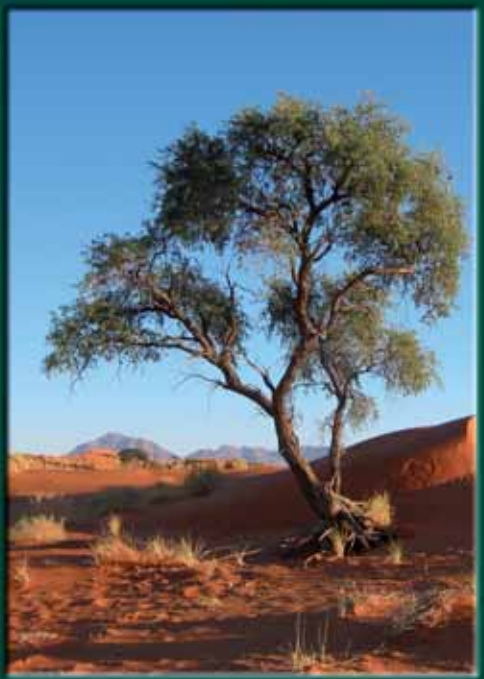
IT'S TIME TO IDENTIFY

Selected Animals and Plants of the Namib



Promoting Sustainable Land Management through Biodiversity Investigation

The Namib Desert Environmental Education Trust (NaDEET) is a non-profit, non-governmental organisation. Our mission is to protect the natural environment of Namibia by educating its citizens to practice a sustainable lifestyle. We offer sustainable living programmes for children and adults at NaDEET Centre on NamibRand Nature Reserve. This identification book, 'It's Time to Identify'; helps visitors to the area explore its unique biodiversity and understand its importance.

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Our Sponsors

The sponsors of *It's Time to Identify* appreciate the efforts of all citizen scientists in understanding and conserving our natural environment. We hope you will learn to enjoy and appreciate our wonderful living world.

This identification guide describes a selection of plants and animals that are commonly seen at NaDEET Centre on NamibRand Nature Reserve.

NamibRand Nature Reserve

Extending over an area of 202,200 ha, the NamibRand Nature Reserve shares a 100 km border with the Namib-Naukluft Park. This privately protected area in the pro-Namib is critically important in facilitating seasonal migratory wildlife routes and thereby protecting biodiversity.

NamibRand is one of the founding and core members of the Greater Sossusvlei-Namib Landscape (GSNL) and is a member of the IUCN.

NaDEET Centre nestled in a dune valley on the NamibRand Nature Reserve

Namib Sand Sea UNESCO World Heritage Site

QUICK FACTS

Status in Namibia: First natural World Heritage Site

Date inscribed: 21 June 2013

Distance from GSNL: Zero. It is 100% part of the Greater Sossusvlei-Namib Landscape.

Unique quality: It is the only coastal desert in the world that includes extensive dune fields influenced by fog.

Size: Over three million hectares and a buffer zone of 899,500 hectares.

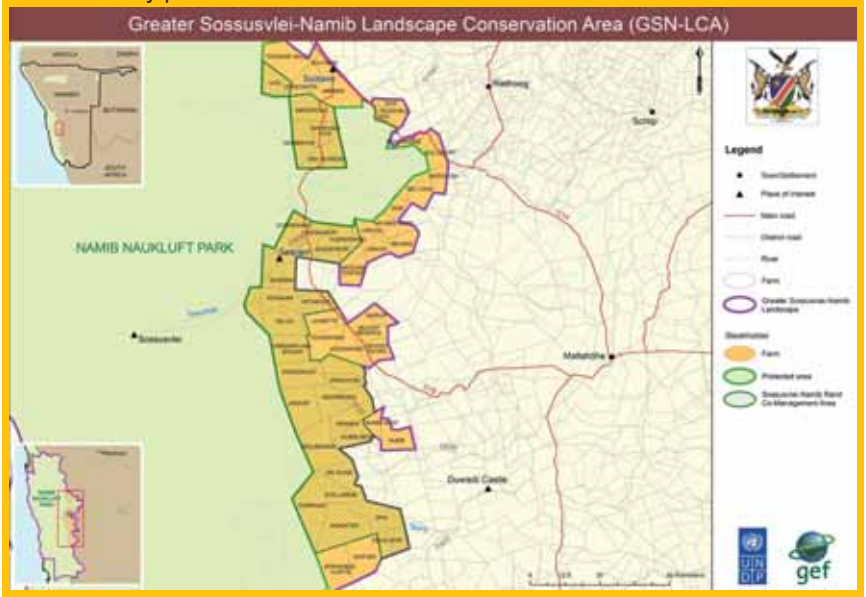
Number of dune systems: Two. An ancient, semi-consolidated one covered by a younger active one.

