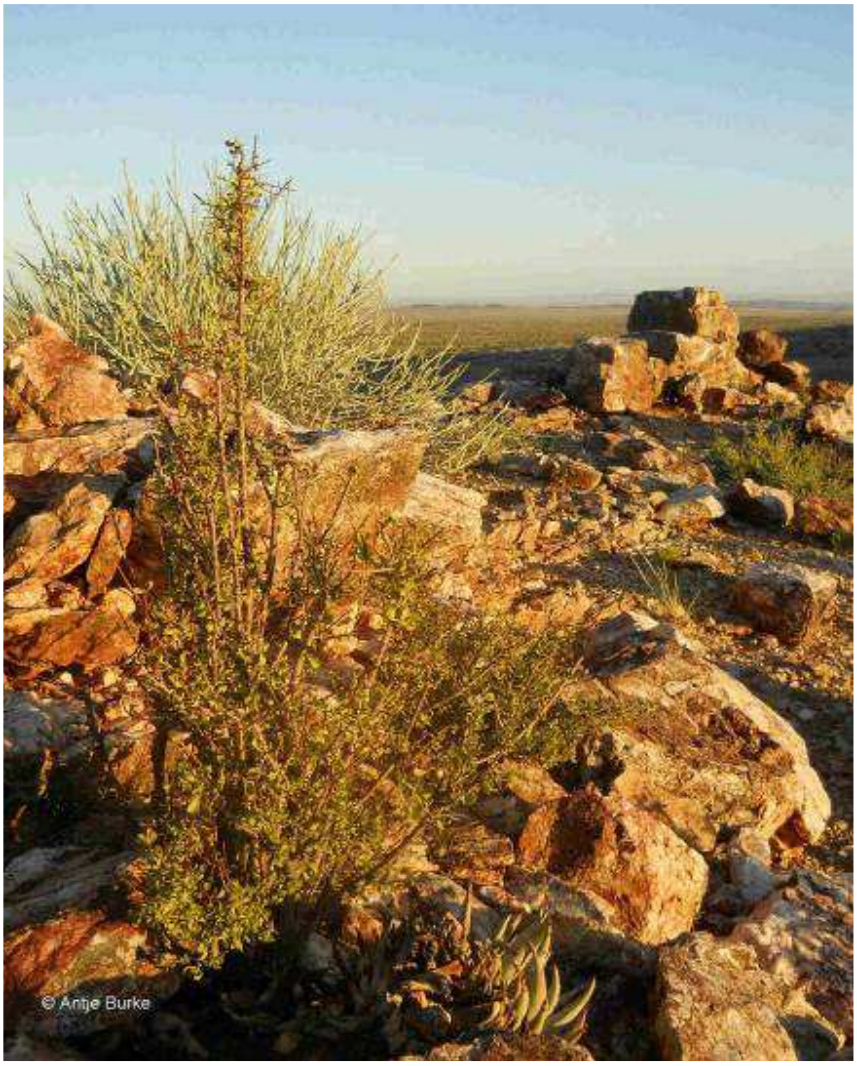
Biodiversity zonation of the Greater Fish River Canyon Landscape

Report of field survey in the Nama Karoo area

April-May 2013



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Summary

As part of a biodiversity zonation for the Greater Fish River Canyon Landscape the summer fieldtrip April-May 2013 targeted six areas, which were selected on the basis of data gaps, representation of the landscape and rainfall patterns. The Orange River mountains proved the most exciting from a plant research perspective, as new distribution records may have been found here.

Background

Namplace commissioned a biodiversity zonation of the planning domain of the Greater Fish River Canyon Landscape (GFRCL) in southern Namibia. This study is a continuation of the biodiversity zonation for the Ai-Ais Hotsprings Game Park which was completed for the Ministry of Environment and Tourism in 2011. The same approach and methodology are applied in this study. This document reports the field work of the summer survey 19 April – 5 May 2013.

