



Restoration ecology in **Namibia**

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Most people visit Namibia to experience wide open spaces, profuse wildlife, spectacular scenery and perhaps to have a glimpse of African culture. Thanks to low population pressure in many parts of the country, at present, Namibia can offer all of this in profusion.

Yet, in Namibia, more and more people demand services such as water, electricity and goods, hurrying along the development of infrastructure and industry. Several of these recently proposed development projects may encroach on core wilderness areas and have resulted in fierce debates between environmentalists and the pro-development lobby.

*Why being proactive
will pay off in the
long term*

Pending the final word of the decision-makers, if development projects go ahead in environmentally sensitive areas, what can be done to avoid or minimise the scars of human impact?

Given these threats and human pressures on many natural areas, restoration ecology receives increasing attention globally at present. Without venturing into detail, ecological restoration is a variant of the term rehabilitation, which simply means making the land useful again after disturbance. Rehabilitation could mean creating a pasture where there was once a wetland, or a forest plantation where existed indigenous forest. Ecological restoration, in turn, aims at stimulating the natural sequence of recovery after disturbance, often by simple means of intervention. Ideally this should eventually result in a stable, self-sustaining ecosystem similar, if not identical, to what was there before.

In Namibia's arid to semi-arid environment only such an approach could eventually provide positive rehabilitation results. Focusing on the southern Namib, an area at present experiencing ever-increasing pressure by developers, the Namibian National Biodiversity Programme has recently launched a new project – "Restoration ecology in the southern Namib Desert".

The southern Namib was selected as a pilot area because of its nearly pristine wilderness character, its status as one of the few areas of international conservation in an arid region, and the looming, potentially very destructive impacts of prospecting,

mining and infrastructure developments. With such gloomy prospects for this fascinating piece of earth and considering its immense tourism potential, if development cannot be stopped, minimising the impact by ecological restoration is an imperative.

The new project's aims are twofold: to understand the natural processes of southern Namib ecosystems and to develop practical means to enhance the natural process of recovery in this arid area. These are very ambitious objectives, given how little is presently known about natural processes controlling vegetation and wildlife dynamics in the southern Namib. However, the project will probably not have all the answers within the present two-year trial period, but rather aims at developing a focused research and monitoring framework, with perhaps the initiation of a few projects actively addressing some of the many questions.

Along with the twofold approach goes a twofold strategy to obtain funds for projects within the restoration ecology framework. While funds for basic research are likely to become available through international research initiatives, it is anticipated that applied research dovetailed to the needs of individual developers will be supported through monitoring programmes, for example, as part of environmental management plans for development projects.

However, there will also be generic tasks which would potentially benefit all developers in the area. Examples range from the establishment of a nursery in the southern



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Pioneer work in Namibia. Nearly 700 plants of some 40 different species were excavated and moved to the National Botanical Research Institute in Windhoek for relocation and propagation trials.

Namib (mainly geared towards propagating the indigenous flora and thus providing materials for replanting), a procedural framework for involving commercial nurseries in plant rescue missions, to supporting broader research questions. With contributions from all developers, a Southern Namib Restoration Fund, administered by the Namibia Nature Foundation, is planned to take care of these common issues.

Basic research will investigate vegetation dynamics,

plant-soil and biotic interactions. This may elucidate processes which could be simulated in disturbed areas and thus provide natural means of restoring vegetation cover and associated fauna.

Practical questions revolve around how artificially created land forms can be made suitable for recolonisation by plants. Will topsoil preservation enhance recovery of these arid ecosystems? Can plants naturally occurring in the area be used for replanting in disturbed areas? In places where restoring plant cover is



Where human activities are taking place – although confined to a small portion of this vast area – the impacts are severe. These will leave scars which take a long time to heal, or without restoration efforts, may never heal.

not feasible, what mitigating measures could be employed to contribute to the preservation of plant and animal diversity in the southern Namib? The questions are endless and informed answers are few and far between at present.

A little step towards this seemingly insurmountable task has been made by a small project at the National Botanical Research Institute investigating the relocation and propagation potential of selected species of the southern Namib flora. Since many of these plants are protected, treasured by succulent collectors and thus of extremely high horticultural value, relocating plants from areas to be mined may provide a self-sustaining, commercial enterprise in the long term.

A first trial was carried out successfully with selected plants from the proposed Skorpion Mine area in the south-eastern Namib. This endeavour was supported by Reunion, the mining company who initiated a feasibility study for this zinc deposit. The sand and gravel plains at Skorpion harbour a diverse mix of largely leaf-succulent plants and many species of conservational importance. In a fairly unsophisticated fashion, plants were excavated and transported to Windhoek, where they have now been kept for over a year with minimal irrigation. Besides the general question of tolerance of plants to removal from largely winter to summer rainfall conditions, tests investigating the effect of different

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watering regimes and propagation potential are being carried out.

Invited by the Namibian diamond mine Namdeb, the National Botanical Research Institute recently surveyed gravel terraces along the Orange River. The staff of the institute examined whether or not sufficient material of horticultural importance would become available during mining to justify a large-scale rescue mission, possibly carried out by a commercial nursery. The nursery, in turn, would carry out propagation trials and contribute a percentage of potential profits made from the sale of these plants to the Southern Namib Restoration Fund. Because of the unusual conditions of frequent fog moving far inland along the Orange River valley, the flora on these gravel terraces is very specialised and comprises many species which only occur in this small part of the world. Although plants of collectors' and horticultural importance were found to be too scattered on the terraces to justify large-scale relocation, the institute was able to enlarge its live plant collection and enhance its desert display with many first-time additions.

Some of these live plants from the Skorpion and Daberas mine areas will find a home in the desert hothouse and National Botanic Garden in Windhoek. This will help to educate and interest the public in the

fascinating flora of this very special piece of our planet.

And, last but not least, talking of costs – conventional rehabilitation is expensive. Just picture the enormous irrigation system which would be required to replant an area the size of several football fields with pasture. In this arid, wind-swept environment using and nurturing naturally occurring processes will provide more successful, suitable and invariably cheaper methods.

The solution is likely to lie in the careful design and planning of appropriate, on-going restoration measures, implemented while projects are running. Strategies in restoration ecology revolve around providing the first steps and then letting nature take its own course. To call in bulldozers for large-scale landscaping and clean-up operations afterwards will always be much more expensive.

In the forefront of putting the international Convention on Biological Diversity into practice, the new project in Namibia has the potential to set an example of balancing conservation and development needs and may provide a role model for other countries with similar environmental problems.



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