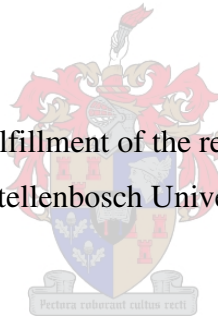


BIODIVERSITY AND THE SOUTH AFRICAN WINE SECTOR
A SUCCESSFUL BLEND?

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at Stellenbosch University



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AUTHOR'S DECLARATION

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ABSTRACT

The acceleration of biodiversity loss is understood to threaten the ecosystems upon which life on earth depends. Existing conservation approaches have proved insufficient to stem global biodiversity losses. Mounting evidence indicates that responsible biodiversity conservation requires an integration of ecology with economics. Accordingly, contemporary conservation interventions incorporate a concept that ecosystems and biodiversity can be used and also conserved. In South Africa, such interventions can be appropriately applied in the Cape Floristic Region (CFR), an area containing severely endangered biodiversity where land use and conservation goals rarely mesh. More than 80% of land in the CFR is privately owned, with large tracts transformed for viticulture. Conservation challenges thus include the reconciliation of wine production needs with biodiversity protection necessities.

This thesis comprises a case study of the Biodiversity and Wine Initiative, an organisation that simultaneously promotes biodiversity conservation in the South African wine sector, by a process of mainstreaming within an viticultural context. The overall study aim was to improve understanding of the BWI as a mainstreaming initiative. Specifically, the area of inquiry is an investigation into how effectively the BWI has protected biodiversity in the CFR between 2005 and 2008. Individual aims were to investigate reductions in threat to biodiversity in the CFR; to assess farmer adoption levels of BWI strategy; and to formulate a sustainability appraisal of the Biodiversity and Wine Initiative. A strategic triangulation of methods was employed. Stakeholder interviews were conducted to probe adoption levels and opinions of BWI strategy. Case studies of two BWI champion estates provided data on best practice. Towards a critical appraisal of sustainability, an assessment was made of the BWI as a functioning mainstreaming model, which included case studies of two model farms.

A number of opportunities and constraints relevant to the effective functioning of the BWI were identified. These aspects included the application of appropriate conservation

incentives; market failures to internalise the costs and benefits of biodiversity; stakeholder confusion about the concept of biodiversity and inadequate funding. The most problematic area identified was effective communication and information channels. Communication is highlighted because the study indicated that a pivotal strength of the BWI is a strong capacity to enable and facilitate partnerships between divergent interest groups – which needs well integrated communications.

It is considered unlikely that the BWI will continue to operate in exactly the present format. Amongst other outcomes, results from the study pointed towards potential for the BWI to build a knowledge exchange forum. Another possibility might lie in leveraging the position as a world-first initiative to provide a bridging role between international scientific research and local policy, decision making and stakeholder interests. Overall results indicated that the BWI is likely to be sustainable, with future influence in wine production and conservation enhanced by international trends towards ‘green’ products.

OPSOMMING

Daar word aanvaar dat die versnelling in die verlies van biodiversiteit die ekosisteme bedreig waarop die aarde staatmaak. Bestaande benaderings tot bewaring is as ontoereikend bewys om verliese in biodiversiteit te verhoed. Groeiende getuienis dui daarop dat die volhoubare bewaring van biodiversiteit die integrasie van ekologie en ekonomie benodig. Daarvolgens bevat hedendaagse bewaringsintervensies die idee dat ekosisteme en biodiversiteit gebruik en ook bewaar kan word. In Suid-Afrika is sulke multidimensionele intervensies van toepassing op die Kaapse Floraryk (KFR), 'n streek waar die biodiversiteit erg bedreig word en waar grondgebruik en bewaringsdoelwitte selde met mekaar skakel. Meer as 80% van die grondgebied in die KFR is in privaatbesit, met groot gedeeltes omskep vir wynbou. Die uitdagings van bewaring sluit dus in die versoening van die eise van wynproduksie en die bewaring van biodiversiteit.

Hierdie verhandeling behels 'n gevallestudie van die Biodiversiteit en Wyn Inisiatief (BWI), wat deur middel van 'n proses van hoofstroming die bewaring van biodiversiteit en sakeontwikkeling in die Suid-Afrikaanse wynbousektor bevorder. Die algehele doelwit van die studie was om begrip van die BWI as 'n hoofstromingsinisiatief te bevorder. Die gebied van ondersoek is veral hoe doeltreffend die BWI biodiversiteit in die KFR bewaar het. Spesifieke doelwitte was om die afname in bedreigings van die biodiversiteit in die KFR te ondersoek; om boere se vlakke van aanvaarding van BWI strategieë te bepaal; om 'n waardebeoordeling van die volhoubaarheid van die BWI te doen. 'n Driedelige strategie van metodes is gebruik. Onderhoude met insethouers is gevoer om die vlak van aanvaarding en menings oor BWI strategie te bepaal. Gevallestudies van twee BWI voorstander-landgoedere is gedoen om inligting oor goeie praktyk te verkry. Ten einde 'n kritiese beoordeling van volhoubaarheid te kan maak, is 'n waardebeoordeling gedoen van die BWI as 'n werkende hoofstromingsmodel.

'n Aantal geleenthede en beperkings wat die doeltreffende funksionering van die BWI aanbetref, is geïdentifiseer. Dit sluit in die toepassing van geskikte bewaringsdryfvere;

dat mislukkinge op die markte die koste en voordele van biodiversiteit internaliseer; insethouders se onsekerheid oor die konsep van biodiversiteit; onvoldoende befondsing. Die vernaamste probleemarea wat geïdentifiseer is, was die oprigting van kommunikasiekanale. Die kommunikasieprobleem word uitgelig want die studie dui daarop dat 'n kern-sterkpunt van die BWI die vermoë is om vennootskappe tussen uiteenlopende belangegroepes te fasiliteer – en dit steun op goed-geïntegreerde kommunikasie.

Dit is onwaarskynlik dat die BWI onbepaald sal voortgaan om op dieselfde wyse bedryf te word. As deel van die uitkomst wys die resultate van die ondersoek op die potensiaal van die BWI om 'n forum vir die uitruil van kennis te vestig. 'n Ander moontlikheid is dat hierdie posisie as 'n wêreldleier op hierdie gebied gebruik kan word om 'n oorbruggingsrol te speel tussen internasionale wetenskapsnavorsing en plaaslike beleid, besluitneming en belang van insethouders. Die algehele resultate dui daarop dat die BWI waarskynlik volhoubaar is, met toekomstige invloed op wynproduksie en bewaring, wat sterk steun op internasionale tendense tot 'groen' produkte.

KEYWORDS

Biodiversity and Wine Initiative

Biodiversity conservation

Biodiversity hotspots

Agricultural biodiversity

Mainstreaming

Ecological economics

Cape Floristic Region

Sustainable viticulture

Farmer incentives

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*The road to wisdom? Well, it's plain
and simple to express: Err
and err and err
again, but less
and less
and
less.*

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Educational opportunities denied were but minor casualties in shattered post-war landscapes of lives lost, damaged and irrevocably changed.

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ABBREVIATIONS

BOTSOC	Botanical Society of South Africa
BWI	Biodiversity and Wine Initiative
CAPE	Conservation Action for People and the Environment
CCIF	Conservation and community investment
CBD	Commission on Biodiversity
CEPF	Critical Ecosystems Partnership Fund
CI	Conservation International
GBA	Global Biodiversity Assessment
GBO	Global Biodiversity Outlook
GEF	Global Environmental Facility
ICARDA	International Centre for Agricultural Research in Dry Areas
ICTS	Internet Technology and Services
IPW	Integrated Production of Wine
IUCN	World Conservation Union
MEA	Millennium Ecosystem Assessment
OECD	Organisation for Economic Co-operation and Development
SKEP	Succulent Karoo Ecosystem Programme
SANBI	South African National Biodiversity Institute
SAWIC	South African Wine Council
SAWIS	South African Wine Information and Systems
TMF	Table Mountain Foundation
UNEP	United Nations Environmental Programme
UNDP	United Nations Development Programme
WESSA	Wildlife and Environment Society of South Africa
WINETECH	Wine industry network of expertise and technology
WOSA	Wines of South Africa
WSSD	World Summit on Sustainable Development
WWF	Worldwide Fund for Nature

CHAPTER 1 STUDY AIMS AND RESEARCH PROCEDURES

Chapter One provides a background to the research field of biodiversity conservation and is an introduction to the Biodiversity and Wine Initiative, the subject of this study. Problem formulation is described and a rationale is offered for a study of mainstreaming as a conservation solution¹. Aims and objectives are defined and descriptions are provided of the qualitative research design, methodology and methodological tools employed. An outline of the thesis structure comprises the final section of this chapter.

1.1 INTRODUCTION

Biological diversity, or biodiversity, is most often understood to be the variability of all living organisms and the complex ecological systems of which they are a part (WCED, 1987). Biodiversity encompasses the species on earth with their unique evolutionary histories, as well as genetic variations within and between populations of species.

Biodiversity also incorporates the distribution of species across ecosystems comprising specific habitats, broad landscapes and entire continents, plus oceans (Brock & Xepapadeas, 2003; MEA, 2005). Despite their value (Costanza *et al.*, 1997) and importance, ecosystems are undergoing human modifications in extent and composition at an unprecedented rate. It has been estimated that modern extinction rates have grown from 100 to 1,000 times faster than historic averages (Daily, 2003; McNeely, 2008) and the world is experiencing what is described as the sixth mass extinction period since the beginning of life on earth (Wilson, 1992; Watson *et al.*, 1995; Novacek & Cleland, 2001). The state of knowledge regarding human impacts upon ecosystem functioning and services provision (MEA, 2005) is incomplete; however there is wide acceptance that human activities have caused changes in both the living and non living components of

¹ Mainstreaming is a potential means by which biodiversity principles can be actively integrated into for-profit land-use systems where the primary emphasis is not conservation (Huntley & Petersen, 2005).

ecosystems (Daily & Ehrlich, 1995; Ayensu *et al.*, 1999; Kinzig *et al.*, 2006). Further, the Millennium Ecosystem Assessment (MEA, 2005) has found that pressures upon natural resources have continued to increase into the twenty first century. Specifically, there has been large scale conversion of land by humans to make way for agricultural expansion. As the world's population expands, there are knock-on effects upon requirements for land transformation, also increasing demands for renewable resources to counter climate change (Daily, 2001; Scherr & McNeely, 2006). Thus, agricultural expansion and biodiversity protection are increasingly propelled into competition.

The lowlands of the Cape Floristic Region (CFR) manifest such competition where the same geomorphological and climactic conditions that support the threatened fynbos biome are simultaneously ideal for viticulture. Wine estates continue to expand in this region (Sandwith *et al.*, 2006), although Cowling *et al.* (2003b) and Fairbanks *et al.* (2004) amongst others, have found that viticultural transformation of the Cape Floristic Region (CFR) is unsustainable for the very ecosystems and biodiversity that underpin the South African wine sector.

A reduction in negative impacts from viticultural transformation could be achieved through instituting environmentally responsible wine production practices and by replacing tracts of monoculture with mosaic landscapes of cultivated land and natural capital which retain similar benefits of untransformed landscapes (Donaldson, 2002; Gelderblom *et al.*, 2003; Jackson *et al.*, 2005). Spearheading a move towards these goals is the relatively new Biodiversity and Wine Initiative (BWI). Self-described as: *a pioneering partnership between the wine sector and the conservation sector*, the Biodiversity and Wine Initiative aims to reduce loss of threatened natural habitat through environmentally unsustainable viticultural practices and to promote sustainable wine production in the CFR (Tony Hansen pers. comm. 28 June 2006; BWI print brochure; BWI website).

A main strategy of the Biodiversity and Wine Initiative (BWI) is to identify and enlist members or champions. Members pledge to implement biodiversity guidelines that

conserve critical on-farm ecosystems and they are encouraged to incorporate a biodiversity story with their winery sales and tourism enterprises. Champions have more stringent conservation requirements in return for higher public status and improved product image. Thus, land and production management practices provide scope for direct action upon natural habitat protection and restoration framed by a broader context of ecological and economic management (Meurk, 2007). The BWI occupies an unusual nexus (du Toit, *et al.*, 2004; Loreau *et al.*, 2006) of wine farmers, wine producers and marketers, and conservation bodies, at a frontier of developmental and environmental advances in South Africa. No study of this initiative has yet been made and this thesis is intended, at least in part, to fill the gap.

1.2 STUDY BACKGROUND

As humans are connected to their natural environments by complex, interdependent actions, so are agriculture, biodiversity and ecosystems finely meshed together by interwoven impacts and challenges (CBD, 1992; Jones & Pattayanak, 2006). Ongoing dynamic changes have removed humans from survival achieved exclusively by the direct use of natural resources (Jones & Pattayanak, 2006), even in agricultural sectors. Most societal development is now based upon the use of diverse resources for human economic growth and prosperity. Conversely, current evidence shows that many of the earth's natural resource bases are increasingly overwhelmed by adverse impacts of expanding human economies, to the point where human wellbeing is threatened (WCED, 1987; CBD, 1992; MEA, 2005). In this regard there has been a growing realisation that biodiversity loss cannot be addressed as a discrete environmental issue (Salafsky *et al.*, 2002; Simpson, 2004; McNeely, 2005; Huntley & Petersen, 2005; Scherr & McNeely, 2006).

Underscoring an integrated approach to biodiversity conservation, the discursive language of conservation has changed (Dirzo & Loreau, 2005). Protecting biodiversity is no longer about ethics and aesthetics - conservation discourse now includes commodities, consumers and culture (Ten Kate & Laird, 2000; Jenkins *et al.*, 2004; Nicholls, 2004).

Yet, despite contemporary trends towards the integration of business with biodiversity conservation, no single approach has yet proved to be wholly effective (Brock & Xepapadeas, 2003; Balmford & Cowling, 2006). Specifically, there are contentions that inadequate attention has been given to the development of practical instruments to achieve sustainable win-win objectives for biodiversity conservation and business (Fromm, 2000; du Toit *et al.*, 2004; Carpenter *et al.*, 2006; Petersen *et al.*, 2008). Evidence is increasing that most individuals and communities will conserve a species only if they directly benefit from doing so (Metrick & Weitzmann, 1998; Ferraro & Simpson, 2004; Bawa, 2006; Cumming, 2007; Amri, 2008). Hence insufficient societal and institutional acknowledgement of the economic value of biodiversity will distort economic incentives to conserve, thus compounding biodiversity losses (Bhattharai & Hammig, 2001; McNeely *et al.*, 2005). In regard to practical conservation solutions in the CFR, a pertinent question is: How is biodiversity conservation to be sustainably integrated with human scales of economy?

In overcoming valuation problems for biodiversity in South Africa, there exists an urgent need for synergistic conservation approaches (Turpie *et al.*, 1996; Balmford & Cowling, 2006; Frentz, 2006; Cowling & Wilhelm-Rechmann, 2007; Cumming, 2007) thus this study is grounded in theory from Ecological Economics (Common & Stagl, 2005). Economics focuses on human uses and allocations of resources. Reflexively, ecology focuses on the use of resources within biodiversity and ecosystems, including human beings. Viticulture provides a good illustration of an ecology-economics nexus with opportunities and challenges for both sectors.

