


<i>Secrets of De Hoop and Environs</i>	Field notes on the GEOMORPHOLOGY, HYDROLOGY and ARCHAEOLOGY Between CAPE AGULHAS and CAPE INFANTA	 <b>Geomorphological Research</b>
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This collection of field notes was compiled by:

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Readers who wish to comment on, or discuss, any subject, are welcome to contact Y Eytam.

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## FOREWORD

### Motivation

The coastal belt between Cape Agulhas and Cape Infanta is one of the most diverse areas in the Western Cape. It has a variety of landscapes and natural features: on the seaside there are tidal pools, cliffs, sandy shores and shifting dunes; inland there are very old as well as young rock formations, quartz intrusions, river gorges, dry valleys, caves and sinkholes; three rivers of different hydrological regimes cross the area and there are a few periodical lakes. There are Stone Age and Khoisan archaeological sites, historical clay and kaolin mines as well as stone-walled fish traps.

The area is 'off the beaten track' and has not received the attention it deserves. It has been studied very little and the information about it is quite scarce. There are a few scientific papers and university theses, which the common visitor to the area is not aware of, and which cannot be easily found on the Internet. Also, some of these publications cannot be understood without the necessary background in natural sciences.

The most visited place is the De Hoop Nature Reserve, which constitutes a large section of this area. It has no visitor centre and the available brochures, flyers and maps give very little information on the natural features, which are unique to this area. Booklets on its flora and fauna, compiled by previous managers of the reserve, are now out of print.

In recent years I had the time to explore the area and research it in detail. Equipped with the available information and with a set of 1:50,000 geology field-sheets from a survey conducted in 1984, I roamed the area on foot for many days. Other useful tools (which previous researchers did not have) were the Google Earth satellite images, with which I could identify morpho-tectonic lineaments and zoom into small features; I also used the images to learn about the periodical changes in the extents of water bodies and sand dunes; and bushfires stripped large swaths of their thick vegetation cover, to reveal more details of the terrain and of features, which could not be discerned before.

The more I walked in the area and scrutinised the maps and satellite images, the more questions I had about the geological history of the area, the true extent of rock formations and sediments; the distribution of caves, dry valleys, sinkholes and limestone crust (calcrete); and the roles of erosion and possible earthquakes and tectonic forces in the formation of ravines and gorges, and the shaping of other features.

The above are only some of the subjects which required, I thought, a new approach. I first had to make myself more familiar with this large area and obtain first-hand information from its hidden corners. I then realised that all the knowledge that I have accumulated will be lost if I did not publish it.

I have decided, therefore, to tell readers about the many secrets of this beautiful and interesting area, and to make them aware of the processes I was trying to understand. I have collated all the information from previous studies and from my research in one volume. I created this website where I have installed numerous Field Notes which describe, more with pictures than with words, and debate, the natural features and processes. Many subjects are to be further investigated and discussed with other scientists and whoever wishes to contribute to the knowledge of the area.

Every Field Note in the website constitutes one of dozens of pieces of a jigsaw puzzle, which is the Study Area (defined below). The website is, in fact a book, where Field Notes are presented in chapters, by which I wish to assist with a better understanding of the area.

## The Study Area

This collection of notes is the summary of detailed current exploration of the coastal belt. This belt includes the Bredasdorp Plain, the Limestone Platform (Hard Dunes) between Cape Agulhas in the west and Cape Infanta in the east, the shale hills (the Rûens) north of it and the seabed south of it, as shown in the figure below.




Vast sections of the area are inaccessible by car; most of the terrain is of high, rugged relief, and covered with thick, thorny vegetation and thus difficult to roam on foot; other sections are cultivated farmland. The Overberg Test Range occupies a large area SE of Bredasdorp and access to the coast and the southwest Hard Dunes is denied. All sections, except for public nature reserves, lie behind barbed wire fences. All the above render the area underexplored.