Approach

Plants are used as indicators to evaluate biodiversity importance because

- They are at the bottom of the food chain and thus form the basis for most other biodiversity.
- Vegetation can be readily used for landscape-level mapping.
- Information on plant distributions in Namibia is electronically available and retrievable, although not complete for the entire country and at a coarser scale than required for this study.

Available plant distribution data (at quarter degree square resolution, i.e. 15 minute intervals on a latitude-longitude grid) were requested from the National Botanical Research Institute to guide the planning of the field work. A rapid assessment was necessary since the vegetation season is brief and only two fieldtrips were planned for the entire study area – one in the summer season in the eastern study area, and one in winter (August-October) in the western part.

Gaps in plant distribution data in the eastern part of the study area were identified in the following areas (Fig. 1):

- Naute (new addition to National Park) (grid: 2918CC)
- Klein Karas Mountains (grids: 2718AA, 2718AC)
- Northern canyon (grid: 2717BA)
- North-western canyon (grid: 2717BC)

- South-east corner (grid: 2817BD) and
- Orange River near Aussenkehr (grid: 2817CB).

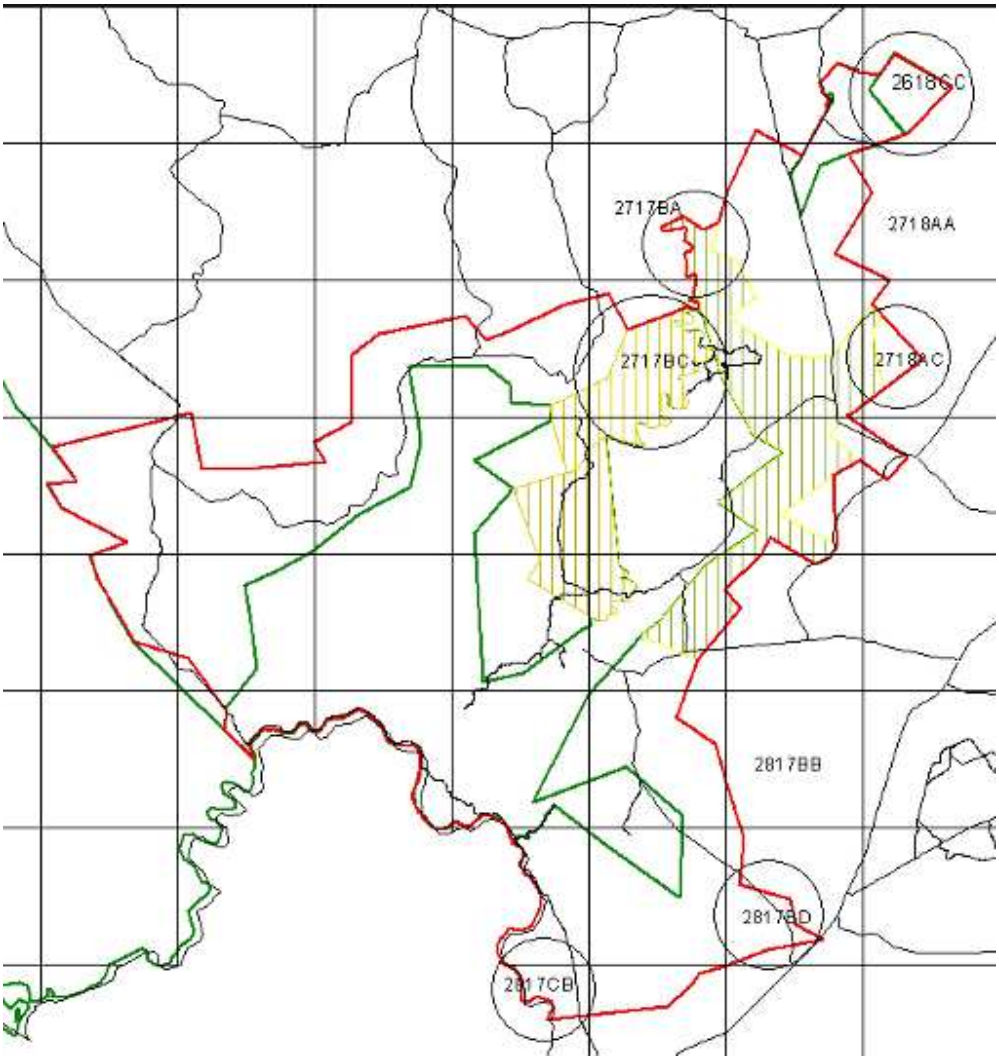


Figure 1. Provisional target areas for summer field survey in the Greater Fish River Canyon Landscape.

