubnitziae* (O. KUNTZE) O. HOFFM. is a regular companion in this community together with *Tribulus zeyheri* SONDER, *Sutera maxii* HIERN and *Adenolobus gartipensis* (E. MEYER) TORRE & HILCOAT. Downstream from Soutwievier *Pechuel-Loeschea leubnitziae* (O. KUNTZE) O. HOFFM. forms dense stands.

Further away from the riverbed *Acacia alba* DEL. becomes the dominant species within the plant community, sometimes together with *Tamarix usneoides* E. MEYER EX BUNGE and *Acacia erioloba* E. MEYER. Under the tree layer *Pechuel-Loeschea leubnitziae* (O. KUNTZE) O. HOFFM. is the most abundant species. In some places, a single *Euclea pseudobenus* E. MEYER EX A.D.C. can be found.

Higher up, the plant community consists mainly of *Acacia erioloba* E. MEYER and some *Acacia alba* DEL. together with thick stands of *Salvadora persica* L. *Tamarix usneoides* E. MEYER EX BUNGE is a regular companion. Towards the dunes the hummock forming grass *Stipagrostis sabulicola* (PILGER) DE WINTER, sometimes together with *Salvadora persica* L., becomes dominant.

The Kuiseb delta is an important biotope as it includes the greater part of the *inara* fields. The delta can be divided in the southern and northern Kuiseb arm. The main *inara* fields are situated in the southern Kuiseb arm. *Acanthostigmos hortius* WEIW. EX BENTHAM & HOOK. F. forms large hummocks. Together with *Stipagrostis sabulicola* (PILGER) DE WINTER, *Tamarix usneoides* E. MEYER EX BUNGE is characteristic for this area. In some places *Acacia erioloba* E. MEYER is a creeping bush and due to this, contributes to the formation of hummocks. The northern Kuiseb arm is separated from the Kuiseb river by a dam. The vegetation is composed of the same species as the southern part, but is generally in a very bad condition. Because no water can enter this area, *inara* fields are dying and have been abandoned by the Topnaar. In this area *Capparis hereroensis* SCHINZ and *Alzooanthemum dinteri* (SCHINZ) FRIEDRICH occasionally occur.



Figure 2: Gravel plains

### 2.1.3.2 Gravel Plain of the Central Namib

This large, flat area is almost totally devoid of plants for long periods of time. Shortly after a rain shower, however, it may change into a green carpet of, mainly, grasses. The genus *Stipagrostis* is well represented. Most of the perennial vegetation lives in washes and small depressions.

Due to the influence of climatic factors the vegetation changes with distance from the sea. The gravel plain which is closest to the sea, receives a lot of precipitation through fog but very little through rain. Stones are covered with lichens while *Arthroerua leubnitziae* (KUNTZE) SCHINZ, *Zygophyllum stapffii* SCHINZ, and *Asclepias buchenaviana* SCHINZ grow in small depressions. In a zone immediately to the east, both the precipitation due to fog and rain is very low. Some perennial vegetation is limited to small washes. After a rain shower, however, a plant community dominated by grasses appears. Further east, the amount of rainfall increases. As a result, the number of species and their coverage increases. Some trees, e.g. *Acacia reficiens* WAWRA, *Acacia erioloba* E. MEYER, *Parkinsonia africana* SONDER and *Boscia foetida* SCHINZ subsp. *foetida*, grow in washes.

### 2.1.3.3 Coastal Plain, South of Walvisbay

This coastal plain, called Dorob, is a wet depression between the coastal dunes and the northern Kuiseb arm. Here vegetation consists mainly of *Phragmites australis* (CAV.) STEUDEL, *Odyssea paucineris* (NEES) STAFF and *Salsola nollothen-*



sis ABBLEN, *Tamarix usneoides* F. MEYER EX BUNGE, *Suaeda* sp. and *Lycium chenerum* THUNB. are widely distributed and sometimes form monospecific stands.