Amongst cross-sectoral challenges to overcome, Bhattharai & Hammig (2001) explain that market failures are paramount. Market failures destructive to conservation efforts arise if existing financial markets fail to adequately value costs and benefits of goods or services delivered by natural ecosystems. In the case of biodiversity, market failures frequently occur because beneficiaries of biodiversity conservation efforts are not isolated, or possibly not yet even alive, and so cannot be identified, much less made to pay for the benefits they derive (Ferraro & Kiss, 2002; Adams & Hulme, 2001). Costs,

on the other hand, are paid directly by the agency expected to bear responsibility for a conservation intervention (Bawa, 2006). Thus, the public acquiring the benefits of conservation and the agency paying the costs are often not the same (Bhattharai & Hammig, 2001). In agricultural terms, conservation initiatives tend to emphasise the benefits of protecting species, habitats, ecosystems, and ultimately the planet (Mittermeier *et al.*, 2005); whilst the costs incurred (Swart, 2003; Redford, 2005) by individual farmers in setting up and maintaining conservation measures tend to be ignored (Ferraro & Kiss, 2002). Understandably then on the basis of cost-benefit analyses alone, a wine farmer's best policy is to do nothing. Such a state would constitute a type of market failure situation. Lochner *et al.* (2003) therefore contend that aligning benefits of biodiversity conservation with costs thereof is vital, especially in managed ecosystems where the primary emphasis is on production - such as ecosystems that exist in land transformed for the practice of viticulture (Antle & Capalbo, 2002; Gemmill & Varela, 2004; Ferraro & Simpson, 2004).

In addition to problems with cost-benefit alignments, inadequate measurements of conservation success can negatively impact on-farm conservation efforts. Conservation initiatives often measure success by biological indicators alone, whereas analytical and empirical research indicates that other measurements should be included. The more divergent the social value (cost or benefit) and the private value of conservation, the more likely individual farmers are to use natural resources unsustainably (Jones & Pattanayak, 2006). Therefore, because individual decisions for using biodiversity may be comprehensible from individual perspectives but be sub-optimal for wider communities, stakeholders' economic concerns should be considered in plans to reduce natural resource degradation in agriculture (Cobb *et al.*, 1999; Adler, 2002; Goeschl & Swanson, 2002).

Exacerbating market failures and inadequate systems of measurement, institutional inadequacies are relevant to biodiversity loss in South Africa. According to researcher Bob Scholes, of the Council for Scientific and Industrial Research (CSIR), South Africa's biodiversity stock as measured by land surface transformation, has dropped by 20 per cent in the past century and continues to decline, whilst the economy has expanded by

several orders of magnitude over the same period (Scholes & Biggs, 2005). However there is a stark contrast between rampant biodiversity loss evident in the Cape Floristic Region and inadequate governmental and institutional counteractions. Cowling *et al.* (2003b) indicate that decision makers need to mobilise additional resources. In this regard, incentive-based strategies for conserving biodiversity allow for direct incorporation of much needed, but under-utilised, private sector resources.

Towards harnessing the private sector to overcome market failures, measurement shortcomings and institutional inadequacies amongst other challenges, the Biodiversity and Wine Initiative works to institute biodiversity mainstreaming practices in the wine sector. The practice of mainstreaming protects both human wellbeing and natural resources by promoting the sustainable use of natural resources to stimulate local economic development (Huntley & Petersen, 2005). Theoretically, environmentally degrading human behaviours are reduced; pressure on the immediate natural environment is relieved (Jones & Pattanayak, 2006); and human advancement thereby becomes more secure (Daily, 2003). Concurring, Barbier, *et al.* (1995) indicate that prevailing trends of economic incentives are pivotal factors influencing societal use of biodiversity resources. Current global conservation impetus is towards reorienting the economic incentives that drive private investment, production, and consumption, into making biodiversity conservation a viable business proposition in its own right (EU Lisbon, 2007; Pearce, 2007).

Designing solutions to biodiversity loss in South Africa has been a daunting task in no small part due to the complexity of the causes of biodiversity loss and to the lack of financial and political capacity needed to address these causes (Wood *et al.*, 2000; Wynberg, 2002; Cowling & Pressey, 2003; Swiderska, 2007). Towards redressing a lack of practical conservation instruments, the Global Environment Facility (GEF biodiversity strategy) has found that effective biodiversity conservation requires an integrated approach incorporating economic incentives. However, until the formation of the Biodiversity and Wine Initiative, there were no formal conservation incentives for wine producers in the Cape Floristic Region (Sandwith *et al.*, 2005). Such paucity of

incentivisation has been attributed in part to the problem that South African conservation is commonly considered to be public sector-driven, so conservation on private land is often overlooked at all levels (Wynberg, 2002). Nevertheless, with more than 80 per cent of the Cape Floristic Region's land area under private management where the wine sector is strongly represented, conservation of endangered indigenous and endemic vegetation on tracts of land within wine-producing estates in the Cape Floristic Region (CFR) might reasonably be considered a responsibility of the wine sector (Sandwith *et al.*, 2005).

Business and biodiversity projects overseas have demonstrated that mainstreaming can bring economic benefits in terms of job creation; tourist revenue; investment in biodiversity projects; and adding value to businesses themselves (Meurk, 2007). Global industry assets held in global funds that feature a screen of some type of social responsibility are expanding (Social Investment Forum Report, 2003) and biodiversity is increasingly included in these ethical investment criteria. In South Africa, possibly because of smaller company size, turnover and margins, interest in biodiversity integration has been slower to get off the ground except with those specifically trading on environmental associations. Despite being the only such initiative in the world of wine production, the BWI can be generically classified as one of a fast emerging breed of global mainstreaming providers of profit with biodiversity conservation as a primary focus (Ashley & Haysom, 2006; Frentz, 2006).

1.3 PROBLEM FORMULATION

In the context of the foregoing discussion, the main research question was: How sustainable is the BWI as a mainstreaming initiative? The central concern is that past approaches to conservation in the CFR have not yet proved sufficient to stem biodiversity loss (Fairbanks *et al.*, 2004). Problem formulation began with a realisation of the need to improve biodiversity conservation options in the Cape Floristic Region for land transformed by viticulture.

The literature indicates strong contentions that conservation difficulties occur when institutional conservation is inadequate; when public sector intervention does not include

privately owned land and when conservation benefits are not appropriately measured, nor captured by conventional market-based economic activity (Gowdy, 1997; Kiss, 2004; Jenkins, 2004). Furthermore, the limited scope of purely ecology based conservation strategies is that economic strengths cannot be harnessed to full effect. Such analyses indicate that in the case of on-farm conservation in Cape Floristic Region, it is important to consider the incentives and constraints faced by wine farmers who control large tracts of endangered biodiversity and ecosystems.

Viljoen (2008) found that it is possible to adapt use of a Pressure-State-Response framework to identify indicators, when employed in conjunction with communities in a participative manner. The Pressure-State-Response model illustrates the linkage between human activities and the environment. It describes the connections between pressures brought by human activities on the environment, the environmental states that occur, and the responses of society to those states. A continuous feedback results between both the environment and humans and the effects of the human elements on the decision-making processes. In this respect, the Biodiversity and Wine Initiative could be said to represent a model with potential to provide lasting conservation solutions.

Thus, the research question was formulated with consideration of the following points:

- The BWI has facilitated effective conservation interventions in the CFR
- There is potential to lead and inform global best-practice in mainstreaming
- Sustainability indicators are few and no study of the BWI has yet been made.

1.4 AIMS AND OBJECTIVES

The overarching aim of the study was to achieve an improved understanding of the sustainability of the Biodiversity and Wine Initiative. The fulfilment of this aim has provided a platform for a perspective on mainstreaming biodiversity conservation via the catalytic functions of the Biodiversity and Wine Initiative. The main outcome is a critical appraisal of the BWI, with particular reference to sustainability. Further specific aims of the study were:

- To provide a robust literature-based background to the integration of business and biodiversity conservation principles in the wine sector.
- To provide a critical appraisal of the BWI as a mainstreaming initiative.

Determining sustainability can be a lengthy process so to achieve the aims of the study maximum efficiency, it was decided to make a case study and to identify indicators to assess mainstreaming outcomes of the Biodiversity and Wine Initiative according to a pre-set model (Cowling, 2005). For this purpose, the following indicators were used:

A: Reductions in levels of threat to biodiversity through BWI efforts

B: Level of adoption of BWI principles:

Attitudes towards the BWI

Identification of resistance factors

C: Evidence of sector-based mainstreaming outcomes

These indicators are from a generic toolkit utilised by the Global Environment Facility at project level² adapted to maximise accurate evaluations of the efficiency and effectiveness of the BWI in attaining higher level mainstreaming objectives, whilst assessing the impact of BWI conservation activities on farmers and other stakeholders. The indicators were also employed to ascertain changes to biodiversity status in the CFR and cumulatively to enable an overall assessment of mainstreaming outcomes.

Further, the study was guided by these operational objectives:

- Provision of a broad review of conservation and mainstreaming context for BWI
- Development of a set of criteria for assessing sustainability
- Analysis of stakeholder and non stakeholder attitudes towards the BWI.
- Evaluation of two BWI best- practice case studies
- Compilation of data for an assessment of the sustainability of the BWI

² GEF operational program No.13. Conservation and sustainable use of biological diversity important to agriculture. The sustainable land management project guide.

Source: www.gefweb.org/Projects/Focal_Areas/land/land_guide.html

1.4 STUDY DESIGN AND METHODS

A case study comprises a snapshot of the Biodiversity and Wine Initiative including current constraints, opportunities and requirements. Figure 1.1 below provides a diagrammatic representation of the research design for this study.

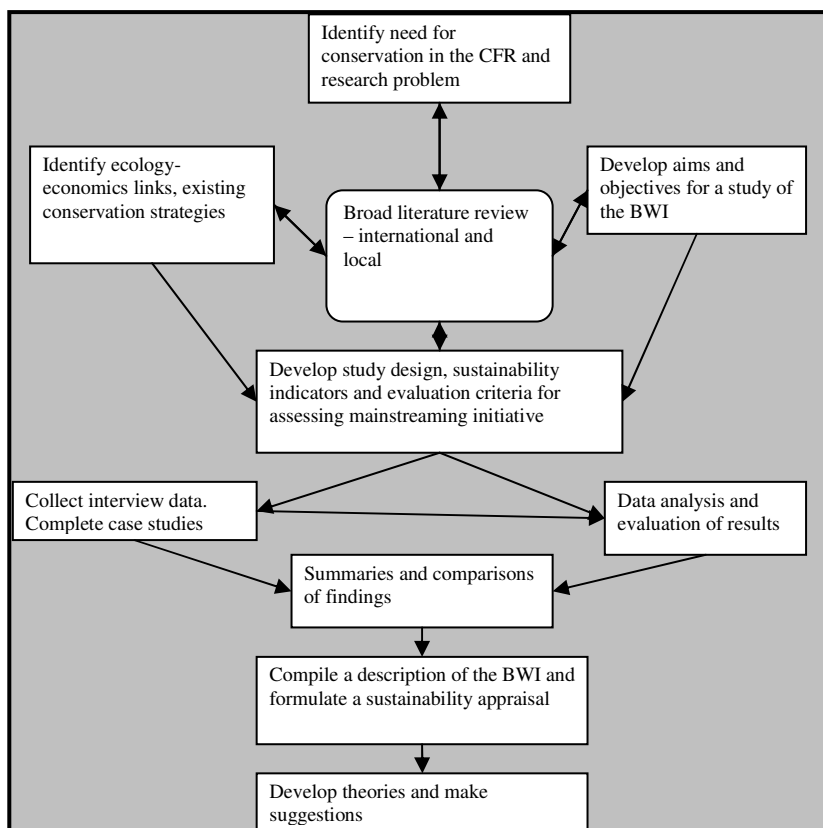


Figure 1.1 Research Design

The paradigm for the study was qualitative, supporting researcher intent to collect data by entering a mutual learning process between scientists, practitioners and stakeholders. Kemmis (1980) asserts that the value of such non-experimental research lies in connections to the real world; adequate descriptions of actions within social and historical contexts, and the ability to rationally critique these descriptions. Accordingly, an intensive literature review was undertaken to understand the history and current status of biodiversity conservation internationally and locally. In a lacuna of existing studies

addressing mainstreaming in viticulture, the literature provided context for the positioning of the BWI in the nexus between the wine sector and biodiversity conservation sector. Amongst other information, the review yielded a model against which to evaluate the BWI as a mainstreaming initiative and thereby enable a critical appraisal of sustainability.

The literature review was followed by an exploratory strategy of inquiry that included a case study methodology (Tellis, 1997; Bell, 2002; Yin, 2003). The whole-farm level at which farmers manage and a complex conservation context meant identifying a research strategy which encompasses context and application. A case study methodology was well suited to interest in unpremeditated answers from participants and possibly unanticipated outcomes from analysis (Weiss, 1998). The involvement of farmers and stakeholders aided identification of values and attitudes that are not always visible, but can demonstrate pros and cons that are inevitably a part of any integration process.

There is an established argument that incentive programmes for farmers are most likely to be accepted if the programmes address particular farmer needs and wants (Langholz *et al.*, 2000). Relevant research is often conducted once such a programme is in operation, and focuses on landowners' actions and opinions towards land use, conservation and the particular incentive programme (Langholz *et al.*, 2000). Such studies are qualitative as they rely on attitudinal responses; typically including landowners party to the incentive programme, as well as those not involved (Cumming, 2007). Additionally, a case study design reports on both process and outcome (Cresswell, 2003) allowing for reflexivity and iteration. The intention was to use an intrinsic case study methodology i.e. focused on understanding the particulars of a unique case. However, further understanding the sustainability potential of the BWI also entailed comprehending the contexts within which the initiative exists and functions. Accordingly, as the study progressed there was an expansion into an instrumental case study (Yin, 2003), where interest is in something more general than a single subject.

Because the basis of an inductive approach is that the directions the investigation might take are not predetermined (Leedy & Ormrod, 2001), the methodological design as shown in Table 1.1 seen below, was divided into several broad phases, following Tellis (1997) and Yin (2003).

Table 1.1 Study method

STAGE 1: Design the case study protocol	<ul style="list-style-type: none"> • Determine the required skills • Develop and review the protocol
STAGE 2: Conduct the case study	<ul style="list-style-type: none"> • Prepare for data collection • Conduct interviews • Field visits and observation
STAGE 3: Analyse case study evidence	<ul style="list-style-type: none"> • Analytic strategy
STAGE 4: Develop conclusions and implications based on the evidence	<ul style="list-style-type: none"> • Compile and formulate date • Present findings

In order to satisfy the requirements for the objectives of this study, an interview questionnaire was constructed; however there was considerable participant resistance to formal questionnaires. Reworking the style of interview caused iteration between stages 1 and 2 above, and within the stages of 2. Stages 2 and 3 also were iterative, because the new strategy resulted in interviews being conducted to ascertain individual participant attitudes rather than the statistical, survey-type results initially planned for.

A further advantage of adopting a qualitative research strategy was direct connection with participants, to ‘restory’ their views (Cresswell, 1998). The BWI tends to operate in a working environment where funding and figures drive project formats and objectives; whilst counter-narratives and alternative stakeholder stories contain messages that can enhance functioning and replicability if effectively utilised. Without interactivity to interpret the ways in which the respondents express their experiences, a nuanced basis for appraisal might not have eventuated.

