

SUMMARY REPORT WINE AND CONSERVATION: The Impact of Viticulture Expansion in the Cape Floristic Region

A report commissioned by Conservation International



Authors:

Sue Matthews, Catherine Hughes, Dean Fairbanks and Kristal Maze

The Botanical Society of South Africa compiled this report in partnership with the Percy FitzPatrick Institute of African Ornithology and the Chief Directorate: Agriculture, Western Cape (Elsenburg).



The Botanical Society
of South Africa



Percy Fitzpatrick
Institute, Centre for
African Conservation
Biology, University of
Cape Town

Phase 1 Summary

South Africa is the world's seventh largest producer of wine, with an output in 2000 of 837 million litres. About 90 per cent of this production occurs within the Cape Floristic Region, which is internationally recognised as a biodiversity hotspot. A boom in wine exports to foreign countries during the last decade has created concern within the conservation sector that some of the region's most vulnerable natural habitat might be targeted for vineyard expansion. Agriculture and forestry have already transformed more than 30 per cent of natural habitat in the region's lowland areas, much of it rare renosterveld vegetation.

The Wine and Conservation Project was therefore initiated to assess the potential impact of the wine industry's growth on the biodiversity of the Cape Floristic Region. The project consists of two phases, and this document summarises the report written at the end of Phase 1. Phase 1 comprised a desk-top study of wine industry trends to identify factors driving vineyard expansion, a GIS-modeling exercise to quantify the extent of rare habitat that might be threatened by such expansion, the development of a database of stakeholders in the wine and conservation sectors, and the recommendation of a number of options for encouraging conservation-friendly practices in the wine industry. These recommendations will be considered for implementation in Phase 2 of the Wine and Conservation Project.

The Cape Floristic Region

South Africa's Cape Floristic Region is internationally recognised for its rich biodiversity. Confined to the south-western tip of the African continent, it is the smallest of the world's six floral kingdoms, but has the highest concentration of plant species – approximately 9 000 in a 90 000 km² area. Of these species, about 70 per cent are endemic, being unique to the region.

The high species diversity and endemism is attributed mostly to the Fynbos biome, which comprises two key vegetation groups: fynbos and renosterveld. Fynbos is a fire-adapted shrubland that grows on nutrient-poor soils in winter rainfall areas, and comprises more than 7 000 species. Renosterveld, which grows on fertile, fine-grained clays and silts in moist lowland regions, contributes only 1 000 species. However,

approximately one third of the plants that are unique to the Cape Floristic Region are renosterveld species, and 188 of these endemic taxa are considered threatened.

This is because the rich, moist soils of renosterveld habitat are well suited to agriculture, so large areas have been converted to wheatfields, vineyards and grazing pastures. Urban development and invasive alien vegetation have also transformed the habitat, with the result that renosterveld has been reduced to less than four per cent of its original extent and is now almost entirely limited to isolated remnants on steep slopes and rocky outcrops. Most of these scattered fragments are under private ownership, as the existing reserves in the Cape Floristic Region mainly protect mountainous catchment areas, rather than the more accessible lowlands. Indeed, less than one per cent of the remaining area of renosterveld falls within a protected area. It is therefore apparent that renosterveld and other lowland habitats are the most urgent priorities for conservation action in the Cape Floristic Region.

The wine industry

The wine industry in South Africa dates back to 1655, when Jan van Riebeeck, the first governor of the Cape, planted a vineyard in the company gardens of the Dutch East India Company. With its Mediterranean climate of warm, dry summers and good winter rainfall, the region proved to be ideal for growing grapes, and during the last century the area under vine expanded rapidly. Today South Africa is the world's seventh largest producer of wine, with an output in 2000 of 837 million litres. About 90 per cent of this production occurs within the Western Cape, where the wine industry contributes approximately 10 per cent of the province's Gross Geographic Product and indirectly supports 345 000 people.