### 2.1.3.4 Inselbergs

The Vogelfederberg is a small granite outcrop, about 55 km north of Gobabeb. It consists of two hills, up to 527 m in height. The smooth surface of the hills is devoid of any plant growth, except for some vegetation that occurs in crevices, gullies and depressions. Around the hills a plant community, consisting of numerous species can develop due to run off water. *Aloe asperifolia* A. BERGER is quite abundant here.

Mirabib is a small granite Inselberg, 840 m high, WNW of Gobabeb. Plant communities are found in its small crevices, gullies and depressions and on the fringe of the mountain. *Mesembryanthemum guentchianum* PAX is quite an abundant plant on the mountain.

Southeast from the Mirabib there is a complex of small granite hills which belong to the same geological entity. In these hills a plant community consisting mainly of *Sarcocaulon marlothii* ENGL. persists.

### 2.1.3.5 Swartbankberg and Hamilton Range

The Swartbankberg (464 m) and the Hamilton Range (549 m) form a linear series of outcrops, consisting of limestone, intruded by dolerite dykes. Due to their height a lot of fog is trapped. This results in a relatively well developed vegetation, in sharp contrast to the surrounding gravel plain. Plants grow in crevices and cracks where there run off water can collect. Exposed rocks are nearly completely devoid of vegetation. *Aloe asperifolia* A. BERGER, *Trichocaulon pedicellatum* SCHINZ, *Sesuvium sesuvioides* (FENZL.) VERDC. and *Hereroa puttkamerana* (DINTER & BERGER) DINTER & SCHWANTES are found exclusively in the mountain's cracks and crevices.

On the other hand, *Acanthostegios horridus* WELW. EX BENTHAM & HOOK. F., *Acacia erioloba* F. MEYER, *Euphorbia phylloclada* BOISS., *Casaria jurineifolia* DC. subsp. *scabra* (DC.) ROESSLER and *Pechuel-Loeschea leubnitziae* (O. KUNTZE) O. HOFFM. are found in the washes around the mountain.

A few kilometers southwest from the mountain *Euphorbia lignosa* MARLOTH is quite common on a small calcrete hill (belonging to the same geological entity).

near the Kuiseb (Swartbank). *Citrullus ecirrhosus* COGN. is quite common on the plains around the mountain.

### 2.1.3.6 Dunes

The sand dunes pose serious problems for the establishment of plants: instability of the loose sandy soil, low precipitation, high temperatures and high insolation (both resulting in huge evaporation). Most perennials show adaptations to these conditions through xeromorphy (reduction of the exposed leaf area: rolled, water storing or reduced leaves). The development of long taproots which can reach the water table or superficial roots extending over a relatively large area are other examples of adaptations. Most dune plants immobilize the moving sand which results in the formation of large hummocks.

The dunes on the salty plain along the coast between the lagoon of Walvisbay and Sandwich Bay are mainly covered by *Salsola nollothensis* ALLEN. More inland *Tamarix usneoides* E. MEYER EX BUNGE covers whole dunes.

Most of the dunes south of the Kuiseb, are almost unvegetated: only in some places does *Stipagrostis sabulicola* (PILGER) DE WINTER and *Acanthosicyos horridus* WELW. EX BENTHAMM & HOOK. f. form large stands on the lower faces of dunes. In the interdunal depressions grasses occur. On the slipfaces towards the Kuiseb river *Tamarix usneoides* E. MEYER EX BUNGE and *Salvadora persica* L. cope with the moving sand.

In the dunes between Dorob and the northern Kuiseb arm, *Stipagrostis sabulicola* (PILGER) DE WINTER and *Acanthosicyos horridus* WELW. EX BENTHAMM & HOOK. f. are quite abundant, together with *Zygophyllum simplex* L. and especially *Trianthera hereroensis* SCHINZ. In the depressions between the dunes *Zygophyllum stapffii* SCHINZ and *Arthroaerua leubnitziae* (KUNTZE) SCHINZ appear.

