Renosterveld under scrutiny

Bringing science, management and stewardship together

by **Odette Curtis**, CapeNature and TMF (WWF-SA), Napier

Renosterveld conservation has received much attention lately and many more people are now aware of the plight of this severely threatened, unique and poorly-understood habitat. The biggest landscape-based approach towards conserving renosterveld started with the very detailed mapping processes (initiated by SANBI), followed by fine-scale plans for conservation. In the Overberg, the process of putting these plans into action has started, on a very small scale, with focused stewardship efforts (through CapeNature's Stewardship Programme) on priority areas in the lowlands. This process involves identifying 'priority clusters' – based mostly on size and connectivity, as well as biodiversity and 'uniqueness' – and approaching groups of landowners in order to negotiate stewardship contracts. This will ultimately secure natural remnants for long-term conservation, through partnerships between CapeNature and the individual landowner, who retains ownership of the land. Along with these contracts, comes a detailed management plan which outlines, for example, alien clearing schedules, grazing guidelines and burning schedules.

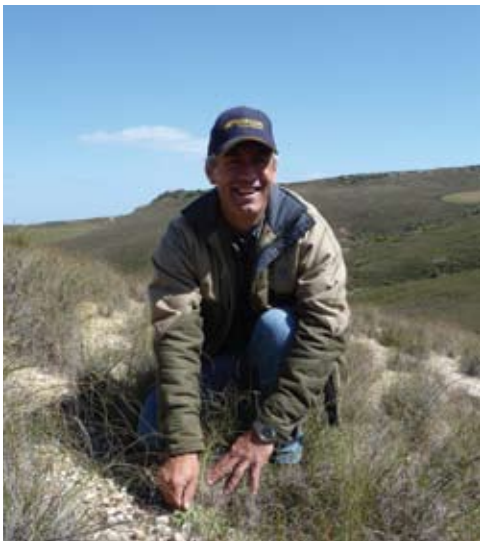
The challenge here is that while our understanding of fynbos ecology and therefore our ability to manage it is quite good, there is a real dearth of knowledge around renosterveld ecology. Thus, we are poorly equipped to provide management guidelines for this 'Critically Endangered' vegetation type, in spite of the fact that we are working towards securing significant tracts of renosterveld for conservation.

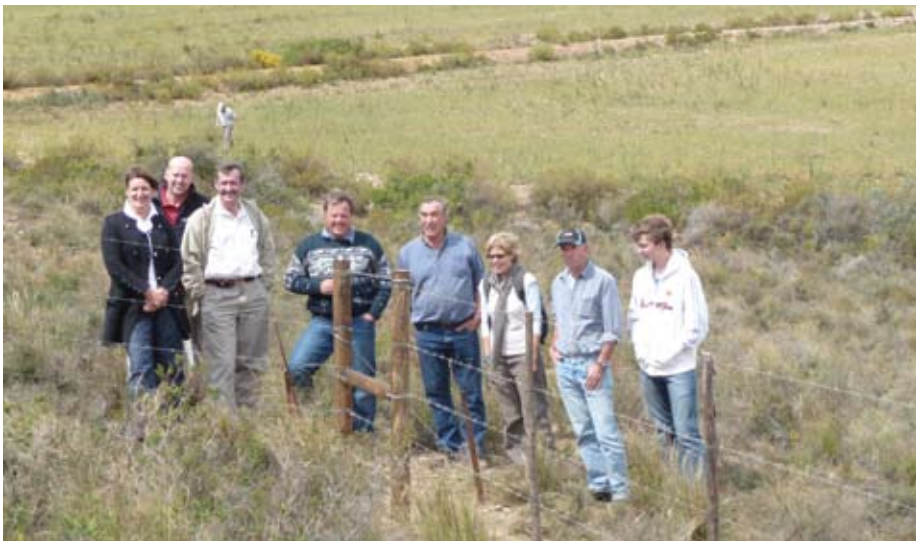
What complicates this are the different types of renosterveld that occur across the landscape: in the Overberg alone, there are three main distinct types: Western, Central and Eastern Rüens Shale Renosterveld. Here, the grassiness of the veld generally increases from west to east, suggesting that historically there may have been more frequent fires in the east. However, even within eastern areas, there are some very dry, Karoo-like habitats which are unlikely to be highly adapted to fire. Thus, we have a west-east shift in vegetation type, but within this, we also have localized shifts in vegetation, which are probably the result of a combination of factors, including soil type, soil depth, rainfall and altitude. Thus, applying one set of management guidelines across this area is inappropriate – one needs to take all these factors into account.