For most of the last century, South Africa's wine industry was under the strict regulatory control of the KWV – the *Koöperatiewe Wijnbouwers Vereniging* [Co-operative Winefarmers Association]. The KWV was initially established in 1916 as a co-operative of wine and brandy farmers, with a mandate to regulate prices of grapes and wine by controlling their supply. The KWV was granted increasing powers and ultimately statutory control over the wine industry through the Wine and Spirits Control Acts of 1924 and 1940. Membership became compulsory for all wine and brandy farmers, who were obliged to sell their products through the KWV for a fixed minimum price.

This guaranteed market acted as an incentive to plough up and plant under vine vast tracts of land, especially in river valleys where water was plentiful for irrigation. The sandy and nutrient-rich alluvial soils here were not conducive to the production of high-quality grapes, but the focus was on maximising output. Farmers were encouraged to plant high-yield varieties, which were primarily used for distilling brandy. As a result, in apartheid South Africa the domestic market was typically flooded with cheap, mediocre wine.

However, the run-up to the election of a new, democratic government for South Africa in 1994 heralded a new era for the local wine industry. Trade sanctions imposed by foreign countries during the apartheid era were lifted in 1992, and the new government introduced a range of policies and legislation that promoted the liberalisation of international trade and agricultural marketing. Wineries began marketing their wines independently, and in 1997 the KWV's last vestiges of control were removed when it became a group of companies. International demand for South African wines soared as "Mandela Magic" swept the world.

Exports increased rapidly in response, from only 20 million litres in 1992 to 140 million litres in 2000, and today account for about 25 per cent of total production. Almost half of all exported wine is destined for the United Kingdom, with the Netherlands, Scandinavia and Germany being the other most important markets.

The desk-top study of wine industry trends indicated that this growth in export opportunities probably acted as a powerful driver of vineyard expansion, as the area under vine increased from 92 038 hectares in 1990 to 105 566 hectares in 2000. However, interviews with agricultural extension officers and an analysis of plough permit applications processed by the Provincial Department of Agriculture between 1990 and 2001 revealed that much of the expansion was on land previously used for other forms of agriculture, such as wheatfields or grazing pastures, rather than on virgin ground.

The increased export opportunities also had a marked influence on the structure of output of the wine industry. South African vineyards have historically been dominated by white varieties, but increased global demand for red wine has resulted in extensive

replanting to red varieties. Furthermore, in response to increasingly sophisticated consumer tastes for high-quality wines, winegrowers have started focussing on noble cultivars, and have expanded their vineyards into the foothills, where soils and micro-climates are more suitable for these varieties.

It is therefore likely that virgin land above existing vineyards will increasingly be under pressure of encroachment. Increased wine-farming activity is also occurring at the edges of the Cape Winelands, with the newly developed Overberg district at the south-eastern extreme considered to be the most likely area for vineyard expansion.

Despite these trends, strong competition with other wine-producing countries means that the future of the South African wine industry is uncertain, and demands a level of caution that does not encourage large-scale vineyard expansion. Moreover, the legislative reform process undertaken by the post-apartheid government has resulted in stronger legislation governing the cultivation of virgin ground than in the past. Applications for the cultivation of new agricultural fields must be processed by six institutions responsible for implementing the applicable legislation in the Western Cape, namely:

- Western Cape Department of Environmental and Cultural Affairs and Sport (DECAS)
- Department of Water Affairs and Forestry (DWAF)
- National Department of Agriculture (NDA)
- Provincial Department of Agriculture (PDA)
- Western Cape Nature Conservation Board (WCNCB)
- South African Heritage Resources Agency (SAHRA)

Each of these institutions has its own requirements for processing applications according to its mandate. As a result, the process has to date been confusing and slow, prompting some incidents of illegal ploughing. However, a new procedure aimed at streamlining the application and review process is currently undergoing a trial period, and it is anticipated that the new legislative framework will lend a degree of much-needed protection to the Cape Floristic Region's biodiversity.