## 2.2 Plants in the Kuiseb Topnaar Culture

The Topnaar are much influenced by the Western way of living. Due to this, a great part of their knowledge of plant uses is now lost. Whereas in the past they depended completely on the natural environment, this dependency has become much weaker with time.

The Topnaar of the lower Kuiseb river use one important wild food plant, the *inara* (*Acanthosicyos horridus*). In the past this wild cucumber was their staple food. Now corn has taken over this position, but the *inara* still forms an important part of the Topnaars' diet. Available during 5 months of the year, the fresh *inara* fruit is processed in such way that it can be stored for up to several years. Other food plants, besides some less important edible fruits, are short in this area.

The majority of the plants are used for medicinal purposes, even though a mobile clinic visits all villages once a month and provides the local population with medicines. Plant parts are used fresh or a decoction in water is made. The use of medicinal plants depends upon the availability of plants in the environment, the beliefs of the people, their ideas about plants, the way animals use plants, etc. It is generally known that all indigenous people look for the plants they need in the surrounding environment, to fulfill certain needs. Despite the harsh Namib environment and the scarce vegetation, also the Topnaar find medicines for all ailments.

Several plant roots are used to curdle milk in order to increase the conservation time of the milk. Also many wild herbs are used for herbal teas or as food flavouring.

Women are known to use yet other plants to manufacture cosmetics: perfume, body powder, lotion, and the like.

Wood is not much used as a building material since garbage material is more highly prized.

Fuel is obtained from the trees found along the Kuiseb riverbed. The floods in the Kuiseb carry much dead wood and often uproot whole trees.

Witchcraft has completely disappeared due to the influence of missionaries for more than a century.

Plants are no longer used for fibres, dyes, tannins, etc.

Fodder for goats and cattle is reasonably abundant. *Acacia* pods and several herbs and shrubs form the core of the livestock's diet.

## 2.3 Plant Uses

The plants catalogued below are arranged by family in alphabetic order. Non-vascular, more primitive plant families are listed before the vascular plant families. Following the scientific plant name, the herbarium specimen, collected by the author, is mentioned (VdE is the abbreviation of Van den Eynden). All specimens are deposited at the National Herbarium of Namibia and duplicates are deposited at the herbarium of the DERUN. If existing, a Nama name is given, as well as the common names in English (E) and/or Afrikaans (A) as found in the literature. Each plant is briefly described and its distribution in the Kuiseb area is given. All plant uses by the Topnaar are mentioned as well as uses in other areas or by other people, as found in the literature (all consulted books and articles are mentioned in the literature list). Botanical terms are explained in the glossary.

### 2.3.1 Nonvascular Plants

#### Alariaceae

*Ecklonia maxima* (OSBECK) PAPANFUSS

Nama *huri* || *hâb*, *huri* || *hâb*, || *gam|gûib*

The botanical name *Ecklonia* is derived from Ecklon (1795-1868), a pharmacist, who collected many plants in the Cape Colony. This marine plant, which can grow up to 7 m long, has a dense cluster of flat pinnae (leaves) and is found on the coasts of southern Namibia and South Africa. When mature the stipe (stem) becomes hollow and the terminal part forms a large float. This marine plant is only found where the sea water temperature does not exceed 15° C.

The stem of this seaweed is roasted and ground. The powder that is thus obtained (mixed with vaseline) is rubbed on wounds and burns. This treatment prevents infection and accelerates healing.

#### Basidiomycetes

*Battarea* sp.

Nama *!ôasâb*

This light brown fungus is found on the banks of the lower Kuiseb river. It grows approximately 25 cm high, has a cap of 8 cm in diameter and exhibits a dull powdery appearance. Due to insufficient research, this fungus has not yet been conclusively identified. According to a preliminary study however, it may be *Battarea guicciardiniana* CES (K.M. JACOBSON, personal comment).

The spores are rubbed on burns to reduce the pain and hasten healing. They are also rubbed on rough spots of the body. Spores (mixed with fat or *inara* oil or a red ground stone called *inai*) are used as a cosmetic. It also protects the skin from sunburn and drying out. PISANI (1983) says the mixture of *Battarea* spores and fat is also rubbed on infected udders of cows and ewes.

