



Islands of Diversity

*Isolated mountains in arid
Namibia are home to a richer
fauna and flora than their
surroundings*

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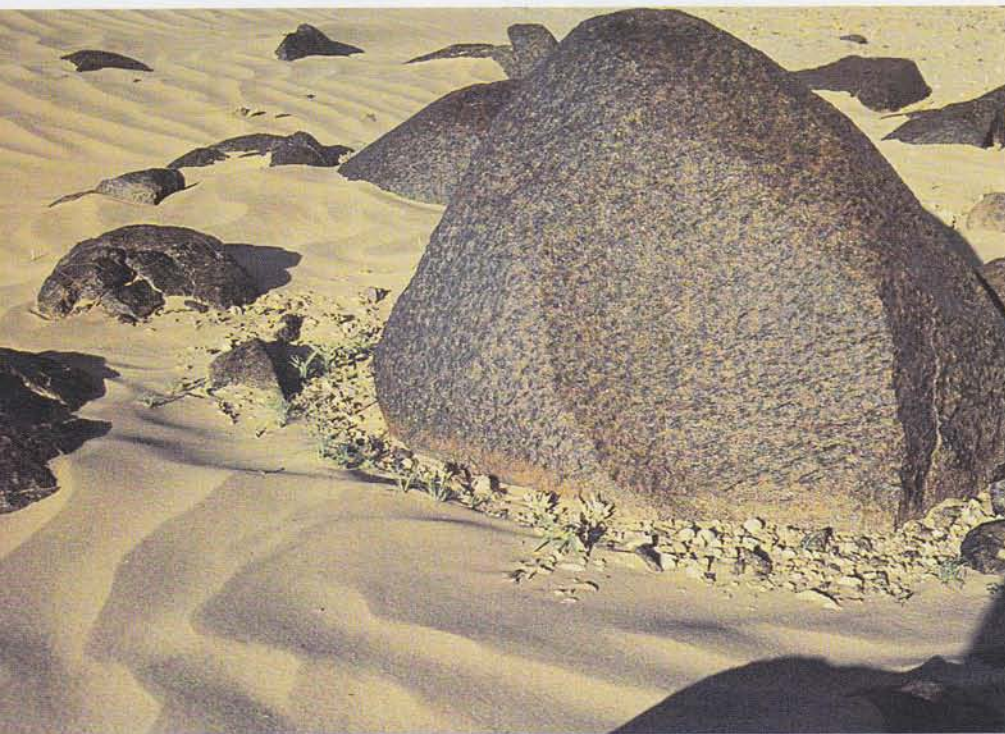
Scattered across many parts of Namibia isolated mountains, technically termed "inselberg", present photogenic views to many visitors. They range from small, low outcrops of several tens of metres to mountain massifs of many 100 m height, such as the Brandberg, providing conspicuous landmarks, shelter and resting places for humans and wildlife alike.

Inselbergs in Namibia are geologically variable and originate from different periods. While the development of some inselbergs has been aided by the upward movement of magmatic material within the earth's crust, others are remnants of rock materials harder than their surroundings which have been removed during millions of years of weathering and erosion. As such Namibia's inselbergs embody the spectrum of ancient Precambrian rocks of the old super-continent Pangea to rock intrusions formed during the Cretaceous period about 100 million years ago. Gneiss and granitic inselbergs of the southern Namib range at the lower end of the time scale, the table mountains of Damaraland capped with hard basalt are remnants of the Jurassic period and most of the central Namib's granite domes are of Cretaceous origin. The Brandberg, Namibia's

