Care For Our
DUNES & BEACHES

Every dune,

every beach is

unique.

So we must care

for each one.

CoastCARE

IT'S UP TO US NOT TO DISTURB THE NATURAL BALANCES.

Over 80% of South Africa's 3 000km coastline is made up of sandy beaches and dunes. Each one is unique, because it is constantly changing in shape, area and size as it is built up or eroded by natural forces such as the wind, waves and currents.

Even though it may not look like it, beach sand is constantly moving along the shore, as well as on and offshore, between dunes, beaches, sand bars in the surf zone and estuary mouths. These four systems make up what is known as the littoral active zone, and if we disturb any one of these systems, we could potentially affect all the others.

HOW OUR BEACHES ARE FORMED:

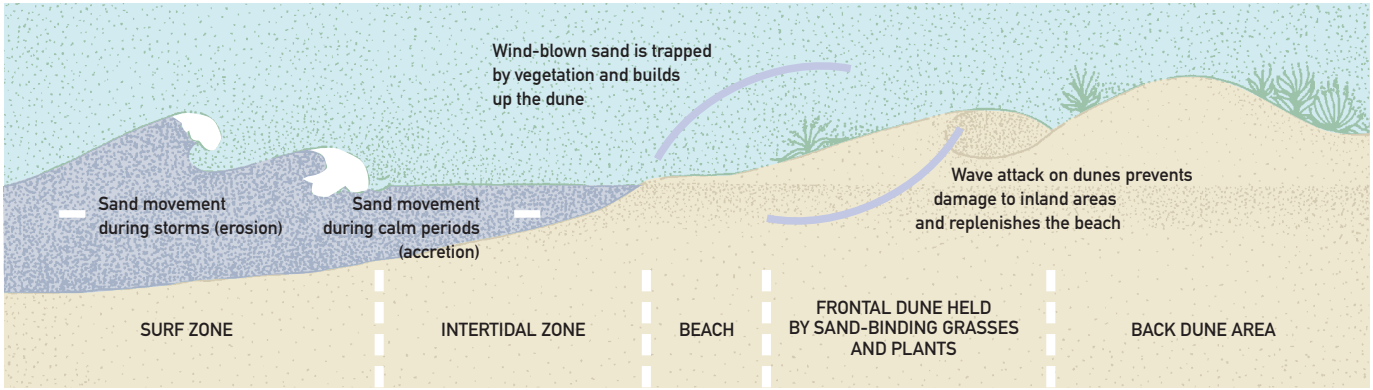
The ongoing movement of sand along the shore is the result of thousands of waves continuously breaking at a slight angle to the shore, giving rise to a longshore current. This is how some 500 000 cubic metres of sand per year is pushed northwards on Durban's beaches - the equivalent of about 100 000 truckloads.

Weather conditions also affect the shape and size of beaches. For example, during the stormy winter months, increased turbulence in the surf zone erodes the beach by transferring sand offshore to form a sand bar. The beach then becomes narrower and steeper. In the summer, however, the waves are smaller and the sand is gradually carried from these offshore bars back onto the beaches, which slowly become wider with gentler slopes.

In spite of this seasonal cycle of erosion and building-up, as long as there is no human interference, our beaches keep their natural equilibrium.

HOW OUR DUNES ARE FORMED:

Dunes are mounds or ridges formed by loose sand blown onshore by winds and deposited on the upper part of the beach. As with beaches, during calm weather this sand is brought from the surf zone by the wind, waves and tides. It is then trapped by plants growing at the high-tide mark, to form frontal dunes - those closest to the beach. Likewise, during storms these frontal dunes are eroded as they are exposed to increasing wave attack. Sand then moves back to the beach and into the surf zone. The frontal dunes act as a vital barrier to protect the back dunes (those behind the frontal dunes) and inland areas. They also keep sand on the beach by trapping sand blown up from the beach, and by returning sand to the beach during the erosion period.