Extending landscape boundaries
Welcome to the Greater Sossusvlei-Namib Landscape

This public-private partnership aims to co-manage the Greater Sossusvlei-Namib Landscape (GSNL) to fulfil its vision for:

- An enhanced landscape and biodiversity conservation
- Socioeconomic development for the sustained benefit of the people.

The GSNL approach allows for multiple benefits within a conservation framework. The total land area within the GSNL is 5,730 km² and has more than 30 active members. It extends the conservation area of the Namib-Naukluft National Park and the newly proclaimed “Namib Sand Sea”.



Landscape management by landscape members

Sossusvlei gives visitors a glimpse into the Namib Sand Sea

Becoming a 'barefoot scientist'

As you use this guide to identify some of the plants and animals around you, what can you do with this information?

To start with show your friends and family what you have found. Think about what role the organism plays in the ecosystem.

- What does it feed on and what feeds on it??

Many people do not like "bugs", but actually by learning more about them we can see how they are useful to us.

For instance, a dung beetle buries dung underground. This reduces flies and puts nutrients back into the soil.

Discussing these aspects will help you to understand how all living creatures play a role in a healthy ecosystem. We as humans also depend on a healthy ecosystem, so it is for our own good to know and understand what the plants and animals around us are, and what they do.

Make a contribution to conservation by being a 'barefoot scientists'. This is how Namibia has come to be recognised as a world leader in conservation work. We need you help to keep it that way.

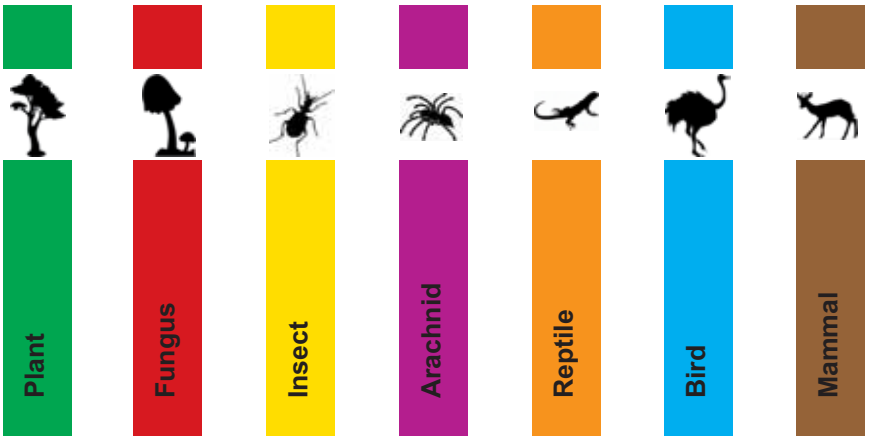
How to use the identification guide

Use the steps below to correctly identify the species you have seen.

Identify = to distinguish between different types of species (living things).

Find the right section

First find the correct section of the booklet for the species you are trying to identify. There are seven sections in this guide. The different sections have the following colours and symbols:



Identification Guide!

Find the right species

Look at the photographs in the correct section. When you have found a species that looks similar to what you are trying to identify, read the information given for that species. This includes:

- English common name
- Scientific name
- General information
- Size
- Description

Notes to species' sizes:

Depending on body shape, living things are measured in different ways.
The sizes of species in this booklet are measured as follows:

Plant and **fungus:** Average height in meters (m) or centimetres (cm)

Insect and **arachnid:** Average body length (including legs) in centimetres (cm)

Reptile: Average snout to vent length (SVL) (excluding tail) in millimetres (mm)

Bird: Average height in centimetres (cm)

Mammal: Average shoulder height in meters (m), average weight in kilograms (kg)

Learn more:

Lastly use the symbols and the general information to learn how the species is adapted to living in the Namib Desert. Different symbols are given to every species as described below:

Binocular: the animal can be seen and observed primarily from a distance.

Magnifying glass: the animal can be looked at closely. Plants always have this symbol.