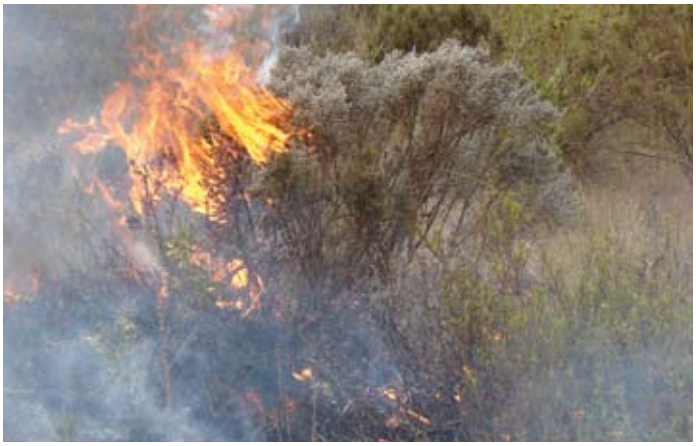
The Table Mountain Fund (WWF-SA) has funded a research project which is focusing on addressing these issues in Lowland Renosterveld in the Overberg. We are currently in the second year of a three-year project on the effects of fire and grazing on renosterveld, with a view to providing guidelines for management that benefits both biodiversity and agriculture.