A UNIQUE LANDSCAPE. HOME TO MANY UNIQUE PLANT AND ANIMAL SPECIES.

Inhabitants of the beach:

The beach can be divided into two zones - the intertidal zone and the backshore.

THE INTERTIDAL ZONE is the area between the high and low-water mark. At first glance this part of the beach may seem devoid of life, but buried below, and living between the sand grains, millions of little animals are found, many only emerging at night or when the sand is covered by water at high tide. Most remain between the sand grains their entire life. By burrowing in the sand, these unique species survive the storms, winds and waves of this harsh and ever-changing environment. Here we also find crustaceans such as the three-spotted swimming crab and the mole crab, and molluscs such as the white mussel and plough snail. Since no fixed plants grow in this zone, food is brought in twice a day on the incoming tide so that snails and crabs can feed on bits of plant matter left over as the tide recedes, and mussels and some fish can filter food particles from the water. These tiny creatures are in turn an important source of food for larger fish such as white steenbras and galjoen.

THE BACKSHORE is that part of the beach above the high-tide mark where driftwood accumulates and seeds and fragments of beach plants sprout and grow after being deposited there by high tides. Importantly, these plants are the forerunners of the new dunes. Birds such as the African black oystercatcher and the white-fronted plover nest in this zone. In northern KwaZulu-Natal leatherback and loggerhead turtles also lay their eggs here.

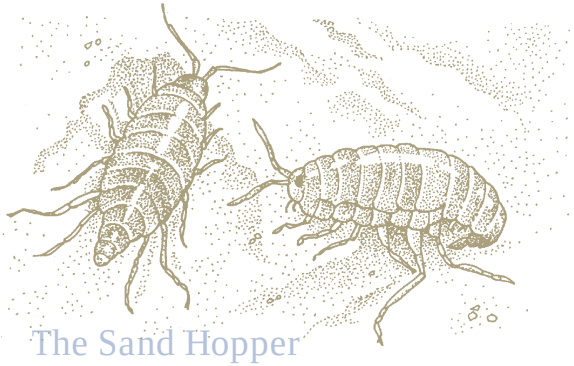
Inhabitants of the dunes:

Dunes are home to many endemic species of plant and animal. Most of the ‘pioneer’ plants that grow on frontal dunes, as well as many of the animal species, only occur here. Dune vegetation stabilises sandy dunes by trapping the sand with its roots and leaves. Strong winds, high salt loads and sand movement close to the ground restrict this vegetation to a few hardy ‘pioneer’ species on the frontal dunes, mostly grasses and creeping plants. These plants have adapted to grow ahead of accumulating sand, stabilising it so that other plant types can follow as the dune matures. As the sand slowly becomes more fertile, the abundance and diversity of plant cover increases. Where dunes are older and more stable further inland, a richer vegetation develops and becomes scrub, thicket, or even forest, depending on rainfall and age. Trees found on these dunes include our white and red milkwood species, as well as alien invasives such as rooikrans and Port Jackson, which threaten extensive stretches of coastline. Not only do we find molluscs, crustaceans, reptiles and amphibians living here, but also insects, birds and even mammals, such as mole rats and the hairy-footed gerbil.

AND HOME TO MAN CENTURIES AGO.

Amongst the dunes may lie what looks like an ordinary pile of discarded shells. But a closer look reveals that these are in fact the remnants of human life along our shores hundreds of years ago. These historically significant 'shell middens' may contain stone tools, shards of pottery and even bits of bone, and date back to the time of the San - the Bushmen hunter-gatherers. Fishhooks made of bone and stone sinkers tell us that they were keen fishermen, too. Pottery shards along the Eastern Cape coast are signs of early Nguni pastoral communities that inhabited these parts some 1 800 years back. Please remember that these are valuable archaeological sites and are all protected by law. Do not destroy any of them, or take anything away.

Also along our coast are historical fish traps or 'visvywers', constructed up to 2 000 years ago. They were designed to trap fish coming in on the high tide and prevent them from returning to sea. Some are still in use today. All fish traps over 50 years old are protected by law and may not be damaged in any way.