Sun: diurnal animal (active during the day)

Moon: nocturnal animal (active during the night)

Endemic: Animals and plants that only occur in one geographic area. For this identification guide, this symbol is given to any species that lives primarily in Namibia. An endemic species does not naturally occur anywhere else in the world.

Endemics and Biodiversity

Endemics are a useful tool to measure biodiversity in a region. Generally, the higher the rate of endemism, the higher the biodiversity. Resource managers and farmers can use this information to better take care of the land.

ARE THE VOCABULARY WORDS TOO DIFFICULT?

This identification guide has tried to simplify many words often used in identification books. For words that are unfamiliar to you, go to the glossary in the back of the guide for help.

Camel Thorn

Acacia erioloba

Description **Size: 3-20 m**

This tree has a unique appearance when it is old. It has a spreading canopy and rough, grey to blackish bark. The young branches are shiny and reddish-brown. The leaves are actually a twice compound leaf with small leaflets. It has straight, light grey thorns and produces golden-yellow ball shaped clusters of tiny flowers. The fruit is a thick, short pod, often shaped like a half-moon or human ear and is covered with fine creamy-grey hairs.

Biology

This is one of the most common trees in the Namib Desert and provides food and shelter to many animals. The thorns protect the leaves from browsers and reflect the sunlight. The leaflets will fold together when it is very hot to reduce exposure to the sun. It has a thick bark that assists in regulating the internal temperature of the tree. The tree's long taproot gets water from deep underground.

Wild and domestic animals eat the nutritious seedpods, which contain lots of protein. The animals cannot digest the seeds and therefore they are excreted with the animal's droppings. The stomach acid of the animal dissolves the hard outer layer of the seed and this helps the seed to germinate.

Similar species

Candle-pod Acacia

Acacia hebeclada

Size: 2-12 m

The seedpods are present year round and stick up like candles on a Christmas tree making this tree easy to identify.

Smelly Shepherd's-bush

Boscia foetida

Description **Size: 1-3 m**

This plant usually grows as a shrub, but it can also grow as high as a tree. It has a whitish bark with small cracks exposing rough, dark coloured bark. The young branches are grey with a purple colour underneath. It has small, olive green leaves that are clustered along the branches. It produces small, smelly, greenish flowers. The yellow round fruit is about 1 cm in diameter and is hairy.

Biology

It is important as a source of food. The small, thick, waxy leaves help prevent water loss. The white bark reflects the sun's heat and this reduces water loss. The branches grow closely together preventing browsing animals from eating all the leaves.

The flowers give off an unpleasant smell, hence the name *foetida*, meaning fetid or smelly. The unpleasant smell attracts flies that pollinate the flowers.

Similar species

Shepherd's Tree

Boscia albitrunca

Size: 2 - 10 m

This tree has larger leaves than *B. foetida* and does **not** produce bad smelling flowers.

False Ink Cap

Podaxis pistillaris

Description **Size: 15 cm**

The fruit body, commonly named a mushroom, consists of an elongated, egg-shaped sac covered with large, brownish scales. The large cap, which protects the blackish spore-bearing tissue, splits and usually falls away at maturity. It has a hard, woody stem.

Although considered by many to be a "stalked puffball", it is more closely allied with the Shaggy Mane (*Coprinus comatus*) than with puffballs.

Biology & General Information

When the large cap splits and falls off, the spores can be dispersed by the wind. Large numbers may appear after heavy rain. It grows in deserts and semi-deserts. The black ink is used by people as face paint in local traditions and as a sun protection.

Fungi

Fungi were previously included in the plant kingdom, but are now in a kingdom of their own. Unlike plants, fungi are unable to produce their own food through photosynthesis, as they lack chlorophyll, but resemble animals in their ability to live from animal and plant matter. A type of fungus called yeast is used in baking bread and fermenting alcoholic beverages like beer. Many mushrooms are edible and therefore people collect them, e.g. the omayova (termite mushroom *Termitomyces sp.*).

Toktokkie beetles

Tenebrionidae

In Namibia, there are more then 550 species within this family. These beetles are mostly black, flightless, and generally live on the ground. Their size, shape and appearance are extremely variable. Most are scavengers, feeding on detritus, thus returning vital nutrients back into the soil.

The following is general information about most toktokkies:

Adaptations

In the desert, heat avoidance and water loss are the biggest challenges facing the beetles. Some species produce white wax on their elytra (wing covers) if it gets hot. The wax reflects the sun's rays and helps keep the beetle cool. To reduce water loss, the wing covers have fused in most of the tenebrionid beetles, forming a cavity with only one opening above the anus. The breathing spiracles open into this moist cavity, thus reducing moisture loss. This adaptation results in the beetle not being able to fly.