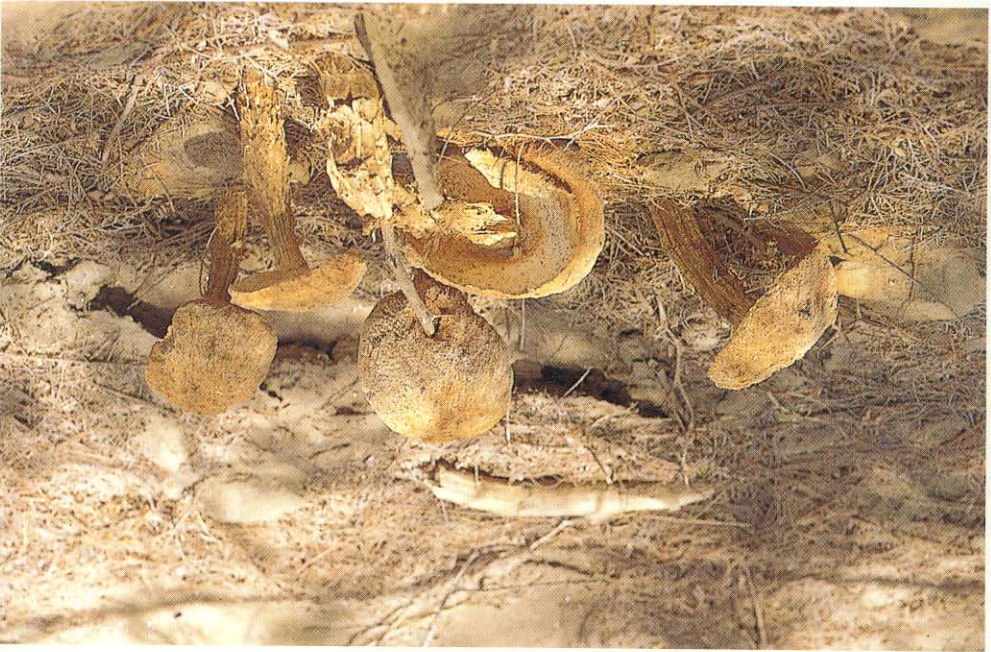


Figure 3: *Battarea* sp.

### Lichens

*Parmelia hottentotta* (THUNB.) ACH.  
Nama | uil | *khaob*

A lichen is a fungus living in symbiosis with algae. Many lichens are found in the fog area of the Namib desert. *Parmelia hottentotta* has a grey-green thallus up to 4 cm high and grows on the Swartbankberg. Although several lichen species are used by the Topnaar people, *Parmelia hottentotta* is the easiest to gather because of its upright habit and large dimensions. The generic name refers to the shape of the lichen (*Parmia* (Lat), shield, locket) and its specific name to its distribution in the Hottentot territory. The ground lichen is used as a deodorant or perfume. A decoction is drunk to cure coughs and to relieve stomach and chest pains.

## 2.3.2 Vascular Plants

**Amaranthaceae*****Arthroerua leubnitziae*** (KUNTZE) SCHINZNama *saris*Common name ink bush (E)Figure 4: *Arthroerua leubnitziae*

This bush is common on the gravel plains of the central and northern Namib, where often it represents the only vegetation. The eastern limit of its distribution corresponds to the limit of the coastal fog belt. The plant cannot absorb fog directly, but utilizes water that accumulates on the soil surface through its roots. The stems of this plant are segmented, succulent and forked (furcated), up to 50 cm long, with small triangular leaves that are often reduced to scales. The small flowers, surrounded by dry, greyish bracts, grow in dense inflorescences at the end of the stems. The outer part of the perianth is covered with silky hairs, the inside is scarlet.

A decoction of the roots is drunk to ease tremblings.