1.5 DATA COLLECTION

Ongoing text and document searches (Yin, 2003) were employed concurrently with flexible, semi-structured interviews with participants in the Western Cape, and also in the UK and USA. The data collection process remained reflexive, with an interpretive line of inquiry. Participant and non participant observation procedures occurred in work or social settings. Records of field notes were digitally transcribed, and a hard-copy file of documents collected from field sites was compiled including visuals (Hay, 2003).

Multiple sources utilised in this study proved to be complementary and this research report constitutes a presentation of findings from literature-based data triangulated with real life stories and observation, couched in the narrative of biodiversity conservation. Interview data came from purposeful, non statistical samples of participants. The participants were arranged into four broad interest groups, categorised during analysis as: Wine Sellers, Estate People, BWInsiders, and Informed Outsiders.

The flexible nature of qualitative study (Feagin *et al.*, 1991) allowed for refinement of participant selection. For example, it became clear that winemakers on the larger estates only make wine and other professionals handle viticultural practices, conservation actions and marketing. On medium-sized farms, there is more direct involvement by the winemaker with BWI principles and personnel, and on smaller farms sometimes the winemaker was also the grape grower and conservationist and the marketing was in-family or by the person who doubles as office manager – so a range of estates were included to achieve a reasonable spread of professional capacities amongst the participants.

Different sampling techniques were applied to obtain specific types of data towards fulfilling a related research aim (Yin, 2003). Table 1.2 following on page 14, shows sampling rationales employed and the types of sampling used.

Table 1.2 Participant sampling

<p>Critical case</p> <p>BWInsiders: for vital background and feedback</p> <p>Estate People: Graham Beck and Vergelegen participants - BWI champion estates</p>	<p>Permits logical, maximal application of information to case study</p>
<p>Stratified purposeful</p> <p>Wine Sellers: grouped homogenously, although on three continents. The aim was to get an idea of wine seller information and consumer demand. Geographic location or employment type was not being studied.</p> <p>Estate People: 2 groups, equal numbers from members and non members</p> <p>Informed Outsiders: obtain a spread of attitudes from varying perspectives</p>	<p>Illustrates subgroups and facilitates comparisons</p>
<p>Opportunistic</p> <p>Used for some Informed Outsiders</p>	<p>During field work, taking advantage of unexpected opportunities</p>
<p>Snowballing</p>	<p>Used to follow leads from all participant groups</p>

Samples were grouped in this manner so as to ensure that a variety of biodiversity conservation and wine production experiences amongst participants could be recognised and analysed. Participants were invariably interested in the background of the study and typically some time was spent explaining exactly how the specific interview fitted into the overall study design. The questions were open-ended as favoured by Weiss (1998) who maintains that the process gives researchers and readers a more complete

perspective. Questions were different for each participant group and partly dependant on the depth to which the researcher intended to enter the world of the participant.

Wine Sellers

Participants were located in London and Washington DC. The interviews with *Wine Sellers* were conducted to obtain a sense of market-awareness of South African biodiversity conservation needs in countries to which South African wine is exported. These cities were chosen because the researcher could reasonably expect to find English speaking participants which would expedite the interview, recording and analytic processes. The researcher spent three months in Washington DC for personal reasons, and structured a number of opportunities to speak with participants during that time.

Thereafter, a ten day visit to London was specifically made for the dual purposes of attending WOSA's UK launch of the *Variety is in our Nature* marketing campaign and to interview participants for this study. Interview questions were open-ended, to encourage answers from the respondent about his/her experiences, but there was no researcher intent to engage in-depth with the participants. Research interest was in gaining data from a random sample of wine sellers in areas catering to high disposable income consumers.

For this group, there were two questions asked of every participant:

- What do you understand by biodiversity with reference to wine?
- Have you received any consumer requests for biodiversity-friendly wine?

To speak with participants from the Wine Sellers group, the researcher entered wine stores, wine bars and restaurants and asked questions of the owner/manager, sommelier or head waiter. The researcher aimed for a quiet time of day; for example the wine steward at Harrods was interviewed whilst he oversaw the restocking of shelves late at night.

Estate People

The original research proposal contained a formal questionnaire for Estate People, aimed at producing a table of attitudinal responses. However, after the first interview the participant declined to fill in the questionnaire, or alternatively to supply the researcher with a verbal rating between 1 and 3 assigned to each question. The participant summoned her brother who helpfully explained the details and expenses involved in requirements for BWI champion status; but he too did not wish to complete any questionnaire.

The original technique clearly put strain on the participants, and it was decided that the likelihood of achieving productive interviews would be reduced. Instead, a simple outline was devised to promote informal questioning. It was anticipated that a less formal interview situation would be more conducive to the formation of relaxed relationships between participants and researcher. Weiss (1998) maintains that a less formal approach to data collection allows interview participants to be more at ease and participants are therefore more likely to divulge information. Because the researcher engaged intensively with participants from this sample group, a more personalised interview technique was appropriate.

From this group of participants, questions were used to elicit personal attitudes towards the BWI and what it was that the respective estates actually did to conserve biodiversity - if they did so. Pre-interview online searches and background reading about individual estates were undertaken. The aide d' memoir used for Estate People interviews and an example of a transcribed interview are attached, as Appendices A and B respectively.

To speak with participants in the Estate People group, the researcher met with each respective participant on the wine estate after making prior contact. Except for the two conservationist participants, making initial contact by phone calls and emails was entirely useless. Attending conferences, organised wine-tastings, making active visits to wine farms and trawling the booths at WINEX proved to be effective.

Informed Outsiders

The Informed Outsider group of participants was selected for specialist knowledge of either the conservation sector, or of the wine sector. The objective was to find participants from a wide range of backgrounds with nothing invested in the BWI, but with the ability to reflect thoughtfully upon the sustainability of the BWI. For these participants, the researcher explained the role of the BWI; then asked each one to reflect on the potential for sustainability of the BWI in its present form, from individual perspectives of specialist expertise. To speak with participants from the Informed Outsider group, the researcher drew mostly from people already known and respected; but some participants volunteered. Three well-regarded wine writers not personally known to the researcher were asked if they would correspond and/or meet with the researcher and all kindly responded in the affirmative. Overall, the set of Informed Outsiders contained individuals who provided the greatest available variation in perspective, role, type and focus.

BWInsiders

The BWInsiders were from the BWI and from WOSA. The first contact was with Tony Hansen, the CEO and founder, and also with then-project co-ordinator Sue Winter. Tony and Sue left the BWI soon after the commencement of this study and Inge Kotze took the helm combining both roles, still working with Joan Isham the extension officer. At the study design stage, the researcher worked intensively with Tony Hansen, thereafter Inge was contacted to check-in and seek insights as the study progressed. From WOSA, the researcher made contact in Cape Town with Su Birch CEO. Later in London, Su made an introduction to Sophie Waggett, the UK representative for WOSA.

Participant / non participant observation

Depending on how welcome the researcher felt, she asked to spend time talking with a

participant, watching what he/she did at work; or visiting the conservation projects on the estates. Paper, pen and camera recorded what was seen and heard. For example, at Vergelegen, the researcher made a number of visits over a 7 month period from late 2006. These visits were as a non participant observer of farm and tourist activities, and included a behind the scenes visit with a conference group. From December 2007, the visits became participatory and the researcher was privileged to become further acquainted with Gerald Wright, the experienced conservationist, who supplied invaluable information, facts and figures about conservation projects at Vergelegen.

Most interview participants preferred to remain anonymous or give only first names. When considering ethics of reporting interview data, confidentiality was applied to all Estate People, including a winemaker who insisted that his name be used because he wanted WOSA to know what he thinks. Estate People are directly involved in wine sector and all are known to WOSA and to the BWI. There was a concern that by naming the participants who did not take up the offer of confidentiality, it may seem as if they are highlighted. The study aim was to obtain freely-given data and construct an overall sense of attitudes, not to focus on any particular individual. Further, consistent with the case study framework of this research (Miles & Huberman, 1994; Yin, 2003), no attempt was made to standardise or otherwise control distinctions made by participants. Instead, the multiple pieces of additional data provided by participants were collected as interesting material to consider during the analysis and interpretation stages. The list of participants can be found as Appendix C.

Field notes

Notes made in observation visits to Vergelegen and Graham Beck as well as to other estates were based on a rapid project assessment chart - available as Appendix D. The notes covered ecological and economic aspects. Notes also included what was observable of the social developments on estates - the researcher having comprehended from audience response at the 2006 UK launch of the 'Variety is in our Nature' message on that WOSA might shift positioning upon biodiversity conservation. Except for the

intensive notes made at Vergelegen and Graham Beck Wines, these field notes were not part of the original design. However unexpectedly relevant data were also obtained and some were included in the findings.

1.6 DATA PROCESSING AND ANALYSIS

An advantage of qualitative data analysis is that it allows for awareness of diverse perspectives in understanding dynamic developments. Data collection and data analysis proceeded simultaneously, with constant comparison between different sources of data (Cresswell, 2003). The broad process of analysis was divided into stages as follows:

- Code notes from observation and interviews
- Categorise
- Seek similar phrases, themes, categories, differences
- Isolate patterns; processes
- Add field notes/desk study notes/observation notes
- Find generalisations relating to patterns in database
- Test generalisations with theory and constructs from the literature review
- Compile a description of the case
- Present the full narrative

The data set from the Wine Sellers category was analysed first, to understand if relatively expensive biodiversity-friendly wine was finding its intended market – or indeed any market. Selected participants operate venues in upmarket urban areas frequented by tourists. A research assumption was that a relatively well-educated and/or high disposable income group would form the target market. Responses to the first question were coded numerically – 1 for no understanding; 2 for some understanding; 3 for in-depth understanding. It was noted where more than one participant made a similar observation. The data set from the Estate People category was analysed according a model adapted from Morris & Potter (1995). Semi structured interviews were conducted, with interaction between researcher and participant. At the conclusion of an interview each

participant was asked to select a level of adoption that seemed appropriate to the individual.

For the Informed Outsiders category, the characterising variables became more clearly defined in the course of the sampling procedure and data collection. The variable of perspective was initially described using a transcription that added no value, so the lists were replaced by one question: For what reason/s do you think the BWI is sustainable or is not sustainable? Analytically, the use of a single question represented an iterative shift, emphasising data that provided a spread of attitudes varying by perspective, role and focus-type. The categorisation of participant responses into *dubious*, *interested*, *supportive* and *enthusiastic* groups provided additional insights into the breadth of working knowledge held by each participant. For instance, those with more of a conservation perspective usually had an excellent understanding of the principles and/or workings of the BWI. Those conservationists who knew that WOSA existed were frustrated about perceived failure to provide valid extrinsic incentives for conservation. When a participant had a broader perspective, a combined understanding of the spheres of WOSA and the BWI seemed to mediate this frustration, replacing it with a longer-term strategic approach to resolving big-picture issues. Every response was tagged with both alphabetic and numeric codes. The alphabetic codes recorded the focus-type i.e. amount of conservation knowledge held by the participant and also the perspective - global or local or both. The numeric codes represented the sector to which the participant belongs and marked the category of response from each participant.

The analysis of the data set from the BWInsider category concluded the analytic process in early 2008. The final interview with BWI staff members was reflexive and interactive; conducted so as to discover differences between research findings and the experiences of the BWI project co-ordinator.

Standard software programmes were used during the data collection and analysis processes. Microsoft Word and Microsoft Excel were used to capture data and construct diagrams. The overall intention in the analysis process was to demonstrate adequate

knowledge of relevant data including an understanding and explanation of rival theories to the success/failures of the BWI and also to consistently address the research aims proposed at the outset.

1.7 RELIABILITY

According to Yin (2003), the value of qualitative research pivots on the ability of the researcher to consistently link data; interpretations; reductions; results and conclusions to the reality within which they exist. Miles & Huberman (1994) hold that the aims of qualitative research are to offer a perspective of a situation and to provide appropriately constructed research reports. Further, mindful of Kemmis' (1980) contention that non-experimental research should meet two types of justification: the truth of findings and researcher accountability, an explanation is offered of how the study was self-monitored.

Relevant sections of the draft study were supplied to some of the original participants: Mr Kent Reeves, researcher and advisor for the Central Valley Farmland Trust CA; Mr Dave Hughes, international wine judge, author, founder of the Cape Wine Academy.

Developing patterns and themes were verified by repeated literature searches and by follow-up interviews, peer checking, and return visits (Leedy & Ormrod, 2001; Bell, 2002). In addition to member checking, emerging descriptions, categories and themes were discussed with 'auditors' who have knowledge in the relevant subject areas, but were not study participants. Mr Melvyn Minnaar, wine writer and expert on the history of the wine sector in South Africa generously agreed to comment on early findings and potential themes. Ongoing feedback during 2008 was provided by Mr Allan Mullins CWM, wine judge and national wine selector for Woolworths.

Analysis employed a largely descriptive strategy to identify an overall pattern of complexity (Yin, 2003). A narrative report was compiled and results were compared with the literature. Finally, draft sections were submitted for general feedback to: Dr David

Bridgman, development economist; Sir Rupert and Lady Cilla Bromley of the South African Wetlands Forum; Mr Dimitri Coutras, marketing consultant in the wine sector.

Multiple sources of data were accessed during the study, including: interview transcripts; newspaper articles and archived material; awards and accreditations; donor information and validation; funding sources; industry journals; specialist writing; related studies; validated conservation figures; photographs; transcripts of official presentations and speeches; conference proceedings; workshop proceedings; round-table transcripts; educational field trips; Cape Wine Academy teaching materials; written and verbal personal communications; promotional literature; field notes on comparative estate visits in the USA UK, SA; government legislative and policy documents; access to a draft proposal for World Heritage status for the landscape of the Cape winelands; restaurant wine-lists; Botanical Society and SANBI publications; BWI and SAWIC self-generated literature; studies by the World Bank, IFC, GEF, CI, WWF CEPF; notes from conservationist conducted fynbos walks; press releases; notes from wine cellar tours and museum visits.

Data gaps in the study were noted, amongst which are:

- Impacts of wine tourism were not addressed. Selling South African wine abroad is different to selling wine when the purchaser has learned first hand about fynbos conservation.
- Minimal data were included on specific types of incentives that might encourage sustainable conservation in managed landscapes.
- Data did not comprehensively explain why there is a gap between scientific conservation research and the communication of the meaning of biodiversity to consumers and markets.
- The views of foreign owners of wine estates, relevant to conservation in the CFR, were not captured.

