

Z. BIBLIOGRAPHY

Z2. Morphology

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The karst of the De Hoop Nature Reserve, Western Cape, South Africa

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Abstract: The De Hoop Vlei Reserve and adjacent areas, only 150km east of Cape Town, support an important coastal karst, which is developed on Tertiary dune limestones. A high density of enclosed hollows with some dry valleys constitute the surface karst. Shallow caves are localised. The complexity of enclosed hollow plan-form increases with altitude and therefore with the age of the limestone surface. A pitting index is given as a measure of difference between areas of differing karst age. There is also evidence for syngenetic karst development of both valleys and hollows.

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INTRODUCTION

Some of the most spectacular surface karst and caves in South Africa are accorded conservation status by virtue of falling within the De Hoop Nature Reserve. This reserve, set up originally to preserve and breed endangered animals, is located on the coast of the Western Province, east of Cape Agulhas (34° 50'S: 20° 00'E), some 150km east of Cape Town (33° 55'S: 18° 28'E) (Fig. 1). De Hoop Vlei, an important RAMSA bird locality, divides the karst area (Butcher, 1983). Most of the reserve lies east of the Vlei but, as a large area outside the Reserve on the west is held by the Defence Force, it has *de facto* conservation status. This karst area is developed on Cenozoic Bredasdorp Group limestones (formerly known as the Coastal Limestones).

GEOLOGY

To help understand the karst geomorphology mention must be made of the structural context. The Reserve lies within the Cape Mountain belt. Cape Supergroup Peninsula Formation quartzites and sandstones form the mountain ranges, and Bokkeveld shales (also Cape Supergroup) underlie the intervening valleys and plains. North of Cape Town the alignment is north-south whereas eastwards the alignment swings west-east. The Reserve lies south of the orogenic node where the alignment changes (Fig. 2). The change in direction can be recognised in the

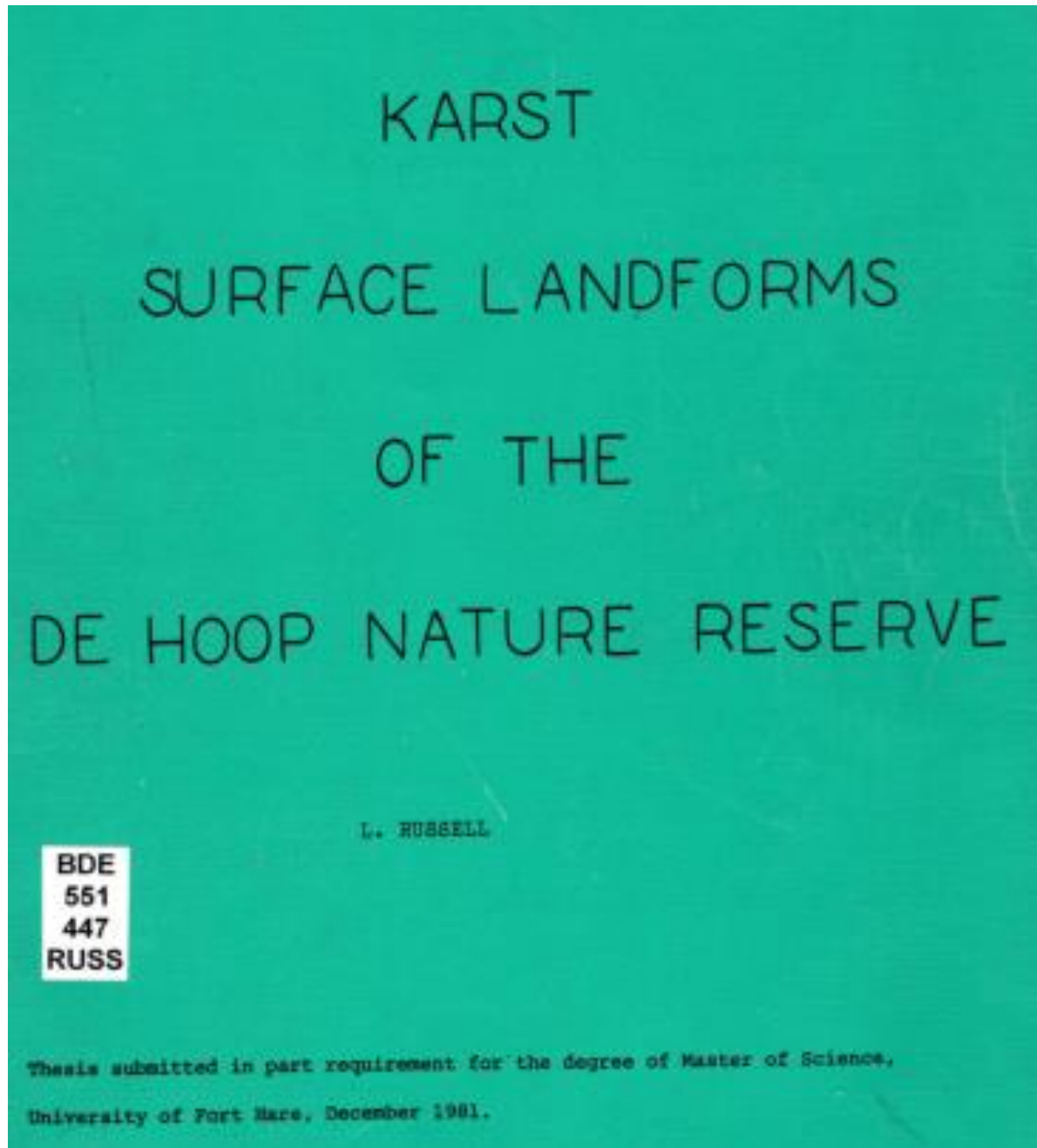
Bredasdorp Range, in the planed and buried ridges that crop out at Struis Bay and Armiston (34° 35'S: 20° 14'E) and in the Potberg, which rises to a maximum altitude of 370m, jutting into the ocean at Cape Infanta (34° 29'S: 21° 51'E) (Fig. 2).