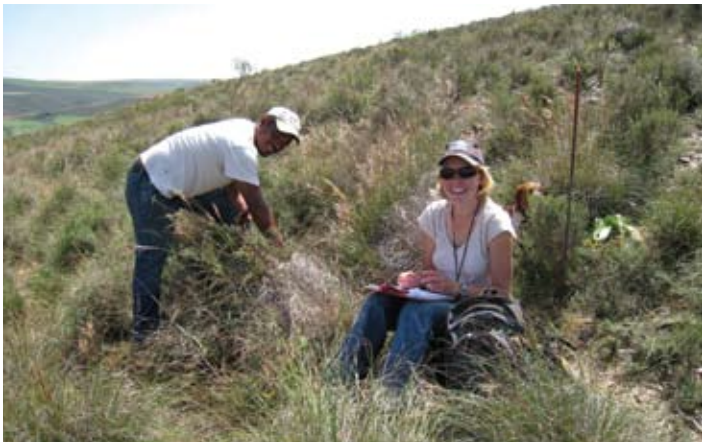
Experimental research

Although the project has several facets – research, generating awareness,





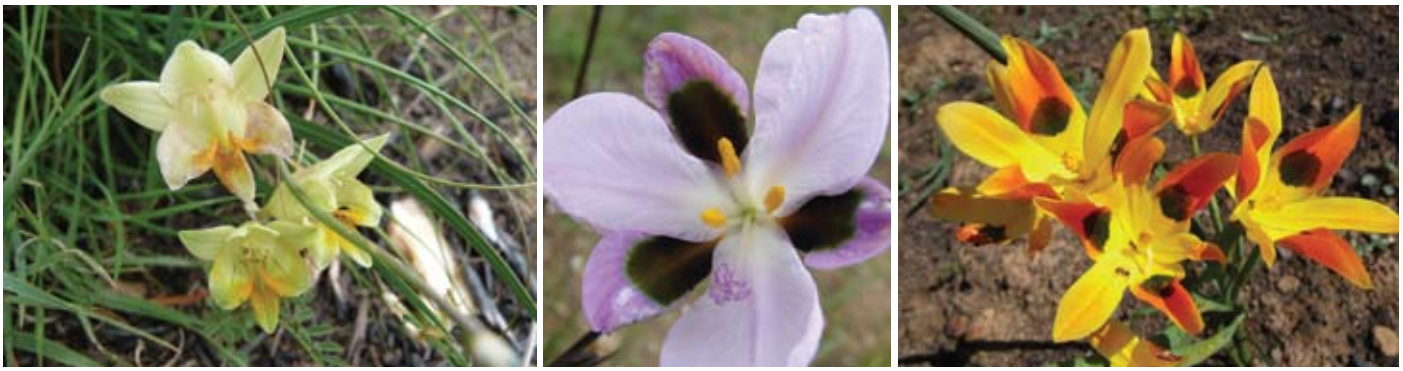




TOP LEFT: Dirk van Papendorp on his farm, Voorstekop near Heidelberg with *Gibbaeum* and *Haworthia* plants. TOP RIGHT: The TMF Project launch was attended by landowners, managers and biologists. BELOW LEFT: The critically endangered *Polhillia connata* goes up in smoke. After the fire, plants re-sprouted and very quickly flowered. Photos: Odette Curtis. BELOW RIGHT: The author, Odette Curtis, and Eugene Marinus at the test plots. Photo: Cameron McMaster.

"Sentinent species that we are, *Homo sapiens* is able to understand the shape, extent and value of Earth's biodiversity. Indeed, we have a responsibility, as well as a self-interest, to value it."

Richard Leakey and Roger Lewin



Renosterveld flowers LEFT: *Freesia refracta*. CENTRE: *Aristea terifolia.* RIGHT: *Morea elegans.* Photos: Odette Curtis.

encouraging custodianship – the main focus is the experimental testing of the effects of fire and grazing on the veld. Plots (10 x10 m) were set up at six sites on farms across the Overberg in spring 2007, from Fairfield (Valerian van der Byl) near Napier, to Nysty (Albert Bester) north of Bredasdorp, to Fonteinskloof (Ian Le Roux) near Riviersonderend, to van Rheenen's Crest (Thomas and Trevenen Barry) and Voorstekop (Dirk van Papendorp) near Heidelberg. These farmers have all expressed an interest and concern for renosterveld management and therefore kindly offered their veld for these experiments. The plots have been set up in such a way that we can compare vegetation cover and diversity between pre- and post-burn scenarios, north- and south-facing slopes, burned and unburned and grazed and ungrazed plots.

We set out to do six burns in March and April 2008 after collecting pre-burn data in spring the previous year. We were convinced that it would be impossible to carry off all the burns within a single season given the limited time we had available, the limited manpower and expertise and the need for absolutely perfect weather conditions to carry out a successful and safe burn. However, through various strategies and some very committed landowners, after many sleepless nights we managed to get all the burns done within the necessary timeframe. In some cases, landowners did the burns and preparation firebreaks themselves, while in others Chris Martens (CapeNature's Stewardship Programme Manager) managed the burns with Ian Allen (Manager, Grootvadersbosch) and his Working on Fire Team.

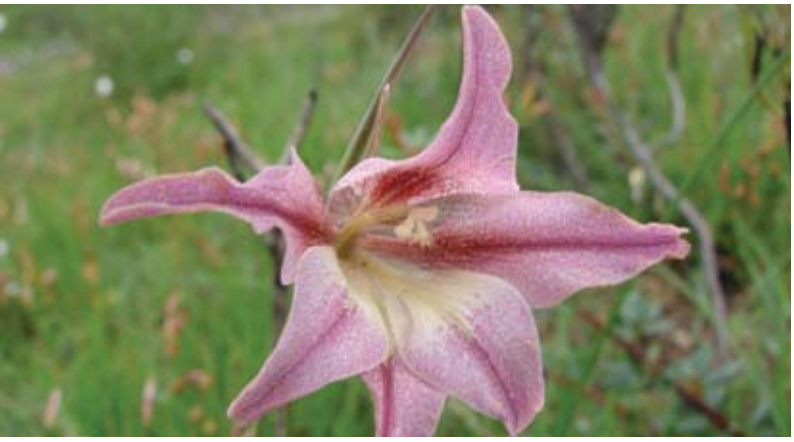
Controlled burns are never a simple matter and were particularly complicated in this case, not only because we did not want to be responsible for runaway fires that could burn fences down, leap across boundaries or burn down tracts of precious wheat stubble (which is often the only grazing available to livestock in summer) but also because we had to prevent fire getting into our 'unburned' control plots, which would be disastrous for the project. Each burn was started by burning the areas around the control plots, in order to make them 'safe' before proceeding with the rest of the burn (which generally covered an area of 80 ha). This may not sound like a difficult task, but I can assure you, this is the thing heart attacks are made of! In one instance, we had finished burning the entire area around a control plot and believed we had everything under 'control' and while the fire burned steadily across the patch and into the wind, a coal was suddenly blown from more than 300 m away straight into the buffer surrounding the control plot, starting another fire immediately. Thanks to a few brave, quick-thinking men and their 'bakkie sakkies' (water tanks with pumps on the back of bakkies), the fire was extinguished seconds before it reached the control plots. I for one slept better after these burns were done!