Modeling study

In addition to the desk-top study, a GIS-based modeling approach was used to predict areas of vineyard expansion, and quantify the extent of rare habitat that would be threatened by such expansion. Information on the location of existing wine cellars and vineyards, together with their environmental profile, was used to model and map areas potentially suitable for vineyard expansion. These were then overlaid with the most vulnerable habitats of the Cape Floristic Region, as identified by the CAPE programme.

The CAPE programme, initiated in 1998 as a strategic planning exercise and now in the implementation phase, aims to ensure the protection of biodiversity in the Cape Floristic Region. Since species data were not considered a practical basis for conservation planning - given the huge diversity of species and the lack of accurate information on their distribution - a system of land classes known as Broad Habitat Units (BHUs) were identified on the basis of physical features and vegetation patterns. These BHUs, which serve as surrogates for plant biodiversity, were assessed in terms of the percentage of remaining area that is required in order to meet conservation targets. For the lowland BHUs, so little habitat remains that nearly all remaining habitat is required in some cases.

In the current study, the number of hectares of each BHU suitable for wine expansion in the various wine districts, and the percentage probability for conversion of BHUs to vineyards, was deduced. Habitats with the highest conservation priority (80-100% required to meet conservation targets) were then overlaid with areas identified by the wine expansion model as being more than 60 per cent suitable for the cultivation of wine grapes.

The model outputs indicated that Breede Fynbos/Renosterveld Mosaic is the BHU likely to require the most urgent conservation attention. An estimated 77.7 per cent of its total area was predicted to be highly suited to wine cultivation. Should expansion of vineyards occur on all suitable land, the fragments of remaining natural vegetation would be reduced to such an extent that the BHU would be virtually eradicated. A mitigating factor, however, is that most of affected area falls within the Worcester wine-growing region, where cultivation is predominantly for white wines, for which there is a worldwide oversupply. It is therefore likely that, prior to any large-scale encroachment onto virgin

ground, many of the vineyards on the Breede River floodplain would be uprooted and replanted with red varieties that are well suited to high temperatures. Nevertheless, the valley slopes may well be targeted for varieties requiring cooler climates and superior soils, so the vegetation mosaic there should be considered highly vulnerable.

Other BHUs were identified by the models as being less vulnerable to conversion to vineyards, but nevertheless in need of conservation attention because of their high conservation priority. Boland Coast Renosterveld, for example, is already highly transformed and fragmented, but 27 per cent of its total area is suitable for wine cultivation in the Malmesbury, Paarl and Stellenbosch regions, which potentially poses an obstacle to conservation. Similarly, Overberg Coast Renosterveld has a maximum conservation priority rating, so the fact that 7 per cent of remaining vegetation is highly suitable for wine cultivation may impact heavily on conservation efforts. An estimated 1213 hectares of Swartland Coast Renosterveld is threatened to a degree in the Malmesbury region. Both Ashton Inland Renosterveld and Waveren-Bokkeveld Inland Renosterveld, although having comparatively low conservation priority ratings, warrant conservation attention because more than 10 per cent of remaining vegetation is vulnerable to conversion. The Perdeberg Fynbos/Renosterveld Mosaic, which is one of the smallest BHUs, is also threatened to some degree by potential vineyard expansion.

Clearly, then, the modeling studies reinforced the concern that renosterveld habitat is most at risk from vineyard expansion.

Stakeholders database

The identification of stakeholders in the wine and conservation sectors was a key objective of Phase 1 of this study, so that proactive interventions to prevent future biodiversity loss could be directed at appropriate target groups. A database was therefore developed, with stakeholders divided into the following 10 groups:

1. Government departments that regulate the cultivation of new land
2. Wine industry regulators
3. Wine growers and producers
4. Wine growers' and producers' association
5. Wine merchants

6. Service organisations to the wine industry
7. Sources of information and expertise
8. Researchers, including those with wine industry and conservation related projects
9. Conservation groups, including government conservation organisations, civil society conservation groups and conservancies
10. Other government agencies with interest in or influence over environmental policy.