Most desert species are fast moving, allowing them to move over the hot sand without being burnt. Some species will bury themselves in loose dune sand to avoid the heat.

Food & water

Toktokkies have access to reliable sources of food and water throughout the year. Most are scavengers and feed on detritus (see box below). Although they are able to recycle their water, they also can get water from the environment in various ways. In the early mornings, there is often dew or fog in the Namib which condenses on plants, detritus and on the toktokkies themselves. Various beetles have special adaptations to utilise this water.

Behaviour

Some species have developed a unique "tapping" method of communication between males and females. The name "toktokkie", which is an Afrikaans word, refers to the sound these beetles make when they tap their abdomen on the ground. Different species of toktokkies tap with differing frequencies.

Reproduction

Females lay eggs in shallow excavations in the dry, sandy soil and the larvae that hatch, feed off the roots of small plants within the soil, as well as on detritus. The larvae are a white to clear colour with a brown head and develop into adult beetles.

Detritus

In parts of the desert, plants are rare. Therefore, many animals feed on detritus. This is composed of wind-blown, dried bits of vegetation or dead animals that have been broken into small pieces and distributed by the wind. Animals feeding on detritus are called detritivores. They fulfil an important function in the desert ecosystem by recycling nutrients and making them available for other animals and plants. As detritus is very abundant, it is the primary base of the desert food web.

Waxy Toktokkie *Onymacris rugatipennis albotessellata*

Description

Size: 20 mm

This black beetle produces a white waxy layer called a bloom on its body in hot, dry conditions. During cold, wet conditions, it is blackish in colour. The hind legs of this beetle are longer than the total length of its body.

Flat Toktokkie *Stips stali*

Description

Size: 10 mm

This is a small, flat, black beetle looking like a seed. It has a round body and very short legs. It has three identifying ridges on the back. It often plays dead to avoid predation.

Racing Toktokkie *Onymacris plana*

Description

Size: 20 mm

This beetle is considered to be one of the fastest insects on Earth. It can run 1 metre in less than one second. This allows them to run across very hot surfaces.

Racing-stripe Toktokkie *Stenocara gracilipes*

Description

Size: 14 mm

This beetle has long legs and a rough surface. It has up to four white stripes that cover the body as a waxy bloom during hot conditions.

Nara Cricket

Acanthoproctus diadematus

Description **Size: 30-40 mm**

It is a large, spiny yellow-brown insect with very long antennae and legs. The head is covered with a hard, armoured helmet. The abdomen is soft underneath but also has a hard shell with spines on top. Its mouthparts are big and powerful. They are wingless; however, the male uses the remains of the wings to produce the shrill sound, which one may hear in the desert at night.

Food & water

It mainly feeds on plants, but will also feed on other insects or small reptiles. It gets its water from the food it eats.

Biology & general information

The armoured ground cricket is primarily a herbivore, but can turn cannibalistic, meaning that it eats individuals of its own species. When threatened they squirt a yellow liquid through gaps in their shell. The strong and thick armoured shell protects its body from predators. Their feet have hooks that help it to climb up trees and grasses to escape from predators. Its colour camouflages it in plants to avoid being seen by predators.

Eggs are laid in packages in shaded soil and remain dormant until the next rain.

Similar species

Long-legged Corn Cricket

Acanthoplus longipes

Size: 30-40 mm

This corn cricket lives on the plains. It differs from the Nara cricket in colour and the relative length of the legs.

Sugar Ant

Camponotus maculatus

Description **Size: 5-15 mm**

It is a reddish-brown ant with a slender head and rounded abdomen. The worker sugar ants are small to medium ants while the soldiers are larger in size.

Food & water

The sugar ant feeds on small insects such as caterpillars and honeydew. The honeydew is a sugary excretion of aphids. It will collect honeydew and bring it back to other ants in the nest. It gets its moisture from its food.

Biology & general information

They live in colonies to protect each other from predators. The pupa is in a closed cocoon. They do not run in trails.

Similar species

Harvester Ant

Messor denticornis

Size: 5-15 mm

Large shiny black ants that live on the plains. They eat grass seeds, which they gather using a network of trails that radiate from the nest.