## Previous studies

**Geology:** The geological mapping of the area between Stanford to Riversdale by J Malan and his colleagues in 1984 resulted in a set of maps (field sheets) in 1:50,000 scale, which form a part of the Riversdale geology map in 1:250,000, of 1993. Malan later investigated the stratigraphy and the sedimentology of the Bredasdorp Group, which dominates the coastal belt in the above-mentioned area. Malan's very detailed work was published as an MSc thesis, submitted to the University of Cape Town, in 1990. Several, short papers, discussing the lithostratigraphy of each formation of the Bredasdorp Group were published in 1989 and 1991 by the Geological Survey. In 1987 Malan and Theron, have investigated the lithostratigraphy of the Enon Formation in a basin east of Bredasdorp.

**Karst (dissolution of limestone) landforms:** The many karst features in De Hoop Nature Reserve were studied by Lin Russell. Her research was published as an MSc (1981) and a PhD (1990) theses, submitted to the University of Fort Hare. Prof M Marker (UK), who also guided Lin Russell's research, published a paper on the karst of the De Hoop Nature Reserve in 2002. Reports about the caves of De Hoop Nature Reserve were compiled by the reserve's management during the years, but they are not available to the public. Many caves were investigated and mapped by members of the SA Speleological Association and reported on in the association's bulletin.

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**Hydrology:** The environmental factors and the hydrological regime of De Hoop Vlei were investigated by Shirley E Butcher. Her research was published as an MSc thesis (1993), submitted to the University of Cape Town. The investigation of the chemistry and the sediments of the vlei was published by Johan Lanz as an MSc thesis (1997), which was also submitted to the UCT. The quality of the Heuningnes River was studied by GJ van der Ende in 2015.

**Archaeology:** Findings in coastal Stone Age cave and shelter were discussed by CS Henshilwood et al in 2014. Possible KhoiKhoi sites were reported in the book 'The People of De Hoop Nature Reserve' in 2002, by Ann and Mike Scott (previous managers of the reserve). The book contains historical material about the early settlers in the area, and brings some information on the surrounding farms, the vlei and its hydrological regime. LV Kemp wrote an MSc thesis on ancient stonewall fish traps (2006), and P Hein et al studied the post-colonial fish traps (2010) along the coast.

**Summary:** The abovementioned works (all of which are 30 to 40 years old) served as background information to this study. Some of the researchers are deceased and the rest are not exploring the area anymore. [Several other studies, of the flora and fauna of the De Hoop greater area, as well as cave investigations, were published during the last four decades, but they are out of the scope of this study].

### **This study**

This research is about the geography, geology, morphology, hydrology and archaeology of the area. The notes are based on observations and information collected in the field while criss-crossing the area on foot, reaching points which were, until now, only the domains of herders, livestock and firewood cutters. This information is supported by maps and satellite images and referenced to previous researchers. Many features have been described and discussed here for the first time. This study, nevertheless, did not carry out accurate mapping of any formation or feature. Some observations on flora and fauna – subjects which are out of the scope of this study - are only briefly mentioned, adding to the general knowledge.

### **This website**

The objective of this website is to reveal the secrets of the area and report about them in a popular rather than a scientific way, which uses more photographs than words, and which will appeal to all readers.

The notes are short and mostly descriptive. None of them presents a completed research and should not be considered as a final report. Several notes pose more questions than answers and can be used as a base for further debates and studies. Where information from other publications and websites was used, their authors were credited.

The field notes do not constitute 'traveller's guides' to the area and no recommendations or travel tips are given.

The author welcomes comments from readers and will debate any subject. It will also be possible for readers to add notes which they have compiled, for which they will be credited.

The website is in the process of being populated with Field Notes. As the author carries on with the research and intends to revisit the many different features, the contents is constantly amended and updated. The notes are arranged in twenty-six chapters. Click 'Guide' on the front page of the site, to see the full list of the field notes.