The Sand Hopper

Great numbers of sand hoppers occurring on our south western shores help decompose the kelp that washes up there. They themselves are food for birds such as the sanderling and Hartlaub's gull.

Leatherback Turtle

Driven by an inexplicable instinct to return to the same beaches where they hatched, these turtles come ashore every summer on the beaches of Northern KwaZulu-Natal to lay their eggs. Graceful swimmers, they move clumsily on land, making them easy prey for humans.

African Black Oystercatcher

One of the world's three rarest oystercatcher species, they form life-long pairs and breed only once a year, rearing a maximum of two chicks. They are particularly vulnerable to injury or death by off-road vehicles.

Swift Tern

Graceful in flight with a prominent yellow bill, this is a social bird that gathers in small groups which can grow into flocks of up to fifty. Dives for food such as anchovies and mullet, often joining gannets and cormorants in feeding raids on shoaling fish.

The Kelp Gull

Scavenges for food and can be seen dropping shells from a height onto rocks or hard wet beach sand to break them open, then diving down to eat the contents.

The White-Fronted Plover

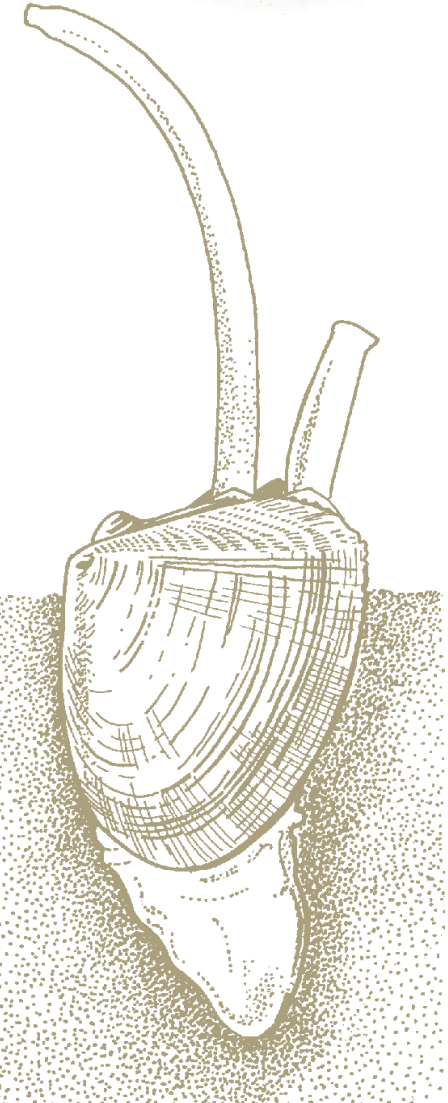
Easily recognised by its habit of running fast, then stopping to peck at something, then running on again. Nests near the high-water mark, but many chick deaths are caused by recreational vehicles.

The Plough Snail

The plough snail's name comes from its fleshy foot, which it uses to move over the sand. It can eat up to one third of its own bodyweight at one time, then go without food for as long as three weeks. Its favourite foods are washed-up bluebottle and jellyfish.

The Ghost Crab

These crabs are carnivorous and spot their food with their stalk eyes. As they inhabit the driftline area, they are especially vulnerable to harm from off-road vehicles.



The Three-Spotted Swimming Crab

This sea crab lives in the sandy shallows, which makes it very easy to stand on when we are paddling. It is useful bait for fish such as kob or steenbras.

The White Mussel

This mussel normally burrows on wave-swept beaches by working its wide fleshy foot into the sand. Whilst they are filter-feeding, long inhalant and exhalant siphons emerge from the sand in which they are buried.

Sea Wheat

Specially adapted dune plants, such as the endemic Sea Wheat, play a vital role in stabilising frontal dunes.