The resistant Cape fold ranges have assisted preservation of the limestone between the Bredasdorp and Potberg ranges. Following the break-up of Gondwana (the southern hemisphere supercontinent) a series of fault troughs developed along the coast extending off-shore, in which sediments of Cretaceous and later age have been preserved (Dingle *et al.*, 1983). The Reserve overlies the inner margin of one such half-graben (Fig. 3). Two major Tertiary tectonic uplifts account for the present altitude of the limestone. Faulting that resulted is most easily recognised in the Peninsula Formation quartzites, but has also been important in directing dissolution within the limestone. The basic geology of the Reserve is shown on Figure 3.

Cenozoic near-shore limestones occur sporadically along the South African coast from Saldanha (33° 03'S: 17° 51'E) in the west, to northern KwaZulu-Natal in the east. The southern Cape outcrop between Cape Agulhas (34° 50'S: 20° 02'E) and Mossel Bay (34° 11'S: 22° 08'E), of which the De Hoop area forms a part, and that of the Eastern Cape between Woody Cape and Great Fish River (33° 29'S: 27° 16'E) have the highest density and diversity of karst. The limestones



Russell, L., 1982. *Karst surface landforms of the De Hoop Nature Reserve*. MSc dissertation (unpublished), University of Fort Hare.




Russell, L., 1989. *Karst surface landforms of the Cape Coastal Limestones*. PhD Thesis (unpublished), University of Fort Hare.

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<i>Secrets of De Hoop and Environs</i>	Field notes on the GEOMORPHOLOGY, HYDROLOGY and ARCHAEOLOGY Between CAPE AGULHAS and CAPE INFANTA	 Geomorphological Research
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DOLINES AND SINKHOLES: ASPECTS OF EVOLUTION AND PROBLEMS OF CLASSIFICATION

»DOLINE« IN »SINKHOLE« Z VIDIKA RAZVOJA IN TEŽAVE S
KLASIFIKACIJO

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