

The Story of the Two Oceans - where two worlds meet

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For anyone with an interest in the oceans and in marine life, southern Africa has one of the most fascinating coastlines in the world. The southern African continent is washed by ocean currents which have a strong influence on plant and animal life. The marine environment is varied, complex and unpredictable. At the southern tip of Africa, the cold current of the west coast 'meets' that of the warmer east coast. There are few places in the world where a country is positioned between seas which are so different in temperature and the flora and fauna which they support. Due to the influence of the currents as well as the country's latitude, South Africa experiences tremendous changes in weather and climate. This is illustrated by a comparison in temperature and rainfall received by Port Nolloth on the west coast and Durban on the east coast (these towns lie on the same latitude). Port Nolloth experiences an average temperature of 14,1°C and an annual rainfall of 61mm whilst Durban experiences average temperatures of 20,5 °C and receives 1000 mm of rain every year.

There has always been some controversy about the 'meeting point' of the Indian and Atlantic Oceans. Even scientists tend to disagree on this issue because the Agulhas Current tends to shift regularly. If there is such a thing, the boundary lies somewhere between Cape Point and Cape Agulhas (the southernmost tip of Africa). Based on the decisive differences between the plant and animal life occurring north-west and south-east of Cape Point, some people like to believe that Cape Point is the dividing line. This magnificent 'Point' is considered by many as the most beautiful cape in the world.

The Agulhas Current, one of the most powerful currents in the world, flows southwards down the east coast of South Africa, bringing warm Indian Ocean water from tropical regions. This warm current on the east coast results in a humid climate with high rainfall. Vegetation is lush and dense forests occur. The region stretching from southern Mozambique to Port St. Johns is referred

to as subtropical. It supports tropical species of corals, fishes and crabs, and also various temperate species from southern latitudes.

The coastal waters are warm, generally clear and low in nutrients. There is fierce competition for food and space on reefs and a greater proportion of predators than on the west coast.

Whilst there is a greater diversity of species on the east coast, they occur in lower numbers than on the west coast.

Off the west coast of South Africa, the cold Benguela Current flows sluggishly northwards. The temperate region of the west coast extends from Cape Point to Walvis Bay in Namibia and is characterised by cold waters and various species are either unique to this area or occur in abundant numbers such as commercially important abalone *Haliotis midae* or crayfish *Jasus lalandii*.

The cold current also has a significant influence on the climate of the region as the air flowing from the cold sea over the hot land yields low annual rainfall. The west coast is arid and desert-like and plant life relies heavily on frequent coastal fogs.

During summer, strong south-easterly winds blow across the surface waters of the Atlantic coastline resulting in upwellings of icy cold water. This water, originating from the ocean, carries a rich supply of nutrients, which fertilise the phytoplankton (microscopic plant life forms) and seaweeds. The phytoplankton flourish and form dense blooms so that the water is often murky and discoloured. Prolific forests of giant kelp plants dominate the rocky shoreline. Kelp is one of the fastest growing seaweeds in the world and supplies plenty of food for the great numbers of invertebrates, such as abalone (perlemoen), crayfish, giant periwinkle, urchins, starfishes and anemones which find shelter within the forests.

Along the west coast biological production is high and species diversity is low. The prolific growth of phytoplankton and seaweeds stimulates productive foodchains. Planktonic animals (zooplanktons) feed on the phytoplankton which in turn are eaten by filter-feeding fishes such as pilchards *Sardinops sagax* and anchovies *Engraulis japonicus*. The west coast is one of the richest

fishing grounds in the world and not only supports huge commercial fisheries, but also large colonies of Cape fur seals *Arctocephalus pusillus pusillus* and seabirds such as African penguins *Spheniscus demersus*.

Endemic to the coastlines of South Africa and Namibia, African penguins have become highly threatened due to the fact that thousands were killed for food and their eggs collected by the early explorers. In more recent times, oil spills have had devastating effects on the African penguin population. In June 2000 an oil spill off Robben Island seriously endangered the African penguin colonies on the west coast. Robben Island and Dassen Island (north east of Robben Island) alone are home to some forty-one percent of the world population (there are 21,000 breeding pairs on Robben and Dassen Islands). In a dramatic rescue attempt, over 19,000 oil-free birds were evacuated to Port Elizabeth on the east coast and released there to swim some 900 km back to Cape Town, giving the authorities time to clean up the spill. Another 19,000 oiled penguins were taken to large warehouses in Cape Town to be washed and cared for by staff of SANCCOB (South African National Foundation for the Conservation of Coastal Birds), IFAW (International Fund for Animal Welfare) and thousands of volunteers. This was one of the most successful rescues of coastal birds in the world.

One of the most noticeable differences between the east and west coasts of South Africa is the colour of fishes. A variety of colourful fishes, such as butterfly fish, wrasse, damsels, goldies and surgeons, are common in warm tropical waters. The majority of fishes found off the west coast tend to be silver to yellow-brown in colour. Even species such as klipfishes (family Clinidae) which use colour to camouflage themselves for protection against predators are dull in comparison to east coast tropical species. Some deep-sea fishes such as Red Roman *Chrysolephus laticeps* and jacobever *Helicolenus dactylopterus* are red, but this disappears as the light decreases in deeper waters (a universal phenomenon associated with depth).

Another contrast between east and west coasts is that there are more poisonous and venomous animals on the east coast including stonefish

Synanceia verrucosa, devil firefish *Pterois miles* and various species of sea urchins. Symbiotic relationships between animals also tend to be more common in warmer waters.

Most people think only in terms of an east and west coast, but there is another significant region. This is the warm temperate south coast region which extends from Port St Johns to Cape Point. The south coast represents a great mixing zone, resulting in great species diversity unique to this region. Various seaweeds exist here, but not the kelp forests which characterise the west coast. Many fishes tend to migrate through this region during winter. Schools of fishes such as pilchards migrate northwards followed by predators including elf *Pomatomus saltatrix*, yellowtail *Seriola lalandi*, garrick *Lichia amia* and mackerel *Scomber japonicus*. Various shark species also join the hunt. Along the east coast, vast numbers of pilchards are forced into the shallows and even onto the beaches. This annual phenomenon is known locally as the 'Natal sardine run' and, during the run, humans and seabirds take great advantage of this bonanza. A carnival atmosphere prevails as they greedily gather huge quantities of the silvery fishes.

At this time, great numbers of dolphins migrate up the east coast coinciding with the annual migration of humpback whales *Megaptera novaeangliae* to Madagascar.

During these months, southern right whales *Balaena glacialis* also visit the Cape south coast. Birthing and mating of these whales occurs close inshore, resulting in one of the most spectacular land-based whale-watching opportunities in the world.

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