Dune Vegetation

These are examples of dune plants found along our southern coast. The plant with the red berries is commonly known as the ‘skilpadbessie’, as it is a delicacy for tortoises.

The Sour Fig

A common succulent with pinkish flowers and edible fruit. Their fleshy leaves store water and their sticky sap soothes bluebottle and jellyfish stings.

LET'S BE AWARE OF HOW MUCH HARM WE CAN DO.

Insensitive misuse of our dunes and beaches can severely disrupt and damage these dynamic coastal systems.

Increased beach erosion interferes with or prevents the natural movement of sediment along the shore, as well as between the dune, beach and surf zone. We can cause this by

- erecting fixed structures on the dunes next to the beach
- artificially stabilising dunes with vegetation
- constructing groynes (dam-like structures) extending from the intertidal zone toward the beach
- constructing harbour breakwaters and sea walls
- constructing dams, barrages or diversions on rivers
- removing sand from the littoral active zone.

Damage to the frontal dunes leads to the destruction of this natural coastal buffer. Often the frontal dunes are regarded as a hindrance to development and are levelled or removed entirely. This results in beachfront development being exposed to flooding during storms and high tides, and in the disappearance of or damage to beaches; as there is no sand reservoir from the frontal dune to supply sand to the beach during periods of beach erosion.

Destruction of dune vegetation resulting from excessive trampling by man, off-road vehicles and livestock, as well as overgrazing by livestock, means that the dune cannot perform its function as a natural sand reservoir. With no vegetation to keep it in place, the wind causes the dunes to gradually move inland, devaluating adjacent property.

Dune mining can have a severe impact on dune systems, destroying dune forests and causing serious erosion problems.

Vehicle damage can be severe in the backshore zone where young dune plants, that are the precursors of new dunes, are easily destroyed. Also, large numbers of animals such as ghost crabs live here and are often killed by wheels crushing them. In the same way, the eggs of birds such as the African black oystercatcher are completely defenceless against these vehicles.

Disruption of natural processes by fixed structures such as sea walls prevents the natural flow of water over the beach. This in turn prevents intertidal organisms from existing here as they are dependent on the natural tidal fluctuations, as well as the filtering of water through the sand, a natural purification process.

Pollution is yet another human impact with potentially severe consequences. Offshore oil spills reaching the beach not only have a toxic effect on animals, but also interfere with filtration of water through the sand. Plastic and other forms of litter, caused by dumping at sea, poorly operated refuse dumps and people who uncaringly discard things on the beach, are also increasingly polluting our beaches. As many of these articles are not biodegradable, they can cause painful death for birds and animals if mistaken for food.

HOW WE CAN CARE FOR OUR BEAUTIFUL DUNES AND BEACHES.

We can all play our part by

- *not removing or damaging frontal dunes*
- *keeping beachfront development behind the frontal dunes*
- *not removing sand from beaches and dunes*
- *not removing boulders, kelp or other natural beach material*
- *not damaging or removing dune plants*
- *walking on paths and only driving on roads, not over dunes*
- *grazing cattle inland away from coastal dunes*
- *preventing pollution on beaches*
- *reporting cases of illegal dumping at sea to the Department of Environmental Affairs and Tourism.*

The more aware the public becomes of the importance of conserving our dunes and beaches, the better they can be protected. You can help by watching out for any possible threats to dunes and beaches in your area, and by keeping in contact with your local conservation authority.

For more information, please contact:

CoastCARE, The Coastal Management Office, Department of Environmental Affairs and Tourism, Private Bag X2, Roggebaai 8012, Cape Town, South Africa. e-mail: czm@sfri.wcape.gov.za

Tel: + 27 (0)21 402-3208 Fax: + 27 (0)21 418-2582

COASTAL MANAGEMENT OFFICE

Department of Environmental Affairs and Tourism

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DESIGN: Runette Louw and Jenny Young EDITOR: Vanessa Rousseau PROJECT CO-ORDINATOR: Kobie Bredenkamp