1.8 REPORT STRUCTURE

Based on a 20-month study, this thesis is divided into six chapters summarised on Table 1.3 below:

Table 1.3 Report structure

Chapter One Study, aims and research procedures	Introduction	<ul style="list-style-type: none"> • Study area • Problem formulation • Aims and objectives • Research design and method
Chapter Two Literature review	Background	<ul style="list-style-type: none"> • Theoretical perspectives: • Concept definitions • Practical application: • Conservation strategies • Mainstreaming in the CFR
Chapter Three Biodiversity & Wine Initiative: place, process, progress	Study subject	<ul style="list-style-type: none"> • Background - conservation in the Western Cape • Emergence of the BWI • BWI position in the wine sector • Mainstreaming indicators
Chapter Four On-farm conservation: best practice	Case studies	<ul style="list-style-type: none"> • Comparative case study of first champions • Graham Beck Wines • Vergelegen
Chapter Five Perspectives and perceptions	Results and findings	<ul style="list-style-type: none"> • Aims and objectives revisited • Impact evaluation of indicators : • Reductions in threat to biodiversity • Participants attitudes to the BWI • Farmer adoption levels • Analysis of BWI model of mainstreaming
Chapter Six Synthesis	Synopsis, evaluation, discussion	<ul style="list-style-type: none"> • Some key points: opportunities and constraints • Appraisal of BWI sustainability • Possible further research

CHAPTER 2 LITERATURE REVIEW

Chapter Two provides a theoretical overview of global biodiversity conservation discourse towards solutions that encompass ecological and economic objectives. There is a focus upon sustainable biodiversity conservation on land transformed for agricultural use, specifically viticulture. The first section of this chapter highlights biodiversity and the loss thereof in a global context. Developments in biodiversity conservation are described, highlighting on-farm conservation in the Cape Floristic Region. The second section comprises an exploration of international conservation strategies and interventions employed in the world-wide search for sustainable solutions. Mainstreaming is discussed as a sustainable means for the wine sector to address biodiversity loss within the Cape Floristic Region.

2.1 BIODIVERSITY: VALUE AND LOSS

Increasing human pressures on the natural environment have led to widespread consensus that biodiversity loss is of immediate and ongoing concern (Erhlich & Erhlich, 1981a; CBD, 1992; Daily, 2003). Ecosystems support all life on earth and a critical mass of biodiversity is necessary to continue the necessary flow of life-supporting goods and services that ecosystems provide *gratis* (Costanza & Daly, 1992; Folke *et al.*, 1996; Daily, 1997). Nevertheless, humans are increasingly losing collective natural biodiversity capital through inadequate conservation thereof (Holling, 1978; Metrick & Weitzman, 1998; Myers *et al.*, 2004; MEA, 2005; Heal, 2007). Compounding conservation inadequacies, there are failures to recognise the costs that are incurred by depleting available biodiversity (Lybbert *et al.*, 2002; Pearce, 2007). In this regard, Milton *et al.* (2003) draw parallels between biodiversity loss and individual humans operating personal finances. A wise human understands that it is sensible live off income and interest; but not to consume capital until the capital base disappears. Milton *et al.* (2003) argue that societies should be similarly prudent with the earth's natural resources to enable human populations to sustain themselves into the future.

In Figure 2.1 below, it can be seen that humans directly and indirectly affect biodiversity loss; and human wellbeing in turn is impacted by decreased biodiversity.

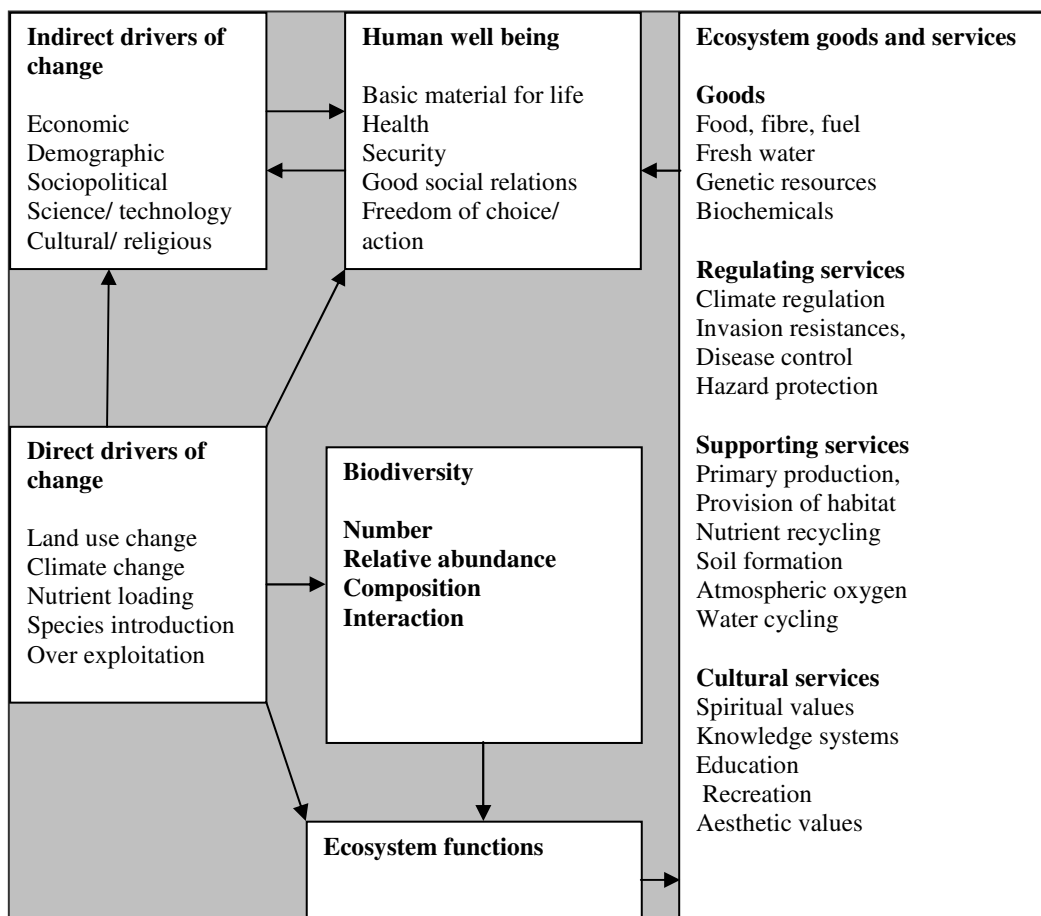


Figure 2.1 Biodiversity, ecosystem functioning, services and drivers of change
Source: Adapted from: Global Biodiversity Outlook 2. UNEP, 2006

Biodiversity is affected by drivers of change and is also a factor that modifies ecosystem functions (MEA, 2005; CBD, 2007). Because the combinations of all forms of life and their interactions with their physical environments are what create a habitable earth for humans (Ayensu *et al.*, 1999; Vermeulen, 2004), increased rates of biodiversity losses affect everyone regardless of where or when losses occur (Daily, 1997; Gowdy, 1997; Diaz *et al.*, 2006). Current population growth and patterns of consumption which increase demands for ecosystem services and energy are amongst the most critical drivers affecting biodiversity.

Humans directly use only a very small percentage of biodiversity; however they rely indirectly on far larger amounts of biodiversity. For example - bacteria and microbes transform waste into usable products, insects pollinate crops and biologically diverse landscapes provide inspiration and recreation. Exact amounts of biodiversity required to enable ecosystems to function effectively vary widely; however all services and benefits derived from biodiversity are dependent on functioning ecosystems (Perlman & Adelson, 1997; Steffen *et al.*, 2004). Daily (1997), Lovejoy *et al.*, (2005) and others have argued further that in addition to human survival needs, societal advancement is also threatened by biodiversity loss - including security, stable social relations, poverty alleviation and freedom of choice. In terms of sustaining human existence therefore, there should be a balance with the protection of the natural environment to meet these needs in the present and into the future (WCED, 1987).

No fully sustainable conservation solution has yet emerged (Glasby, 2002) and biodiversity loss continues to accelerate at rates and scales hitherto unknown (IUCN, 2007). The Global Biodiversity Assessment projects that by 2020, species extinction will accelerate at between 1,000 and 10,000 times more than the natural rate. Compounding the problem, negative changes in biodiversity as results of human activities have occurred the most rapidly during the past fifty years, according to the Global Biodiversity Outlook (GBO, 2006). *Direct drivers of biodiversity loss are either remaining steady, showing no evidence of decline, or are increasing in intensity over time* (GBO 2, 2006, 9-10).

This downward global trend is outlined by the following graph, Figure 2.2 from the Living Index compiled by the World Wide Fund for Nature (WWF). The Living Planet Index tracks and measures population sizes of hundreds of species, to determine global trends in biodiversity health. As seen on Figure 2.2 following, the WWF found that biodiversity has declined significantly world wide, from 1970 to 2005.

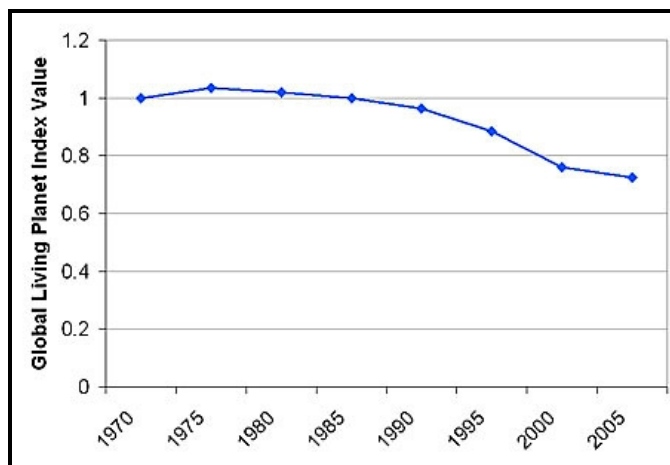


Figure 2.2 Global trends of biodiversity loss, 1970-2005
Source: Global Living Planet Index WWF (2008) (no page number)

In joint recognition that human wellbeing will become increasingly negatively impacted by ongoing biodiversity losses, global leaders convened in Johannesburg at the 2002 World Summit on Sustainable Development to set a common goal to reduce rates of biodiversity loss by 2010.

At the time of writing in late 2008, the deadline is yet closer and biodiversity losses have not abated. Furthermore, the G8 + 5 nations bear a heavy collective obligation to the remainder of the world. Unsustainable production and consumption patterns within these few countries account for the vast majority of global environmental pressures and threats. It was recently estimated that: *the G8 nations, together with the five most important emerging economies - China, India, Brazil, Mexico, South Africa - use almost three-quarters of the earth's bio-capacity²* (BBC news report, 2008) Clearly, much remains to be done to create appropriate enabling conservation environments in many countries, rich and poor alike.

In this regard, Rosenzweig (2003) argues that the future of earth's biodiversity will depend as much upon the redesign of human-dominated landscapes, such as upon conventionally protected areas. Further, relevant to a transitional society such as exists in

³ The capacity of the world's ecosystems to produce natural resources and to reduce harmful substances (WWF).

South Africa, a World Bank report on responsible growth in the present millennium (2004) is apposite. The report indicates that the protection of managed ecosystems and of natural resources on privately owned land are vital to sustaining development whilst developing nations build various forms of wealth i.e. infrastructure, human capital and institutional capacity. Concurring, albeit with a focus on conservation not societies, Pagiola *et al.* (2004) maintain that as most wild organisms live in places where primary use is not biodiversity conservation, extreme biodiversity loss occurs not only *in refugia*, but also in managed ecosystems such as farmland (Cowling, 2005; Huntley & Petersen, 2005; McNeely, 2005). It seems therefore, that trends in stemming biodiversity losses over the next few decades will largely depend on human actions, especially those relating to land-use changes and conservation. These actions will, in turn, be affected by various factors including advances in growing understandings of ecosystem services, development of viable alternatives to natural resources and emphasis placed upon conservation by developed and developing country governments alike.

2.2 CONSERVATION PRECEDENTS AND PROCESSES

As noted in Chapter One, this study is grounded in by theory from the field of Ecological Economics - categorised as an emergent discipline which comprehends the world economy as a subsystem of a larger finite global ecosystem (Baumgartner *et al.*, 2004; Jenkins *et al.*, 2004; Common & Stagl, 2005; Ayres, 2006).⁴ There is a strong historic and semantic synthesis from a Greek stem word: *oikos* - a place to live. The suffixes differ – *logos* refers to the care of a home and *nomos* refers to household affairs. Modern efforts towards global biodiversity conservation strategies (Redford, 2005) are equally synthetic (Costanza & Daly, 1992; Daily, 2001; Common & Stagl, 2005) because ecology can be thought of as a form of economics - a natural economics (Kinzig *et al.*,

⁴ Ecological economics includes a theoretical framework and empirical explorations coupled with policy motives and relevance. Key research focus is on understanding the working of the human-environment system using an integrated, interdisciplinary approach with the question of how to achieve sustainability as the primary objective (Gowdy 1997).

2006). By connecting the concept of goods and services provided by nature, with that of a stock of assets from which the goods and services flow, the scientific and conservation concerns of ecologists are incorporated with monetary yields and market failures, the concerns of economists (Milton *et al.*, 2003). The distinguishing feature for this study is the means through which an economy-ecology problematic is inverted, so that ecological sustainability becomes the predominant goal of human activities and enterprise.

2.2.1 Milestones in conservation discourse

One of the principal insights from current developments in ecology is that human disturbances shape ecosystem change (Ayensu *et al.*, 1999; Brock & Xepapadeas, 2003; Lutz Newton & Freyfogle, 2005; MEA, 2005). It is now widely accepted that human economies and natural ecosystems are inexorably bound. Even though economic models and ecological models are not always linked (Common & Stagl, 2005; Xepapadeas, 2008) (Gowdy, 1997; Dyllick & Hockerts, 2002; Glasby, 2002; Common & Stagl, 2005; McNeely, 2005), strategies for biodiversity conservation cannot afford to overlook the active role of humans and their economies as primary agents of flux in ecosystems (Soule & Wilcox, 1980; Gladwin *et al.*, 1995a; Folke *et al.*, 1996; McNeely, 1999; Brown, 2002).

Chapter One showed that a premise of the modern environmental-economic theory is that environmental problems are frequently the result of market failures (Callahan, 1996; Ehrlich & Ehrlich, 1981b, 1996; Gowdy, 1997). The early, well known rendition of this premise was Garrett Hardin's 1968 essay *Tragedy of the Commons*, which amongst other points made, posited that the commons was overexploited because markets had failed to value the costs and thereby ration access. The solution proffered was that these costs should be incorporated into economic decision making. This particular contention was later manifested in the 'polluter pays' principle, a bulwark of OECD environmental economic management policies. Thereafter, another wave of intellectual interest in environmental problems was awakened by a global realisation of the magnitude of resource depletion, foreshadowed by Kenneth Boulding's representation of the market

economy as a cowboy economy - constantly expanding and overwhelming natural frontiers (Boulding, 1966). Later, *The Limits to Growth* (1972), the first report to the Club of Rome, marked an accepted beginning of modern environmental policy (McNeely 2005; MEA, 2005). The overall argument was that resources driving economies are limited and will become exhausted if consumed at current rates. Most critiques documented concrete examples of environmental degradation from modern consumerism. Conversely, a current and growing trend in consumer behaviour within developed societies supports earth-friendly 'green' products. This trend has been integrated with BWI strategy (Krige, 2004; Demeritt, 2005) and popular media based indications of market trends towards 'green products' can be found as Appendix E.

From Boulding to today, literature indicates an ongoing problem in analysing tradeoffs and synergies involved in managing land for human productivity vs. for biodiversity conservation (Jenkins *et al.*, 2004; Common & Stagl, 2005; Redford 2005). Nevertheless, an increasingly strident global demand for sustainable solutions was cemented by the WCED 1987 report, *Our Common Future*. Finally there was a forum for a widely shared concern that piecemeal strategies were not sufficient to address the existing problems (Steffen *et al.*, 2004; World Bank report 2004). Thereafter, the Global Convention on Biological Diversity, (CBD) was signed as the Rio Declaration of 1992. In 2002 at the WSSD 'Earth Summit' in Johannesburg, the focus of international environmental policy shifted to include biodiversity-related policy fields such as climate change and poverty alleviation.