although technically also part of the savannah area, resemble much more the common perception of an inselberg landscape. However, amongst scientists there is no unilateral agreement about what makes a mountain or small hill an inselberg and one could certainly argue whether or not the Brandberg falls into this category. In addition to differences in geological origin, even the Namib inselberg differ remarkably in size and degree of isolation. Granite domes of the gravel plains of the central Namib, for example, progressively increase from sparsely scattered, low outcrops of sometimes only several metres height along the coast to prominent mountains of several hundreds of metres which merge with the foothills of the escarpment. Yet, nearly the entire part of the southern Namib between Lüderitz and Oranjemund is composed of huge expanses of rocky outcrops that could be called an enormous inselberg landscape. And again the transition to the foothills of the escarpment is gradual, making it difficult to draw the line between inselbergs and the escarpment. However, there is one archipelago of mountains in Namibia which leaves no doubt about its position – the Hauchab complex in the southern Namib

dune sea. Situated half way between coast and escarpment, rising up several hundred metres and surrounded by the vast expanse of shifting sand dunes in every direction, one can hardly picture a more perfect image of an inselberg.

Inselbergs are associated with desert landscapes around the world and what makes them the focus of attention in arid regions is their more favourable environment for flora and fauna. Apart from the steep, bare rock surfaces that are uninhabitable, every other habitat on an inselberg provides more favourable moisture conditions than their surroundings. Because of higher altitudes, fog and rain clouds are often trapped by the mountains, runoff from rock surfaces is channelled to pockets



Like the seedlings around this rock, runoff from inselbergs supports plant growth around their bases and in channels and crevices where soil accumulates.

of soil and shady nooks and corners store moisture for long periods. This provision of crucial water in the desert as well as shelter from the scorching sun and blasting wind has facilitated the development of a comparatively rich flora and wildlife on inselbergs.

Many species normally occurring in higher rainfall regions thus thrive on inselbergs, but are absent in their arid surroundings. On Namibian inselbergs many stem-succulents such as the quiver tree (*Aloe dichotoma*), *Moringa ovalifolia*, *Euphorbia virosa* and *Commiphora* shrubs are examples of species protruding into the desert. The long-term isolated position of some inselbergs has even resulted in species occurring only on a particular mountain. The Brandberg, for example, is

highest mountain, and its surroundings form the geologically youngest and most impressive inselbergs. Although most inselberg landscapes in Namibia are associated with the open plains of the Namib Desert, they are equally abundant in savannah areas, often perhaps not recognised as such. Many stretches of major roads (eg. to Marienthal, Otjiwarongo and Karibib) wind through landscapes of scattered hills similar to those in the Namib. Isolated mountains in the scarcely vegetated southwestern part of Namaland (south of Bethanien),

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PHOTOGRAPHS BY AUTHOR

Often far beyond their boundaries of normal distribution, quiver trees (*Aloe dichotoma*) grow on inselbergs in the central Namib.

thought to harbour 11 endemic plant species, while the Hauchab complex is home to an endemic scorpion.

Water, plants and wildlife have always attracted people to inselbergs and many possess splendid displays of activities of early humans roaming the desert. The legendary rock paintings of the Brandberg area attract thousands of visitors every year, but also most other inselbergs show some signs of human activities in the past, if one looks carefully. Although rock paintings have been discovered on other Namib inselbergs, much more widespread are artefacts found in rock shelters, such as remains of ostrich shells, beads or grindstones indicating that these rock shelters offered at least a temporary residence to some people in the past.

Having offered refuge for plants, wildlife and people for many thousands of years, inselbergs today play an important role as hot spots of biodiversity. With the background of possibly drier conditions associated with global climate change and the ever increasing pressure on rangelands surrounding the inselbergs, many species of plants and animals may only survive in retreat positions on these mountains. On the other hand and on a more positive note, species that have retreated to inselberg habitats, may be able to recolonise degraded areas in their vicinity. This is one of the questions a research project funded by the European Community will tackle in the coming few years focusing on the Brandberg and environs. With emphasis on ecological processes determining the distribution of inselberg flora and fauna, a multidisciplinary team of scientists from Namibia, South Africa, Germany and Britain will study general distribution of plants and insects, plant-insect interactions and the processes that result in the current distribution of inselberg flora and fauna. Once these ecological processes are understood, the team hopes to contribute to the development of practical solutions dealing with reversing degradation in arid rangelands.