**Arecaceae**

Palm family

***Phoenix dactylifera*** L.Nama -Common names dadel (A), date palm (E)

Date palms were introduced in the Kuiseb delta by the Germans, who planted them in the garden of a missionary post near Rooibank (Schepmannsdorp). Since then, these trees have spontaneously multiplied and extended their range. This

tree has a cylindrical stem covered with the remains of old leaf-bases. The very large leaves are composed of long linear leaflets, which are irregularly spaced in 2 rows. Male and female small white flowers, grouped in large inflorescences, are found on separate trees.

The fruits are the well-known dates. They are eaten fresh or dried. A decoction of the roots is drunk to treat tuberculosis.

The origin of this tree lies in Arabia and North Africa, but nowadays it is cultivated in many countries. The heart of the stem is edible. The sap is drunk fresh or distilled into a spirit by people other than the Topnaar.

**Asclepiadaceae**  
Milkweed family



Figure 5: *Hoodia currori*

***Hoodia currori*** (HOOKER) DECNE  
Nama *ikhwab, ikhobab*

This succulent plant, named after Van Hood, himself a famous grower of succulents, and Dr. A.B. Curror, a plant collector in Angola in the 1840's, is found in rock crevices of inselbergs in the Namib. The 12-18-ribbed straight stem of 10-20 cm high and 2.5-5 cm thick bears conical thorns on the ribs, but has no leaves. The stem contains a clear fluid. The large salmon-purple flowers of about 6 cm in diameter have a hairy and papillose corolla and triangular corolla-lobes. Each flower develops into a pair of follicles. These fruits of about 12 cm long split open and release many winged seeds which all have a tuft of silky hair.

The stems are eaten raw after the removal of the outer skin and thorns. Eating this lowers high blood pressure, cures colds and indigestion and relieves stomach pains. The flesh is applied to the eyes to relieve eye pains. Pieces of the stem added to sugarwater give a refreshing drink.

***Orthanthera albida*** SCHINZ [VdE 3.4.a]

Nama |arib

This erect half-shrub, with hairless, pale greyish stems grows in washes on gravel plains and in the mountains of the Central Namib. The linear leaves of 3-50 by 1-2 mm are often reduced to scales and are absent at flowering time. The sessile flowers, which are apple-green on the inside and greyish on the outside of the corolla, grow in groups halfway up the slender stalks. The green, blackish marbled follicles are up to 10 cm long and 1-2.5 cm wide. They split open when ripe to release many brown seeds with long white hairs.

The stems are chewed to clean the teeth. Drinking a decoction of the stems or chewing the stems relieves stomach pains. For the same reason roots can be used. A decoction of the ground seeds is drunk to cure kidney and back diseases. The root is put in beer to improve its flavour. The fruits are eaten, mainly by children. Young fruits are eaten completely, but in the case of old fruits only the inner part of the peel is eaten (the outer part and the seeds are removed).

***Pergularia daemia*** (FORSK.) CHIOV. *var. daemia* [VdE 14.2.d, VdE 6.2.e]

Nama !gubib, !guwib, dai!gubib, !gūtama || ōb

The name of this strong herbaceous twiner with milky latex, which often covers shrubs and trees along riverbeds, is derived from the Latin word *pergula*, penthouse, as the plant can be used to overgrow penthouses. The stems are covered with 1 mm or longer stiff erect hairs and bear opposite, heart-shaped leaves of 2-12 cm long. The greenish-white flowers have a double white corona at the base of a staminal column. The fruits are paired follicles of 5-8 cm long and 1 cm in diameter, covered with short fleshy prickles and release many seeds with long white hairs when they split open.

Latex added to drinking water creates a poison which can be used to kill any animals. A decoction of the roots is drunk as a remedy for venereal diseases and vein problems. The powder obtained by roasting the root (or leaf) and grinding it is applied to wounds.

In Botswana and South Africa (Zululand), the leaves are eaten as a wild spinach. The latex or a decoction of the roots is used in many countries as a medicine to treat several illnesses, such as venereal diseases, arthritis, muscular pains, asthma, rheumatism, snake-bites, etc. The latex may also be used as a fish poison.