Present concerns with perceived shortcomings in standard economic analyses, as argued by Nadeau (2003) and Brock & Xepapadeas (2003), have stimulated efforts to articulate alternative concepts of human interaction with the natural environment (Metrick & Weitzman, 1998; McNeely, 1999; Pretty & Ward, 2001; Rozensweig, 2003; Gladwin, 2006). In this regard there is general acknowledgment of biodiversity loss (WCED, 1987; GBA, 1995; Callahan, 1996; Tokar, 1997; Lubchenco, 1998; MEA, 2005) but significant theoretical dissent as to whether economically based solutions are defensible (Costanza & Daly, 1992; Adams & Hulme, 2001; Adler, 2002; Ferraro & Simpson, 2002;

Nadeau, 2003; Pagiola *et al.*, 2004; Russell & Sagoff, 2005). Nevertheless, a growing body of recent literature supports the economically driven private sector as part of conservation solutions (Jenkins *et al.*, 2004; Common & Stagl, 2005; Huntley & Petersen, 2005; McNeely, 2005). There is increased understanding that in the real world, economically viable solutions are critical for environmental sustainability (Gladwin *et al.*, 1995 a, b; Swart, 2003; Ten Kate & Laird, 2000; Pagiola *et al.*, 2004) and also that protecting the environment does not constitute a liability. Achim Steiner, director of the IUCN contends that '*Investing in environmental sustainability is not a tax on development*' (GEF conference, Cape Town, 2006). Concurring authors Brock & Xepapadeas (2003), with Jenkins *et al.* (2004) and Pearce (2007), contend that engaging private sector in biodiversity conservation is of considerable importance given influences of financial markets upon the sustainability of managed ecosystems.

However, despite weighty evidence to the contrary, biodiversity in sustainably managed ecosystems is often not highly valued (Clark, 1995; Cowling *et al.*, 1996; Costanza *et al.*, 1997; Ten Kate & Laird, 2000; Jenkins *et al.*, 2004). It is likely that until the private sector is motivated to fully internalise biodiversity principles (Huntley & Petersen, 2005), benefits of biodiversity conservation in managed ecosystems will remain unreconciled to the costs thereof (Dyllick & Hockerts, 2002; Daily, 2003; Heal, 2007).

2.2.2 Biodiversity conservation in the Cape Floristic Region

The Cape Floristic Region is identified by a Conservation International as a 'hotspot' of endangered biodiversity. The hotspot system works by identifying and prioritising action in areas that hold species found nowhere else and that are guaranteed to lose species if the areas are not conserved (Conservation International, accessed 14/01/09 at www.biodiversityhotspots.org) The current state of global biodiversity conservation is reflected in South Africa (Bawa, 2006; Collins & Qualset, 2008) with trends pointing towards realising the benefits of including the for-profit private sector in conservation (McNeely, 2005). Within the prevailing move towards integration of ecology and economics (Cowling *et al.*, 2003 a; b) it has been argued that conservation assessments,

plans and strategies in regard to the Cape Floristic Region should include the role of private landowners.

Identified in Figure 2.3 following, the Cape Floristic Region (CFR) comprises 78,555 square kilometres (CAPE figures) of coastline along the south-western tip of South Africa. The CFR is the smallest floristic region in the world, yet has the highest recorded species density for any temperate or tropical region, plus unusually high levels of endemism, holding five of South Africa's twelve endemic plant taxa (Cowling & Pierce, 1999; Cowling *et al.*, 2003b). The region encompasses in the world's most species-rich biome, namely fynbos and is one of five Mediterranean-type systems prioritised in most global conservation assessments (Linder, 2003).



Figure 2.3 The Cape Floristic Region

Source: Conservation International 2008 (no page number)

The Mediterranean climate sustaining the Cape Floristic Region's fynbos-dominated habitats, the decomposed granite soils and rich biodiversity of the Western Cape simultaneously create ideal conditions for viticulture (Sandwith *et al.*, 2006). The Benguela current provides cooler conditions than would be expected at the Cape's latitude (Fairbanks *et al.*, 2001) also very beneficial to grape growing. This confluence of natural conditions has resulted in the major wine producing areas of South Africa, coinciding almost exactly with the most threatened lowland ecosystems (Mathews, 2003;

Sandwith *et al.*, 2006) of the CFR. Exacerbating such conflicts of interest, renewed interests in South African wines post 1994 have accelerated land transformation by encouraging the expansion of viticulture (Mathews, 2003). Cowling *et al.* (2003b) find that even at present levels, viticultural expansion and intensification adversely impact the threatened lowland ecosystems of the Western Cape. With an increase in expansion further adverse impacts can be expected to occur directly through farming operations, or indirectly along the supply chain (Pascual & Perrings, 2007). As an indication of the rate of expansion, in 2005 there were 495 private wine cellars compared to only 210 in 2001 – approximately a 60 per cent increase. Figure 2.4 following, shows the likelihood of future vineyard conversion in the CFR.

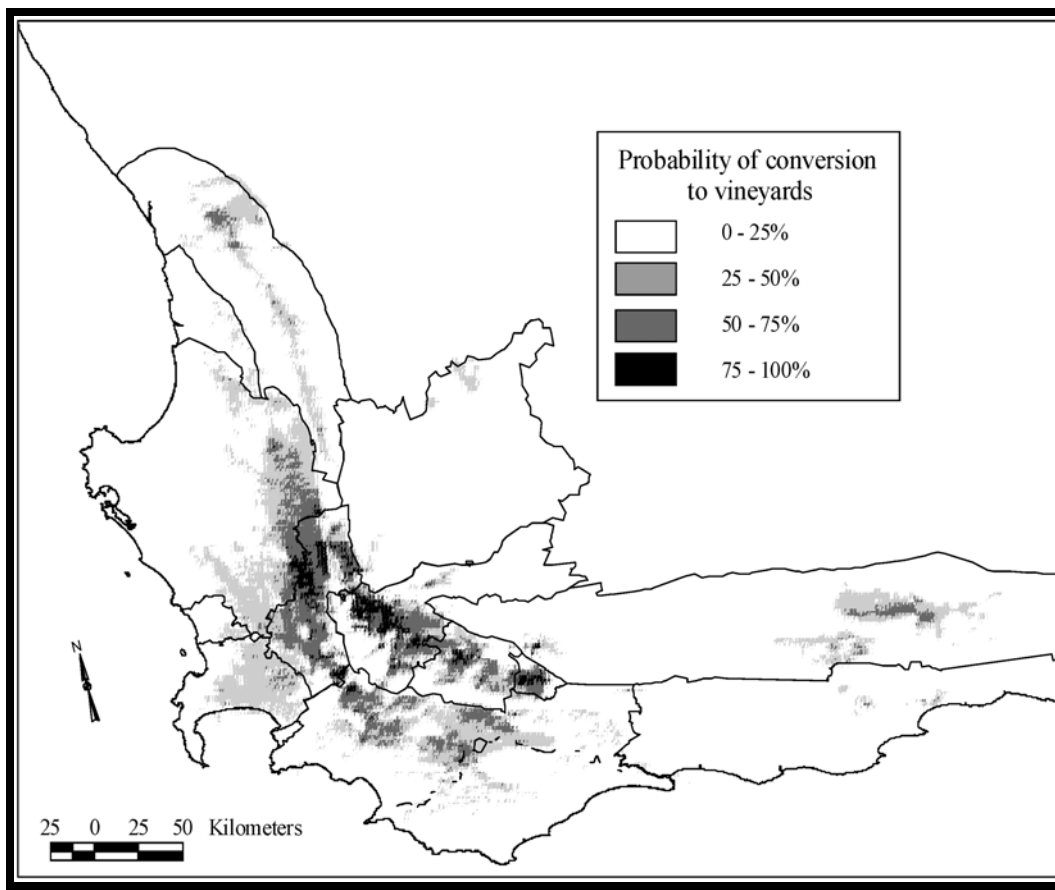


Figure 2.4 Likelihood of future conversion to vineyards
Source: Fairbanks *et al.*, 2004 (page 1084)

Furthermore, an estimated 97 per cent of renosterveld has already been transformed or degraded (Sandwith *et al.*, 2005) and remaining areas of renosterveld form scattered fragments amongst agricultural areas - difficult to conserve in a formal reserve system (Cowling *et al.*, 2003a;b). Moreover, the distribution of the Cape Floristic Region's biodiversity is considered somewhat unusual in that rare and endemic flora occur in extremely tiny patches of remnant vegetation, many of which exist on wine estates (CEPF website). It is therefore considered to be a priority that wine farmers realise that even tiny fragments of natural habitat can be of value (Fairbanks *et al.*, 2004).

2.2.3 Conservation strategies

Until the next big asteroid hits us, the future of known life will depend much more on humanity than on any other force. Which elements of biodiversity will survive human impacts? What strategies offer the best prospects for achieving conservation goals? (Daily, 2005 Conserving Biodiversity p1)

Towards identifying appropriate means of conservation in the CFR, a range of strategies that have been at least partly successful are briefly addressed. The option of conserving biodiversity within agricultural practices is highlighted. Strategies are grouped according to primary orientation – *conservation* or *use* or both.

2.2.3.1 Responses with a primary goal of conservation

Traditional protected areas

According to Kathy MacKinnon, a senior conservation economist for the World Bank (in: Stolton *et al.*, 2003), almost 42 per cent of protected sites are located in developing countries, including some of the world's most biologically rich habitats. For many species, these protected areas will be the single most effective way to ensure survival (Brandon *et al.*, 1998) but there are strong contentions that conservation cannot take place only in carefully demarcated areas of the world (Cowling, 2005). Brandon *et al.*

(1998), Cowling (2005) and Pearce (2007) argue that classical approaches to preserve pristine habitats within protected areas are insufficient and that spending on protected areas remains deficient.

In this regard, approximately six per cent of South Africa's land surface area is conserved by formal means, according to Minister Marthinus van Schalkwyk, in a speech to the South African National Assembly, 20 April 2008. This figure is less than the 10 per cent recommended by the World Conservation Union (IUCN), even though South Africa has a rich and diverse natural heritage to protect. Covering only 0, 8 per cent of the land surface area of the earth, South Africa contains an estimated 8 per cent of identified plants and between two per cent and seven per cent of identified amphibians, reptiles, birds and mammals **Error! Hyperlink reference not valid.** Local conservation allocations are slanted towards protection of wild animals, with about 90 per cent of amphibian, reptile, avian and mammal species represented within reserves. Depending on specific vegetal variety, only 34 to 74 per cent of plant species occur in reserves (Conservation Farming Project website).

Key biodiversity areas

Conservation groups have argued that resources allocated to reducing biodiversity loss are inadequately distributed when directed towards protected areas alone. As a means of achieving more adequate distribution of conservation measures, key biodiversity areas have become accepted as an alternative to protected areas. In this regard Balmford & Whitten (2003) show that a range of regional and local scale conservation assessment approaches have been created to identify key biodiversity areas, especially in developing countries. However Knight *et al.* (2007) contend that some of the prerequisites of successful key biodiversity area interventions including funding from private individuals, and coordinated action between partners and institutions - are generally lacking in regions where the key biodiversity area approach could be most beneficially deployed.

Ecosystem restoration

Ecosystem restoration interventions are conducted in many world regions, with most categories of ecosystems targeted, such as wetlands, forests, grasslands, estuaries. It is projected that restoration interventions will become increasingly frequent conservation responses as ecosystems are further degraded and as requirements for the delivery of ecosystem goods and services intensify with expanding human populations. Ecosystem restoration, however, is frequently more expensive to undertake than is the protection of the original ecosystem and it is rare that all of the biodiversity and services of a system can be restored (GBO 2, 2006).

2.2.3.2 Responses with a primary goal of use

Directed market mechanisms

On occasion, specific market mechanisms have been instrumental in conserving biodiversity. Ecotourism and ecolabelling are examples of sustainable and marketable aspects of biodiversity. In some countries the respective governments utilise market mechanisms for conservation *via*: tax incentives, tradable development permit programmes and contractual arrangements - such as between upstream landowners and those benefiting from watershed services (MEA, 2005). However, with regard to local directed mechanisms Bovarnick & Gupta (2003) warn that the ability of businesses to deliver conservation benefits is dependent on many marketplace variables including volatility, product competition and the high debt burdens of start ups. In addition, alternative livelihoods can cause adverse effects on biodiversity if not well managed.

Carbon markets

Carbon markets offer long-term conservation options in carbon sequestration. Moreover, carbon markets can provide incentives for conservation, especially if designed to dovetail with biodiversity conservation efforts. Whilst such a directly market oriented approach

shows considerable promise, many challenges remain. There is the difficulty of obtaining the necessary information to ensure that the buyers are in fact obtaining the services for which they are paying. There is also the problem of establishing institutional frameworks required world-wide to enable carbon markets to work efficiently and to ascertain that benefits are equitably distributed (MEA, 2005).

Community tourism

Recently many funding bodies have invested in projects that encourage alternative practices compatible with conservation. Community based ecotourism projects are an example of such projects that aim to benefit local people thereby encouraging them to conserve biodiversity (Kiss, 2004; Ashley & Haysom, 2006; Nicholls, 2004). However, success is not a foregone conclusion according to Adams & Hulme (2001) who propose that more research is necessary into tradeoffs between different interests and objectives in community-based projects where economic incentives often overshadow biodiversity conservation.

Further, Kiss (2004) contends that many functioning projects make only negligible changes in existing practices; improve local livelihoods minimally and frequently remain dependent on external support structures. Few studies have investigated the long-term sustainability of such projects. Thus Dirzo & Loreau (2005) contend that owing to an absence of much data, it is difficult to prove that these projects ever fully achieve the dual purpose of biodiversity conservation and poverty reduction.

2.2.3.3 Integrated responses that address both conservation and sustainable use

Conventions

A proliferation of international conservation conventions led up to the 2002 World Summit on Sustainable Development (WSSD), where global leaders converged upon a shared vision of sustainable development as improving social well-being and simultaneously achieving biodiversity protection (Najam *et al.*, 2002). The WSSD (2002)

concluded that the link between natural resources conservation and economic development is particularly close in Africa. However, Akhtar & Griffin (2005) explain that implementation of agreements and conventions is patchy in developing and transitional countries. Moreover, environmental agreements place an administrative burden on resource limited public sectors (White Paper, DEAT 2002; Adler, 2002) and many believe that the processes of treaties have become ends in themselves, with conservation an ill-defined target.

Integrated Conservation and Development Projects (ICDP's)

ICDP's are diverse initiatives that connect biodiversity conservation action within protected areas with community development and wellbeing (Wells *et al.*, 1999). ICDP projects address biodiversity losses by utilising socio-economic investment tools. The projects were developed by the World Wide Fund for Nature (WWF) to redress the 'fines and fences' approach to conservation in reserves.

Recent reviews have provided non sanguine perspectives on ICDP's in that frequently neither the conservation nor the development aims are achieved (Brandon *et al.*, 1998; Wells *et al.*, 1999). However, being sector based and multidimensional, ICDP's are possibly the immediate precursor to mainstreaming as described in Article 6 of the Convention on Biological Diversity. This article requires each party to develop or adapt national strategies, plans or programmes for the conservation and sustainable use of biological diversity and to integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies (CBD, 1992).