Recommendations

A key objective of Phase 1 of the Wine and Conservation Project was to make recommendations on proactive interventions aimed at reducing negative impacts of the wine industry on biodiversity conservation. It is envisaged that these actions would help raise awareness among wine industry stakeholders and wine consumers of the importance of the Cape Floristic Region's biodiversity. Several opportunities for intervention were identified, including:

- Communicating the study findings to wine industry stakeholders and regulatory authorities, highlighting the areas where potential conflict could arise and emphasizing how this could be proactively avoided. An awareness campaign should be initiated to promote the important role wine farms could play in conserving unique biodiversity, both by protecting priority habitat from destruction and by controlling invasive alien vegetation, fire, erosion, and pesticide and fertilizer run-off. Increased effort should also be devoted to educating wine farmers about their legal obligations concerning the cultivation of new agricultural land.
- Exploring opportunities for offering economic incentives, such as 'soft loans' and 'tax breaks', to farmers incorporating conservation principles into wine production, using experience gained from the first pilot project and from existing initiatives investigating conservation incentive schemes.
- Investigating the feasibility of introducing a 'conservation wine' ecolabel, by evaluating mechanisms for implementation (such as the potential for including it

in the existing IPW scheme), and assessing the willingness of co-operatives to pay a premium for grapes from conservation-friendly member farms.

- Amending the Integrated Production of Wine (IPW) certification scheme to include biodiversity criteria. The existing growers' guidelines could be strengthened by providing a map of sensitive habitats that should not be transformed, as well as recommendations on appropriate management practices for remnant habitat. The IPW Scheme currently relies almost entirely on self-monitoring, but scoring in terms of biodiversity criteria should ideally be audited by a conservation agency should a separate ecolabel be introduced.
- Demonstrating the benefits of conservation to the wine industry through two pilot projects. The first project should be located in a traditional wine-growing area producing high-quality red wine, and involve several adjacent wine farms that incorporate remnants of a priority habitat. The key objective of the project would be to act as a demonstration model for co-operative management of priority habitat by conservation agencies and farmers according to the conservancy concept. The second pilot project should be located in a new wine-growing region, such as the Overberg or West Coast, and on a relatively new farm. The key objective would be to demonstrate the avoidance of ploughing virgin land by guiding vineyard development towards non-sensitive or already transformed areas.
- Encouraging regulatory authorities to adopt a policy of prohibiting further ploughing of virgin lands in priority habitats, and promoting the conservation of remnant priority habitats through their extension services. In addition, farming unions and other key roleplayers in the wine industry could be encouraged to adopt a policy of avoiding virgin lands in sensitive habitats and instead siting vineyards preferentially in old fields.
- Conducting more detailed research and monitoring in areas identified as being the most likely candidates for vineyard expansion, particularly the sandveld area of the West Coast, the Agulhas Plain region of the Overberg, and the Breede River valley.

ACKNOWLEDGEMENTS

The authors would like to thank Francois Knight of Agri Informatics for providing background information on the wine industry and advice on GIS modelling of vineyard expansion.

Catherine Hughes is grateful for the supervision and assistance provided by Dean Fairbanks, Jane Turpie and Verna Love. Special thanks go to Johan Truter at VinPro, Yvette van der Merwe at SAWIS and Mike Wallace at Elsenburg for their expert advice and help with data collection. The Agricultural Extension Officers quoted in the report are also thanked for their valuable input.

Susanne Vetter is thanked for compiling the stakeholders database, and the interest shown by stakeholders who responded to the questionnaire is much appreciated.

Comments on earlier drafts of this report by Mark Botha of the Botanical Society of South Africa, and Sarah Frazee and Eduard Niesten of Conservation International, are also gratefully acknowledged.

Lastly, the authors are most grateful for the financial support provided by CELB and CABS of Conservation International, which made this project possible.