The final selection of areas targeted during the summer survey took these data gaps into account, but also included rainfall patterns and representative coverage of all key landscapes. Only one significant rainfall event occurred in the summer season during the period 29-31 March 2013. Also the rains were patchy and ranged between 0 and 54 mm across the eastern part of the study area.

The study was explained to the GFRCL stakeholders at a meeting in Ai-Ais 19 April 2013, and fieldwork commenced immediately after the meeting. The fieldwork was undertaken by myself and Leevi Nanyeni of the National

Botanical Research Institute, with assistance of various GFRCL members in the respective areas.

Preliminary findings

With the exception of the south-eastern corner (2817BD), we visited all planned target areas. No arrangements could be made with the owners here, but the rains were also poor in this part of the study area and we did not pursue this further.

As it turned out, we were surprisingly early for the vegetation survey (3-6 weeks after the rains) and many plants were still in an early stage of development – particularly the grasses. So these are underrepresented in our collections. On the other hand, we were able to collect a large diversity of bulbs and with this managed to substantially contribute to distribution records of a largely under-collected group.

The botanical highlight was a great diversity of *Oxalis* species (sorrel), some of which are not represented in the national plant collection at the Herbarium, which could indicate that we may have found new distribution records for Namibia.


The same or different species? This white flowered *Oxalis* had also been collected by Coleen Mannheimer in southern Namibia before, but has to date not been identified.


An attractive purple-flowered *Oxalis* is fairly widespread throughout the GFRCL area.

We are quite excited about these two white-flowered *Oxalis* – the one on the right from the Orange River mountains is definitely a new addition to the national plant collection, the one above deserves a closer look, as it may not be the provisionally identified *Oxalis ambigua*.

Below are some of the highlights from the respective areas.

Naute

Although topographically not very diverse, the new north-eastern extension to the Naute Game Park provides an essential addition with more browse, fodder and habitat for Naute's game populations.

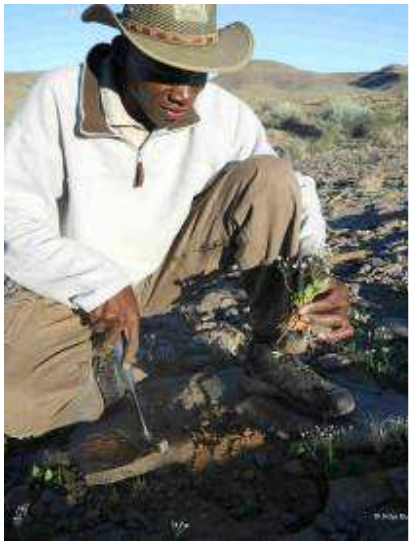
A typical "fence-line contrast" can be observed between the new addition (left) and the existing Naute Game Park (right), with more grass on the previous farmland than in the game park.

Northern and north-western canyon

(farms Elizabeth and Vergelee)

The rugged landscape bordering the northern part of the Fish River Canyon descends in several steps to the deep river course, both to the west and east of the canyon. Thus level plains alternate with steep slopes and kloofs, dissected by several dry rivers draining towards the Fish River. These landscapes composed of shale, limestones and other sedimentary layers support a drought-adapted flora with several plant species endemic to this part of the country.


The southern Namibian endemic bloodwood (*Haematoxylum dinteri*) which mainly grows on limestone, was in full bloom in many parts of the study area during our survey.