Global hotspot system

Indicative of growing international awareness of complex impacts of development on global environments (Brandon *et al.*, 1998; Sanderson *et al.*, 2002; Tomich *et al.*, 2004; Vermeulen, 2004; Redford, 2005), a world-wide system of hotspots was pioneered in

1988 by Conservation International. Regardless of protected or agricultural areas, the hotspot system concentrates resources on the most vulnerable regions of the world. In *Hotspots Revisited* (Mittermeier *et al.*, 2004), a critical review of the success of the hotspot system over the past 15 years, Mittermeier cites the steep climb in use of the term 'hotspot' in scientific papers. Further, he says that the approximately \$756 million thus far devoted to conserving hotspots is probably the largest financial backing given to any conservation strategy. Mittermeier also mentions that hotspots concept has also entered the mainstream as a tool for private sector businesses. Biodiversity conservation efforts in hotspots often require the ability to adapt to a rapidly changing socio-political climate.

Indicated in Figure 2.5 following, these sensitive regions contain a disproportionate number of endemic species and lose habitats at a high rate (Mittermeier *et al.*, 2005). Comprising only 1.4 per cent of the earth's surface, hotspots contain 44 per cent of all species of higher plants and 35 per cent of all land vertebrate species.

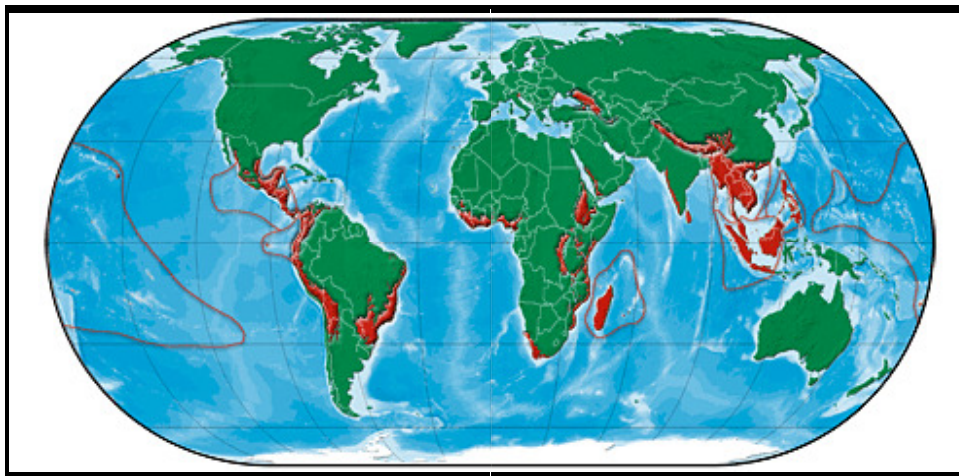


Figure 2.5 Global hotspots of severely endangered biodiversity
Source: Conservation International (no page number, no year)

As Figure 2.5 above indicates, the Conservation International hotspot system is regarded as an expansive and positive conservation response. However, it has been argued that there are better means of evaluation to determine conservation priority sites (Dinerstein & Wikramanayake, 1993). Such counter analyses indicate that hotspots do not provide

guidance as to how conservation should be focused on the ground and that primary use should be as a global prioritisation system (Trudgill, 2001; Conservation International website).

Essentially newer research indicates that protected areas should be targeted based upon relative concentration and complementarity of endemic or endangered species, including representation of local populations and protection of ecosystem services. A suggested means by which to achieve improved conservation is to increase the biodiversity value of the semi-natural matrices i.e. landscapes dominated by human activities, for biodiversity conservation.

On farm conservation: managing agricultural biodiversity in situ

Towards achieving conservation goals that also address drivers of ecological change, current studies emphasise support of sustainable intensification of agriculture and corrections of market failures. It has already been discussed in this chapter that in all sectors, adequate valuation of biodiversity is largely dependant upon the internalisation of environmental externalities which cause degradation of ecosystem services. However Ricketts *et al.*, (2004) have found that well targeted conservation investments in human dominated landscapes have the potential to yield double benefits: for biodiversity and agriculture. Following is a brief discussion of the synergisms and difficulties of conservation in agricultural sectors.

Agriculture has been viewed as a primary destructive force of biodiversity (Gemmill & Varela, 2004; Vandermeer & Perfecto, 1997); however Pagiola *et al.*, (2004) and Pascual & Perrings (2007) amongst others contend that adjustments to the use of ecosystems can lead to improved on-farm biodiversity conservation, without unacceptable decreases in the output of other agricultural services. The present challenge is to meet both sets of needs in a sustainable manner (Pascual *et al.*, 2007; Pascual & Perrings, 2007) and the advent of providers such as the BWI that advocate on-farm conservation, signifies the emergence of a new paradigm for agriculture and conservation.

It is known that agriculture reduces diversity to increase productivity for a component of biodiversity of particular interest (Pagiola *et al.*, 1998). Altieri (1999) estimates that the entire world's agricultural landscapes are planted with only about seventy plant species - in contrast with the plant diversity found within a single hectare of fynbos, which typically contains over a hundred species. Nevertheless, transformation of land for agricultural use is accelerating along with biodiversity losses - almost half the world's temperate and dry forests have been converted to agriculture since the 1700s - 25 per cent of the change has happened in the past fifty years alone (Gemmill & Varela, 2004).

In more than half of the world's fourteen biomes, cropland conversion has already covered between 20 to 50 per cent of their surface areas (Olson *et al.*, 2001). Figure 2.6 below indicates the global spread of agricultural transformation. When seen in context with Figure 2.5 previously shown on page 39, it can be noted that the Cape Floristic Region can be regarded as a hotspot of severely endangered biodiversity that simultaneously contains managed ecosystems.



Figure 2.6 Global area covered by agricultural activity
Source: Conservation International (no page number, no year)

Despite growing concern about land transformation, achieving on-farm conservation in the CFR is not simple (Gemmill & Varela, 2004). Specifically, Cowling (2005) maintains that conservation of the Cape Floristic Region cannot happen in isolation from human activities, including farming activity. However, as noted in Chapter One,

conservation measures can add additional burdens to farmers that may be hard to justify in purely financial terms (Ferraro & Kiss, 2002; Bawa, 2006; Sandwith *et al.*, 2006).

Current theory indicates that ecological conservation goals are unlikely to be met if there are economic losses to farmers (Kiss, 2004; Huntley & Petersen, 2005; Common & Stagl, 2005; di Falco & Perrings, 2005). In mitigation, the use of innovative viticultural and wine production practices while conserving native biodiversity (McNeely & Scherr, 2001; McNeely & Scherr, 2003) has been pioneered by the BWI in the Western Cape. Incentives such as decreased farm management costs and relative marketing and wine tourism advantages offered by the BWI can reduce negative agricultural impacts because profitability from these ventures may blend conservation benefits into everyday activities and immediate decisions (Geach & Peart, 1998). The following chart, Figure 2.7 from Gemmill & Varela (2004), indicates how this paradigm of conservation can simultaneously meet biodiversity and agricultural needs. Each of these landscapes shown in Figure 2.7 is scored on axes of value with the contributions defined in yellow.

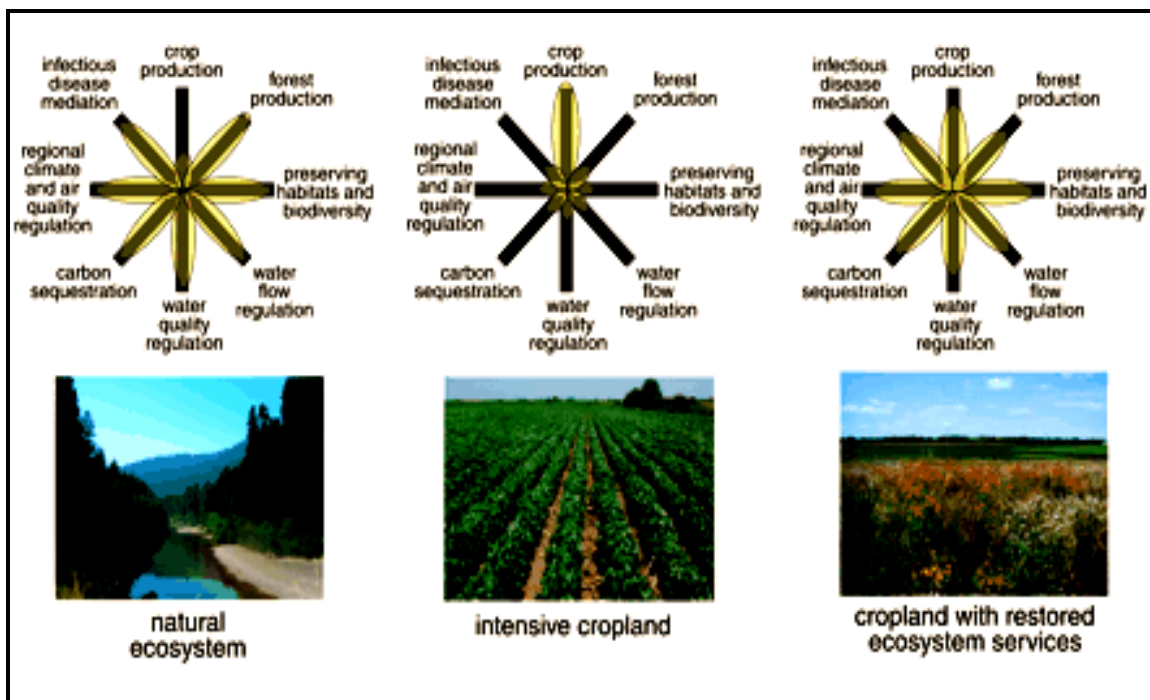


Figure 2.7 Sustainable agriculture
Source: Gemmill & Varela (2004)

Figure 2.7 previously shown on page 42 indicates that efforts to foster biodiversity-friendly practices by integrating on-farm conservation agriculture, organic agriculture and integrated pest management all contribute towards sustainability. With respect to conservation farming since the 1920s, successive South African governments have developed legislation, incentive schemes and extension services to allow commercial farmers to farm in ways that conserve soil, water and vegetation resources. The concept of conservation farming is therefore not new in South Africa. However, following international and national conservation discourse, the concept is broadening to include the conservation of indigenous species and ecosystems in production landscapes (Donaldson, 2002).

2.2.4 Mainstreaming

Mainstreaming integrates biodiversity values into the enabling environment, from national policy to global financial markets; potentially including land- planning, finance, taxation, economic incentives, international trade, capacity building, research, technology (Huntley & Petersen, 2005. What is mainstreaming biodiversity? p4).

Mainstreaming has come to the fore in part to redress shortcomings of other conservation strategies. The process of mainstreaming can occur through conscious intervention or without deliberate intervention, as through the action of market forces. However, Huntley & Petersen (2005) find that the global arena of financial markets has often failed, in that socially and environmentally responsible and integrated investments have not yet materialised effectively. It is suggested that worldwide, mainstreaming initiatives should increasingly be driven by the private sector, in partnership with other pivotal players. The flexible and wide applicability of mainstreaming is advantageous, given that conservation is largely a matter of individual and societal choice based on values and availability of options (Akhtar & Griffin, 2005; Redford, 2005). Each country needs to consider implications of biodiversity loss and to balance asymmetries in the appropriation of benefits and costs of biodiversity use and conservation (Konstant *et al.*, 2005). A

discussion of mainstreaming follows, comprising a brief exploration of mainstreaming practices in the developed world, the developing world and in South Africa.

2.2.4.1 Mainstreaming in the Developed World

New Zealand

Shown on Figure 2.8 following, the New Zealand hotspot covers an archipelago in the Pacific Ocean, some 2,000 kilometres south east of Australia, which comprises 270,197 km² on three main islands and a number of islands nearby.



Figure 2.8 New Zealand hotspot

Source: Conservation International (no page number, no year)

The Global Environment Facility reports that New Zealand has managed significant success in biodiversity conservation of its hotspot – some 33 per cent of its terrestrial land mass is a protected natural area. Although biodiversity conservation interventions on public land are under the aegis of a single integrated management authority, the New Zealand Biodiversity Strategy nevertheless aims to promote conservation interventions that are undertaken insofar as it is possible on private land and with funding sources other than from the government, to develop a mainstreaming approach (GEF website, accessed online January 23 2008 at www.thegef.org). New Zealand has managed to mainstream much biodiversity conservation, by taking conservation outside statutory protected areas and into the commercial arena. Because of its unique natural landscapes and indigenous species, New Zealand targets tourism and film-making among means for sustaining

biodiversity through business. New Zealand authorities hope that practical application of mainstreaming plans will fuel trickle-down economic benefits from agricultural and tourism sectors (McCallum, 2005).

California, USA

Figure 2.9 below shows the California Floristic Province, located on the west coast of the United States of America. Like the Cape Floristic Region, the California Floristic Region belongs to the group of Mediterranean-type areas in the world which are listed as hotspots of endangered biodiversity. The California Floristic Region also has wine producing regions within an endangered floristic hotspot that is severely impacted by viticultural expansion.



Figure 2.9 California Floristic Region hotspot
Source: Conservation International (no page number, no year)

As the most populated state in the America, human pressures have caused California to become one of the most ecologically degraded states. The California Floristic Region exists within one of the world's wealthiest nations and contains some famous national parks; however, the region suffers from threats such as urban sprawl and fire vulnerability similar to those in hotspots found within economically disadvantaged countries (Konstant *et al.*, 2005). Furthermore, only 25 per cent of the California Floristic Region remains in pristine condition, although all or part of America's eight most threatened ecosystems are represented. There is no equivalent of the BWI in America; however the Californian wine grape growers have taken action to protect their

natural heritage. In 1992, the Lodi-Woodbridge Wine Grape Commission has developed a farming manifesto: *Lodi Rules for Sustainable Winegrowing*. Seventy five sustainable farming practices are outlined and these comprise California's third-party-certified, official standard - reviewed by experts in the fields of science, academia and the natural environment. By promoting regional biodiversity conservation efforts, Lodi aims to improve the health of viticultural ecosystems and to increase ecologically conscious wine production methods. Undermining self-regulation in the California wine sector, there is an absence of a governmental mandate to protect California's biodiversity and conservation interventions are often uncoordinated. Conflicts are also common between state government and the management of federal land. Jensen *et al.* (1993) conclude that the existing system of laws and institutions is ill suited to balancing short-term economic gains that result in loss of biodiversity against the long-term costs of these actions.

Mediterranean Basin

The Mediterranean Basin Hotspot covers approximately 2 085 292 km² stretching from Portugal to Jordan and from Morocco to northern Italy.



Figure 2.10 Mediterranean Basin hotspot

Source: Conservation International (no page number, no year)

As indicated in Figure 2.10 above, the Mediterranean Basin Hotspot encompasses over 90 per cent of Greece, Lebanon, Portugal, much of Spain and includes the Canary Islands, Madeira, Selvages Islands, the Azores and Cape Verde Islands.

Many countries within the Mediterranean Basin area have traditions of land conservation; nonetheless, protected areas still only comprise 4.3 per cent of the hotspot's combined land area. Conservation efforts in the Mediterranean Basin aim to solve problems common to all the countries: population pressures; inter reserve connectivity and the sustainable support of rural livelihoods. In recognition of the common natural heritage under threat, there are plans to enable sustainable use of resources within the borders of nature reserves. Although conservation efforts are slanted towards institutional regional development, Conservation International identifies sustainable agriculture as important in the Mediterranean Basin conservation scenario (Conservation International website).