Early results and interesting finds

Although it is far too early to do any detailed analyses, we have run some stats on the data to test whether we can detect any patterns yet – just to be sure that our experimental approach is sound – in terms of sample size, sampling techniques and so on. The good news is that the significant patterns one would expect to see are there – asteraceaous shrubs like Renosterbos, *Dicerothamnus rhinocerotis* and *Oedera squarrosa* decreased after the fire, while geophytes and annuals tended to increase. These are standard results of burning in autumn and only long-term data will reveal important trends, but so far, it all looks promising.

At one site near Heideleberg (Voorstekop) we burned a small population of highly threatened *Polhillia* – a wonderful opportunity to see how this species responds to fire! Interestingly, they re-sprouted very quickly after burning and subsequently flowered! Where shrubs had only partially





TOP LEFT: *Gibbaeum haaglenii.*
TOP RIGHT: *Gladiolus floribundis.*
CENTRE LEFT: *Gladiolus liliaceus.*
ABOVE: *Oedera squarrosa.*
LEFT: *Trichodiadema pygmaeum.* Photos: Odette Curtis.

burned, only the re-sprouting (basal) section of these shrubs flowered prolifically, with no flowers appearing on the 'old' part of the shrub. This small, very threatened and poorly known genus is mostly endemic to the Western Cape, with four of the six species being endemic to the Eastern Rũens Shale Renosterveld, which occurs roughly between Bredasdorp and Heidelberg. Polhillias are very attractive grey-green shrubs, usually with thin, trifoliate, silky leaves and typical yellow Fabaceae (pea) flowers. *Polhillia brevicalyx* is listed as Critically Endangered and *P. canescens* and *P. pallens* as Vulnerable. The fourth species, *P. connata* (also Critically Endangered) was previously only recorded at one site and through surveys associated with this research project, has been recorded in possibly three new localities. In fact, we suspect that the *Polhillia* at Voorstekop that was burned in our experiments was in fact *P. connata* and we are still waiting for a confirmed identification.

A major problem that we have noticed with *Polhillia* in general is that those plants that do manage to form pods often have their seeds predated by insects and therefore are unlikely to recruit. Natural predation such as this would not normally affect normal, healthy populations of plants, but now that these all occur in small, isolated populations in a severely fragmented landscape, predation could be detrimental to the survival of species like these, as recruitment levels are likely to be extremely low. This again reiterates the importance of focusing conservation efforts on large, well-connected expanses of habitat, where our chances of conserving not only individuals, but most importantly, ecological processes, are far greater.

Watch this space!

We expect that further monitoring will help us gain a better understanding of renosterveld systems and ultimately provide meaningful and useable management guidelines to ensure that renosterveld is sustainably managed and therefore conserved in the long term. The Cape's farmers continue to be custodians of this unique ecosystem and its fate remains in their hands. It is the individuals, such as the landowners mentioned in this article, whose interest and passion for the veld gives reassurance to conservation initiatives such as stewardship programmes, gives us hope that good relationships will exist between conservation and agriculture and reminds us that our efforts are worthwhile. Crossing boundaries and building bridges between all the sectors involved is the only way in which we will conserve our threatened systems. 'We would accomplish many more things if we did not think of them as impossible.'

GET CONNECTED

The author can be contacted at odette@orcawireless.co.za.

BELOW: *Ornitholgalum thyrsoides* with its monkey beetle pollinator. Photos: Odette Curtis.