Yellow Burrowing Scorpion

Opistophthalmus flavescens

Description **Size: up to 95 mm**

This scorpion has a shiny, dark body in comparison to its light yellow head and legs. In front of its head, it has two middle-sized pincers that are used for crushing or cutting prey into pieces. It has a long thin tail with a poisonous sting that it uses to paralyse prey or for defence.

Food & water

A scorpion can stay without food for a very long time but if food is available, it feeds on crickets, grasshoppers and other insects. They are sit-and-wait predators. It gets moisture from its prey. Water is lost only through the spiracles and through the faeces. In times of environmental stress, a scorpion can close off its spiracles in order to conserve water.

Reproduction & general information

The young are born alive. The female scorpion takes care of the young by sometimes carrying them on her back. During the day, it hides in burrows that are 30–50 cm deep.

Scorpions glow when an ultra-violet (UV) light shines on them in the dark.

Similar species

Granulated Thick-tailed Scorpion

Parabuthus granulatus

Size: up to 160 mm

This scorpion actively forages for prey, including other scorpion species. It is southern African's most venomous scorpion.

Horned Adder

Bitis caudalis

Description **SVL: 250- 600 mm**

The horned adder is a small snake. Its common name refers to the horn above each eye. The head is distinct from the rest of the body. The colour varies from reddish-brown to sandy-grey. It often has a dark tail tip.

Food & water

It feeds mainly on lizards, mice, gerbils and birds. It gets water from the food it eats. The dark tail tip is exposed and wiggled to attract prey.

Reproduction & general information

This snake does not lay eggs, but is viviparous, that is, 4 to 15 young are born live, usually in the summer. To escape predators, it buries itself in loose sand, leaving only its head exposed. It also lies in hiding in this manner, waiting for prey to pass close by. This poisonous adder also hunts from the protection and shade of plants. It inhabits dry, sandy areas.

Similar species

Péringuey's Adder or Sidewinding Adder

Bitis peringueyi

SVL: 200-250 mm

This snake is commonly known as the sidewinding adder because of the way it moves. It is one of the few snakes in the world with eyes on top of the head.

Lappet-faced Vulture

Aegypius tracheliotos

Description **Size: 98-105 cm**

It's a huge bird, often soaring high in the sky. It has a wingspan of up to 3m. In flight, the white thighs and white bar running along the underwing are easy to see. It has a bald, pink coloured head. The head is bald because a feathered head would be difficult to keep clean.

Food & water

The Lappet-faced Vulture is a scavenging bird. This means that it feeds mostly from animal carcasses. These dead animals are found by sight or by watching other birds. It gets water from the food, but also drinks at waterpoints.

Reproduction & general information

The Lappet-faced Vulture does not breed until at least six years of age, and prefers semi-arid or desert areas for breeding. Nests are built on top of trees. It normally only lays one egg per year. This species is found throughout Namibia.

Endangered species

Many vulture species have declined during the recent times due to human activity. Poisoning and habitat loss have reduced the number throughout southern Africa. As a long living and slow reproducing species, the populations are declining. The Lappet-faced Vulture is an endangered species (IUCN Red List Category: vulnerable).

Oryx (Gemsbok)

Oryx gazella

Description **Shoulder height: 1,2 m** **Weight: 200-240 kg**

The oryx is greyish in colour with a white underpart and black and white markings on its face. It has a thick horse-like neck with a short mane. Both males and females have long, spear-like horns.

Food & water

The oryx is a grazer but sometimes browses from thorny shrubs. It also feeds on roots and tubers it digs out of the ground and sometimes eats wild melons that have a high water content.

It drinks water if standing water is available, but otherwise oryx can go for weeks without drinking and get their water from their food. Oryx conserve water by passing a minimal amount of water when urinating or defecating.

Reproduction & general information:

It gives birth to one offspring anytime throughout the year. Females live in herds. Males defend their territories and some individual males will live alone when the herds migrate.

The long sharp horns are used for defence.

It lives in many different habitats, but is well known as a desert adapted animal. It will often stand on the tops of sand dunes to have the wind cool it off or in the shade of the trees. It has a blood cooling system where the blood vessels in the nasal passage cools the blood flowing to the brain. This network of vessels is called the carotid rete. This allows for a higher average body temperature, which reduces loss of water.

Index of species

Index of species (continued)

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The information in this identification booklet has been sourced from various books and websites. We would also like to thank Gobabeb Training and Research Centre for assisting us with the identification of several insect species.

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