2.2.4.2 Mainstreaming in the Developing World

The following three countries, Mexico, Cuba and Madagascar were selected for similarities with South Africa in terms of unique biodiversity and limited financial resources available for conservation efforts.

Mexico

Mexico can be identified as a transitional country that has taken a traditional top-down approach to biodiversity conservation of its hotspot. Covering most of Central America and including a third of Mexico, the Mesoamerica hotspot shown in Figure 2.11 following on page 48, spans all the subtropical and tropical ecosystems that exist between central Mexico and the Panama Canal. It is known that Ancient Mayans instituted protected areas in this region, and the first national nature reserved was declared in 1876. More recently, according to Varela (2001) Mexico's economic system does not have the institutional capacity, nor institutionalised mechanisms by which to value ecosystem services.



Figure 2.11 Mesoamerica hotspot

Source: Conservation International (no page number, no year)

A recent trend is towards including NGOs in conservation interventions. During the 1990s, local inhabitants and private funding were included in conservation projects for the first time. However a positive enabling environment, institutional systems and economic support for the development of sustainable production systems remain frequently lacking.

Cuba

By contrast to Mexico, Varela (2001) maintains that Cuba has conducted one of the most remarkable co-ordinated policy efforts on sustainable agriculture.



Figure 2.12 Caribbean hotspot

Source: Conservation International (no page number, no year)

The Caribbean Islands hotspot consists mostly of three groups of islands, lying in the Caribbean Sea, between North and South America. Figure 2.12 from the previous page indicates that Cuba accounts for about 48 per cent of the land area of the entire hotspot and contains more than half of the endemic plants found in the region - thus Cuba is a conservation priority in the Caribbean biodiversity hotspot. As a previous Soviet satellite state, the collapse of trade with the former Soviet Bloc led to severe shortage in all imported goods in Cuba, and imports of foods and of inputs such as petroleum, fertiliser, pesticides, fell drastically within two years. Economic sanctions had been long imposed by the USA, so in an effort to become more self-sufficient, the Cuban government declared an Alternative Model of Agriculture. The model prioritises resource conserving technologies and employs local knowledge and skills - essentially mainstreaming agriculture by replacing modern input dependant agriculture with sustainable agriculture. The agricultural model in Cuba secures diversified agricultural production whilst conserving natural resources (Varela, 2001).

Madagascar

In the western Indian Ocean, off the southeast coast of Africa, there is the Madagascar and Indian Ocean Islands biodiversity hotspot. This hotspot, shown in Figure 2.13 following, is dominated by Madagascar, the fourth largest island on earth.

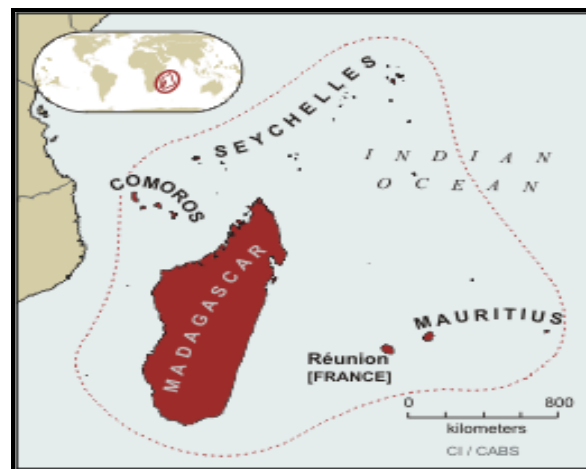


Figure 2.13 Madagascar hotspot

Source: Conservation International (no page number, no year)

Despite close physical proximity with continental Africa, the islands have few of the typical animal species found in Africa. Madagascar is considered to be a valuable repository of species evolution in isolation (Hannah *et al.*, 2005). The island nevertheless suffers extremely severe biodiversity loss and many priority regions of endangered biodiversity are located outside protected areas. Although gradually becoming more streamlined, Madagascar has barely moved beyond the situation where mainstreaming falls under the umbrella term ‘sustainable development’ where, if agricultural practices threaten biodiversity, local stakeholders are merely taught to modify or limit existing practices and thereby mitigate the threat (Brandon *et al.*, 2005).

2.2.4.3 Mainstreaming in South Africa

South Africa’s transition to democracy in 1994 ushered in an institutional dispensation that changed approaches to biodiversity conservation (Cowling *et al.*, 2003). South Africa ratified the Convention on Biodiversity in 1997, endorsing aims that mainstream biodiversity protection into policies and plans (Cowling & Wilhelm-Rechmann, 2003). A responsibility to find answers to South Africa’s biodiversity loss is underscored by South Africa’s less than stellar rating on a Living Planet index scale of ecological footprints per capita, released by the Worldwide Fund for Nature in May 2008. Figure 2.14 below is the chart from the Living Planet Index, indicating South Africa’s position.

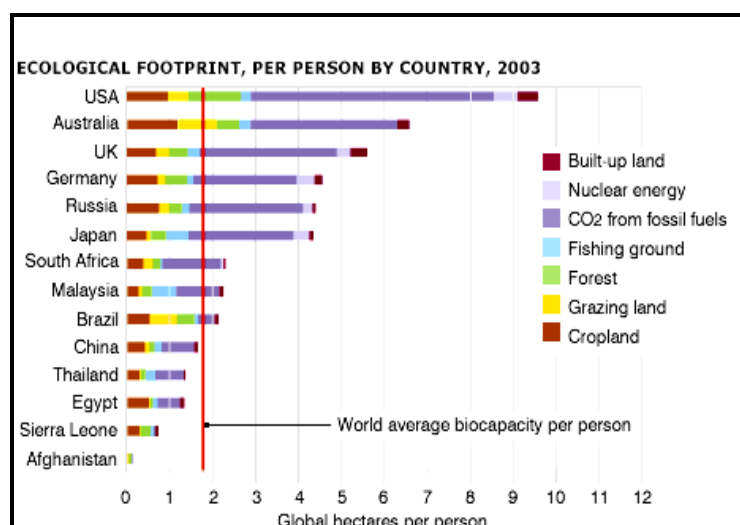


Figure 2.14 Ecological footprint per country

Source: WWF: www.panda.org/downloads/general/lpr2004.pdf

Taking the sum of the world's biocapacity; then dividing it by the number hectares on the earth's surface, the result shows the biocapacity of one average earth hectare. Global hectare per person refers to the amount of biologically productive land and water available per person on the planet. With local reference to Figure 2.14 on page 50 - each human requires an average of 2.2 global hectares to support individual consumption demands at present levels. However the planet is only able to meet consumption levels of 1.8 global hectares per person (Living Planet Index, 2008). Although lifestyles and consumption patterns obviously differ from country to country, there clearly is an onus to find means reduce the per capita ecological footprint in South Africa.

The present South African government has acknowledged the need to look beyond traditional conservation strategies, although in reality many aims have not been met Huntley & Petersen (2005). A recent review shows that biodiversity in South Africa is poorer than ten years ago, despite the expansion of formally protected areas and a decline in cultivation and grazing areas (Swiderska, 2007). Despite evidence indicating a need to build further conservation interventions, Swiderska (2007) maintains that the situation in South Africa has worsened through lack of political commitment, leadership, institutional capacity and funding. Wynberg (2002) argues that lack of delivery for biodiversity conservation is at least in part due to a government more focused on social spending than on the environment. Whilst acknowledging that difficult decisions involving trade-offs among competing goals have to be made, the value of ecosystem services lost to South African society, in the long term, may greatly exceed the short-term economic benefits that are gained from societally transformative activities. It is perverse to non-deliver on conservation targets in favour of social spending, when international research has proved that people with lowest resilience to ecosystem changes are mainly the most disadvantaged in a society (MEA, 2005). World-wide the poorest people are the prime losers from biodiversity loss. Moreover the poorest also experience the largest increases in monetary poverty; relative poverty and also depths of poverty (MEA, 2005).

Despite difficulties, it is understood that a fundamental conservation need in the Western Cape is to safeguard the endangered biodiversity and ecosystems of the Cape Floristic Region for future generations of South Africans (Fairbanks *et al.*, 2001; Cowling *et al.*, 2003a;b). Current conservation discourse in South Africa emphasises mainstreaming of biodiversity within sectoral development programmes and through collaborative local partnerships (Sandwith *et al.*, 2005; Dirzo & Loreau, 2005).

However, in this regard, the literature indicates partnerships typically involve interest groups that traditionally may not have worked well together (Kruger & Shannon, 2000). Mainstreaming partnerships have no 'recipe' and often include an *ad hoc* blend of policy, legislation, self assessment, economic incentivisation and voluntary action (Guyer & Richards, 1996; Loreau *et al.*, 2006). Moreover, economists frequently do not internalise the meaning of biodiversity resources outside the economic value indicated by market exchanges. Similarly, many natural scientists do not grasp the significance of efficient resource allocation through market mechanisms; or the requirements of economic development and growth of a human society (Dinerstein & Wikramanayake, 1993; Gowdy, 1997; Dyllick & Hockerts, 2002; Heal, 2007). Nevertheless at least in principle, there is recognition that failure to understand the economic aspects of biodiversity resources and inadequate reflections of the social values of biodiversity resources in the market arenas are major causes of the present worldwide biodiversity crisis (Clark, 1995; Cowling *et al.*, 1996; Bhattharai & Hammig, 2001; Brock & Xepapadeas, 2003; Bawa, 2006).

2.3 CONCLUSION

Through a review of relevant literature, this chapter has provided evidence that human activity has precipitated the destruction of ecosystems and accelerated biodiversity loss (Sanderson *et al.*, 2002). Further, the literature review has traced developments in conservation thinking towards increasingly accurate identifications of the underlying sources of biodiversity loss. Despite a lack of direct research addressing links between business and biodiversity in wine sectors world-wide, the literature grounds this study in

the dialectic of Ecological Economics. The search for ecologically and economically integrated solutions has been highlighted because prohibiting further loss is not the only goal of contemporary conservation interventions. Sharpley & Telfer (2002) contend that sustainability is broader than merely conservation or protection of natural resources. Sustainability is a function of complex interrelationships between society and natural resources; socio-economic and political structures and local management decisions (Sharpley & Telfer, 2002). In seeking solutions, a parallel goal therefore, is to achieve responsible use with levels of conservation that benefit everyone in the present and the future (Bennett, 2003; MEA 2005). To this end, sustainable conservation policies should ideally promote a balance between advancements in human wellbeing including the use and conservation of biodiversity, and negative human impacts upon biodiversity.

The literature also has offered an overview of conservation strategy and practice in a dynamically shifting field and cast light upon the practical applicability of mainstreaming as a conservation solution with reference to wine production. There is evidence that the practice of mainstreaming potentially fulfils such requirements for sustainability (Huntley & Petersen, 2005). Thus this review has constructed a background and rationale for the inception of the Biodiversity and Wine Initiative. Further, the literature has informed the research design and case study methodology by addressing aspects of the conservation discourse relevant to a sustainability appraisal of the Biodiversity and Wine Initiative. Hereafter, Chapter Three comprises a report on an investigation of the Biodiversity and Wine Initiative as a functioning organisation, including an overview of the initiative in a wider context. Chapter Four provides a report on case studies of the first two BWI champion estates that are considered to employ best practice in on-farm conservation.

CHAPTER 3 THE BIODIVERSITY AND WINE INITIATIVE

PLACE, PROCESS, PROGRESS

The first section of this chapter contains a summary that tracks conservation developments in the Western Cape towards the establishment of the Biodiversity and Wine Initiative. The second section comprises a description of structures, functions and dynamics of the Biodiversity and Wine Initiative, including positioning in the South African wine sector and niche wine markets. Chapter Three has been expanded to capture a directional shift that occurred in the Biodiversity and Wine Initiative very near to the completion of the study. The final section of the chapter links case study indicators with strategic priorities of the Biodiversity and Wine Initiative.

3.1 BACKGROUND

From 1773 onwards, botanists have maintained a steady tradition of botanical discovery and description within the Cape Floristic Region (Gelderblom *et al.*, 2003); conversely the development of conservation in the region has evolved haphazardly. Conservation in South Africa in the early twentieth century focused on game protection (Wynberg, 2002), and the concept of floral reserves did not exist (Gelderblom *et al.*, 2003). Serious attempts to conserve the Western Cape's ecosystems only came about in the mid-twentieth century, largely through the South African Forestry Department. However, incremental curbs on government funding during the apartheid and sanctions era led to cutbacks and losses for conservation action and research. Consequently, the situation was bleak by the early 1990s (Knight *et al.*, 2007) with conservation organisations rendered unable to adequately manage the areas under their control.

The 1994 democratic elections precipitated significant improvements in conservation prospects in the CFR (Wynberg, 2002). A return to the world of global conservation prompted invigorated funding for biodiversity conservation programmes (Cowling *et al.*, 2002). Simultaneously, export markets reopened and investment flowed into the South African wine sector (Wynberg, 2002). From 1999 to 2003 the wine sector grew by 24.4

per cent, *per annum* (Krige, 2004). During the same time period conservationists realised that expanded and intensified viticulture was further threatening the already endangered lowlands of the Cape Floristic Region (Cowling *et al.*, 2003b; Mathews, 2003; Sandwith *et al.*, 2006)

The root of the conservation problem as it relates to winegrowing in the Western Cape is that vines and fynbos lay claim to the same natural resources within the CFR (Fairbanks *et al.*, 2004; Sandwith *et al.*, 2005). It is projected that 15 to 30 per cent of remaining natural habitats in the CFR will be converted for agricultural land use within the coming two decades (Mathews, 2003). Because conversion to commercial farming can generate benefits that appear to be more desirable than conservation efforts, particularly in the short term (Kiss, 2004), commercial expansion of viticulture remains a significant threat to the CFR (Cowling, 2002; Mathews, 2003).

Post 1994, South Africa was included in global system of endangered biodiversity hotspots and the Cape Floristic Region was the first designated hotspot in South Africa (Myers *et al.*, 2004). This inclusion boosted conservation interventions in the region, but remains insufficient to ensure adequate biodiversity protection into the future. As noted in Chapter Two, biodiversity hotspots are typically identified using ecologically based approaches, data on endemic species richness, total biodiversity, and past habitat conversion (Myers *et al.*, 2004). Although important, such conservation strategies tend to neglect economic costs and provide a relatively static assessment of conservation priorities. Moreover, there is also minimal guidance on how to fund conservation and few indications of how benefits and costs of conservation should be distributed (Fromm, 2000; Bawa, 2006; Frenzt, 2006).

Moreover, in South Africa, the government is constricted in focus by legislative and fund- allocation concerns. The South African wine sector self-regulates to some extent, but the recent proliferation of small new wine estates and cooperative amalgamations puts control of even more land in the CFR further beyond the reach of the public sector, thus exacerbating a tendency by the government to ignore the potential of the private

sector in biodiversity conservation (Sandwith *et al.*, 2005; Swiderska, 2007). Conversely, theoretical advances incorporate private sector-type economic considerations into conservation priority setting, and provide partnership frameworks for deciding where, when, and how biodiversity is conserved (Heywood *et al.*, 2007; Meurk, 2007). Given the value of the wine sector, these considerations are of importance. Further, in this respect, it is difficult to put a monetary value to the biodiversity of the CFR, but a recent natural resource economics study estimated the total economic value of the CFR as at least R10 000 million per year, which is equivalent to more than 10 per cent of the regional Gross Geographic Product for the Western Cape. This figure merely confirms direct use value, and does not factor in option value of biodiversity, as yet unknown (SANBI Biodiversity Series 4, 2006).