Although rains were sparse in this part of the study area, e.g. it was very dry in the Canyon Nature Park on Vergelee (left), Leevi (right) still managed to “bag” several interesting bulbs.

Klein Karas Mountains and footslopes

(farms Einaug and Holoog)

The survey in this part of the study area contributed interesting records, largely because more rains fell here. This is where a multitude of *Oxalis*, and several *Eriospermum* species were collected. The good condition of the vegetation made it worth our while to climb and collect along the western slopes of the Klein Karas Mountains. Although the slopes are more diverse than the surrounding lowlands, the vegetation is composed of many species widespread in southern Namibia.

Superficially looking similar, there may be many different *Eriospermum* species in this area.

Not only plants are of interest along the slopes and foothills of the Klein Karas Mountains, but they are also a preferred habitat of rock monitors.

Sharing our enthusiasm for plants, Liana and Gammy pointed out many little things usually easily overlooked (left). Many *Aloe claviflora* which occur along the footslopes of the Klein Karas were found dug up – possibly by baboons.

Southern Gondwana Canyon Park

Gneiss-granite, quartzite and occasional quartz outcrops provide an interesting scenery and diverse habitats in the southern part of the Gondwana Canyon Park. This area had received the best rains (54 mm) and was thus well worth including in the survey, although it had not been identified as a data gap.

While *Hermannia stricta* in full bloom provided a pretty sight on the open plains (above), the real treasures were found on quartz outcrops – here Sue next to the succulent *Cotyledon orbiculata*. Little outposts of the Succulent Karoo Biome, the outcrops support succulents like *Ceraria fruticulosa, Pelargonium spinosum* as well as *Ruschia* and *Crassula* species.

Orange River (farm Aussenkehr)

As experienced before – for us the highlight, since we may have discovered new plant records for Namibia (see white-flowered *Oxalis* above). In a wider context the mountains to both sides of the Orange River not only harbour some of the greatest plant diversity found in Namibia, but also many endemic species, some, like on the South African in the Richtersveld, restricted to a single kloof, others restricted to the broader area of the Orange River valley. And every time Leevi and I climb another mountain we find something unusual! So there is a lot more to explore in this enigmatic area.


An area with granite koppies in the south-eastern section of the Aussenkehr Nature Park (left) contributed to much greater plant diversity than expected in this very arid area. The mountains along the Orange River offer spectacular views and one of the richest floras in the country.

An isolated and unusually large *Ozoroa namaensis* surprised us in the central section of the Aussenkehr Nature Park.

Further work

Lots! Plant specimens will have to be identified, incorporated in the national plant collection, and possibly some send off to specialists for identification. We definitely have many new distribution records, possibly also new records for Namibia. This is why some of the collection has to be send to specialists of certain plant groups. Data processing and mapping is underway, and once the first winter rains are recorded in the south, planning for the winter survey will commence.

Acknowledgements

This survey would have been impossible without the enthusiastic support of all GFRCL stakeholders and Namplace's financial and logistic support. Not only the stakeholders whose properties we needed to access, but also those were no data gaps were identified, were eager to support us. We are therefore sorry that we did not have more time to visit all the farms. Leevi's assistance was absolutely essential to ensure that good specimens of critical species are lodged at the National Botanical Research Institute and that the taxing work in the mountain areas could be undertaken safely. Jonas Heita ensured that stakeholders were well briefed and put me in contact with right people. In the field, we (Leevi and I) would particularly like to thank Eben Naude, Liana Mbako, Simon Goliath, Sikongo Ignatius Nyangana (Gammy), Reagan Mbeava, Max Witbooi, Mnh Dekoker, Angela Otseeng, Trygve and Sue Cooper and Manni Goldbeck and his staff at the Canyon village. Also many thanks for remote support by all land owners who we could not meet in the field. Specimens data from the National Botanical Research Institute ensured that the work could be carried out very efficiently.

Max Witbooi utilised the time when he joined us at Canyon Nature Park also to complete the Namplace questionnaires for the baseline survey.