Specifically because of the threat of further viticultural expansion there is evidence that successful biodiversity conservation in the CFR will depend strongly upon cooperation of the wine sector with conservation bodies. However, no formal encouragement of stewardship was encompassed within the various practices of the wine sector. This confluence of circumstances prompted a study of conservation needs in the Cape Floristic Region undertaken the Botanical Society of South Africa in conjunction with Conservation International. The main outcome of this study was the inception of the Biodiversity and Wine Initiative. As a functioning example of leading edge conservation practices at sectoral and project levels, the BWI has broken new ground and makes a strong contribution to the practices of global biodiversity conservation.

3.2 AIMS AND STRATEGIES

The Biodiversity and Wine Initiative aims to encourage farming methods that simultaneously reduce land conversion and increase protection of biodiversity rich landscapes. Since the launch in 2004 under the aegis of the South African National Biodiversity Institute (SANBI), the BWI has received funding from the Botanical Society of South Africa (BotSoc); Cape Action for People and the Environment (CAPE); wines of South Africa WOSA; Green Trust, Critical Ecosystems Partnership Fund (CEPF);

Winetech; Worldwide Fund for Nature (WWF); World Bank and the South African Wine Council (SAWIC). The initial funding for Biodiversity and Wine Initiative constituted approximately 80 per cent from the South African wine sector and 20 per cent from local and international conservation bodies. An early premise was that after 24 months, the pivotal values and benefits of the BWI would have become embedded within the structures of the wine sector and the BWI as a separate institution would have no further role thereafter. However, it was decided in 2006 to further establish the independence of the Biodiversity and Wine Initiative whilst maintaining strong links within the wine sector.

Briefly, the initiative aims to:

- Prevent further losses of natural habitats in critically endangered sites
- Expand the total land area set aside for natural habitats
- Promote changes in viticultural practices, to develop vineyards as suitable habitats for biodiversity and to reduce practices that have destructive impacts on biodiversity
- Create marketing opportunities by promoting a proactive stance on biodiversity in CFR, as a selling point to differentiate Brand South Africa

Implementation strategies of the BWI can be found as Appendix F.

According to its aims, the BWI can be considered both a progenitor of leading edge international practice in responsible viticulture, and simultaneously a point of entry (McNeely, 1998; Cromwell *et al.*, 1999) where investors connect with actions that have potential for implementation. A point of entry is not necessarily a source of money or political leverage; nevertheless, Guruswamy & McNeely (1998) suggest that an amalgam of investors and partnerships, for which the BWI forms a catalyst, are necessary for sustainable conservation. Aspects include international conservation funds and programmes as well as access to financial opportunities created by markets for ecological services and biodiversity-based commodities (Jenkins *et al.*, 2004; Redford, 2005).

The Biodiversity and Wine Initiative represents a move towards an integrative and cross sectoral approach to biodiversity conservation in the Western Cape (Hughes & Maze, 2002) and is described by Krige (2004) as an important contributor to sustainable wine production. The initiative aims to facilitate conservation through two main mechanisms:

- Stewardship of the land by individual owners and managers
- Standards for sector wide integrated production of wine

Wine farmers and producers who join the initiative are recognised in two categories:

- Member: entry level with a signed statement of intent to set aside an area of natural habitat; implement IPW sustainable production guidelines for farms and cellars.
- Champion: a two year track record of good conservation practice; conservation actions in management plans; conserve at least 10 per cent of the property

From the outset, the BWI motivated for the adoption of mainstreaming practices by emphasising advantages to both the wine sector and the conservation sector. The reasoning was that the wine sector would benefit from leveraging the biodiversity of the CFR as a marketing edge, simultaneously achieving compliance with sustainable natural resource management priorities of IPW. The conservation sector would reciprocally benefit from improved viticultural practices and the conservation of a threatened natural heritage for future generations (BWI website). There was an early focus on selected pilot areas where project implementation took place from 2004-2006. These pilot areas were selected on a basis of the existence of significantly threatened vegetation and rare endangered species. The pilot areas included: the Paarl Mountain ward (Paarl district), the Bottelary (Stellenbosch district) and the Slanghoek ward (Robertson district) (Tony Hansen, pers. comm. 19 July 2006). Aware of pressure to find alternative forms of land use, the BWI identified means by which sustainable use of natural resources could be promoted on wine farms, so as to produce recognisable benefits (Lochner *et al.*, 2003) that encourage ongoing biodiversity conservation.

Wines of South Africa (WOSA), the sector marketing body established early and particularly strong links with the BWI through the International Marketing Council of South Africa, whose main objective is the marketing of South Africa through the Brand South Africa campaign. From 2006, Brand South Africa's positioning in the international wine market has featured the biodiversity of the Cape winelands as its selling point, as seen on the WOSA logo, Figure 3.1 below:



Figure 3.1 WOSA logo
Source: WOSA (2006)

In turn, the BWI represented the conservation element of the marketing drive, underpinning the biodiversity message by actions on the ground - including biodiversity wine tourism. The Green Mountain Eco Route, established in the Elgin area, is the first biodiversity wine route in the world - the logo is shown below as Figure 3.2.



Figure 3.2 Groenberg tourism logo
Source: Allan Mullins, CWM

Despite early successes, there have also been obstacles to the promising activities of the BWI. It was initially hoped that biodiversity-sensitive wine farming would give South Africa a competitive market advantage. The advantage seems not to have fully materialised. Further, since this study began, WOSA has changed position on the biodiversity marketing message. The message now refers to *diversity*, which concept

includes the diversity of South Africa's people. Moreover, although the Western Province minister of agriculture agreed in 2006 to incorporate BWI conservation compliance into the Wine of Origin certification system by 2009, the plan was unsuccessful. Reasons given for the failure include farmer unwillingness; legislative tardiness and lack of operational preparedness. The Biodiversity and Wine Initiative has backed off from the 2009 goal, consequently the use of the IPW and biodiversity guidelines remain voluntary for farmers.

The BWI is still a developing organisation and actively seeking means to have a positive role in conservation. Some important successes have already been achieved, especially in collaboration between private sector, agriculture and conservation and government - sectors that often have conflicting priorities (Huntley & Petersen, 2005). By contrast, this study found that there are challenges in the areas of stakeholder relations, sectoral communications, securing funding, developing effective market incentives and appropriate farmer incentives, and identifying quantifiable results.

3.3 POSITIONING IN THE WINE SECTOR

Integral to the value of the wine sector is the importance of maintaining a healthy natural base. Thus a study of an initiative that promotes sustainable wine production was enhanced by obtaining a cursory understanding of the relative value of the wine sector. South Africa produces approximately three per cent of the world's wine and is the ninth largest producer of wine (WOSA figures). More than 90 per cent of South African wine production occurs within the Western Cape and the wine sector directly supports over 345 000 people (Wynberg, 2002). Excluding tourism, the wine sector generates a total GDP value of R 16.3 billion or 1.5 per cent of the total GDP of South Africa (SAWIS figures 2008). Of this amount, about R11.4 billion remains in the Western Cape (SAWIS figures 2008). Visser (2005) indicates that tourism spending in the Stellenbosch area alone is approximately one billion rand, the majority of which is directly linked with the wine sector.

Likewise, a brief historical understanding of the South African wine sector enhanced an understanding of the present position of the BWI. Until the 1990s, the South African wine sector was in the grip of the Koöperatiewe Wijnbouwers Vereniging KWV. Mandated to regulate grapes and wine prices by controlling supplies thereof, the KWV acquired statutory control of the wine sector. Membership became compulsory for wine and brandy farmers, who were required to sell their products through the KWV for fixed minimum prices (Cape Wine Academy, 2008). This guaranteed market acted as an incentive to transform tracts of land for viticultural uses, with a focus on maximising output. As a result, in apartheid South Africa the domestic market was typically awash with inexpensive, mediocre wines (Wynberg, 2002).

The election of a new government for South Africa in 1994 opened another era for the wine sector. International trade sanctions were removed and the South African government introduced policies and legislation liberalising external trade and agricultural marketing. Wine estates began to market their wines independently and Wynberg (2002) explains that exports expanded to currently about 25 per cent of total production. Mathews (2003) indicates that this increase in export opportunities was a driver of viticultural expansion. In this regard, Mathews (2003) contends that land above existing vineyards will increasingly be under pressure of encroachment and also maintains that wine-farming activity is increasing at the edges of the Cape winelands municipal region.

Globally, wine growers' prevailing opinion tends to be that formalised conservation offers mostly liabilities (Antle & Capalbo, 2002; Boland *et al.*, 2003). Those who deem that conservation equates to green expropriation argue that enforcing conservation often means opportunity costs and the loss of existing infrastructure (Daily, 2003; Ferraro & Simpson, 2004). The BWI has done much to change this perception in South Africa and the sinking rand (ZAR11.52=USD1.01 at the time of writing) has provided an additional fillip for exporting wine producers. However the collective mood in South Africa is negatively influenced by ever more competitive niche markets for New World wines. Moreover, data generated indirectly during the interview process indicates that

participants are somewhat unsettled by the local enabling environment where resources remain in the realm of redistributive imperatives.

3.4 MARKETING BIODIVERSITY

The uncommon floral diversity, the varied soils and microclimates of the CFR have created rich and unique wine *terroir*. Literally translated as terrain, *terroir* defines the French *Appellation Contrôlée* system (Gade, 2004). The acknowledgment that certain areas are better suited to wine grapes or particular cultivars is well known (Saayman, 1977) and the term *terroir* incorporates a sense of how deeply wines express the particular soil, climate, microclimate and biodiversity of a region (Carey, 2001; Gade, 2004). Part of the BWI mission has been to encourage wine farmers to view *terroir* as a means to restore and conserve biodiversity. Now that South Africa has access to the international conservation community and export markets. BWI members hope that an engendered sense of place (Kemmis, 1990; Williams *et al.*, 1992), together with an intensifying consumer focus on 'green' growing conditions and production methods (Krige, 2004) will benefit sales of their products.

Presently seeking means by which to create further market differentiation, the BWI is actively identifying potential synergies within the world of conservation. An example of possible synergy is to operate in tandem with Working For Water, a project of the Department of Water Affairs and Forestry, creating work for 18 000 previously unemployed people, to clear alien species that consume water and fuel fires that cause damage and destroy indigenous species.

Dr Paul Cluver, a dedicated conservationist on his wine estate De Rust near Elgin, is sure that South African wines have special identities: *A specific place on a farm will show something that is special in the world* (personal comm. April 13 2008). To indicate how very specifically indigenous floral species can represent soils and microclimates, Dr Cluver speaks of the *Protea coronata* (Green Sugarbush) seen in Photo 3.1 following. He is quietly confident that South African niche wines will outshine the mass produced

wine market. *As far as is known, the Protea coronata grows in a very small area – exclusively on Bokkeveld Shale, requiring southerly aspects and plenty of rain, he says.*



Photo 3.1 Protea coronata

Source: Nigel Forshaw Photograph taken for the SANBI Protea Atlas Project 2008

Dr Cluver explains further: *Protea coronata illustrates the meaning of terroir. Good South African wines reflect their origin – an individual taste, from an identifiable area.*

Recognition of the links between specific vineyards and wines (Skuras & Dimara, 2004) is reflected in the tradition of identifying wines by place of origin such as Burgundy or Constantia, rather than by cultivar (Gade, 2004). However, it has not yet been resolved exactly how much of a premium that consumers are willing to pay for biodiversity conservation at the place of origin, frequently not in the consumers' own country. In this regard a 2004 survey conducted by the Leopold Center for Sustainable Agriculture, Iowa State University, found that fifty six per cent of respondents were willing to pay at least ten per cent more for a place-based food or *produit du terroir*. A 2008 consumer survey carried out in South Africa by WOSA indicates results similar to those found during this study: i.e. most consumers of wine do not understand biodiversity and are not prepared to pay extra cash to conserve biodiversity, especially plants (Inge Kotze, pers. comm. 18 Aug 2008). Every interview participant for this study, bar BWInsiders, mentioned that the concept of biodiversity was difficult to understand; and public understanding became even more nebulous when biodiversity conservation was linked with the meanings of *terroir*. However, Smart (2004) like Dr Cluver, has found that *terroir* does have the potential to highlight natural differences of place. *Terroir* then seems to have the

potential to promote a variety of consumer interests (Barham, 2003; Gade, 2004), upon which the BWI members in particular hope to capitalise. Data from this study indicate that two important stumbling blocks to capitalising upon this potential in the CFR are:

- Communicating what biodiversity means
- Lack of specific understanding of to whom the concept of biodiversity is best communicated, if the aim is to sell wine.

RECENT DEVELOPMENTS

Since this study began, the position of the BWI within the wine sector *vis a vis* the conservation sector has fundamentally shifted. Whereas in 2004, the BWI originally derived the majority of its funding from the wine sector, at present in 2008 the funding structure has become inverted and 80 per cent of funds are now sourced from conservation bodies, with only 20 per cent from the wine sector. Further, the entire 20 per cent derived from the wine sector is sourced from WOSA, the sector-based marketing arm. The reason given for this inversion is that wine producers have proved consistently unwilling to contribute to the BWI in the absence of quantifiable monetary benefits in return. By contrast, the conservation sector has recognised and rewarded the BWI - for example the 2007 *Cape Times / Vodacom Environmental Award* for outstanding achievements in Environmental Conservation. Becoming further entrenched with sources of support in the conservation sector, the BWI has strengthened a strategic and financial relationship with The Green Trust. The guiding aim of The Green Trust is the conservation of South Africa's unique biodiversity, through means that create tangible benefits for a wide community of users. The Green Trust has affiliations with Nedbank, but maintains autonomy as an associate trust of Worldwide Fund for Nature-SA. Projects enter independent review processes and examination by a board of directors.

The changes in funding structure of the BWI are reflected by an ideological shift that sees a dynamic repositioning of the initiative. An August 2008 interview with CEO Inge Kotze revealed that the BWI is moving away from further direct engagement with the wine sector, increasingly towards fulfilling a conservation mandate. First conceived of as

a biodiversity conservation by business praxis, the move away from business i.e. the wine sector, has been strongly towards prioritising conservation targets. The BWI has even moved out of shared office space with the South African Wine Industry Council (SAWIC) to join the offices of the Worldwide Fund for Nature-South Africa. Kotze explains that the conservation needs of individual farmers will now have to become the responsibility of the industry mandated Integrated Production of Wines programme (IPW). Further reducing direct involvement in the wine sector the BWI leadership has decided that there is possibly a more functional role for the BWI to become involved in policy affecting regional and local conservation programmes that include lands presently used for viticulture. The identification of spatial conservation targets in a broader landscape is now important to the BWI; while conservation activities of individual farmers have become the responsibility of the Integrated Production of Wine. The BWI presently works independently, but under the aegis of the South African Botanical Society. Further, the BWI seeks to create an operational model that will mesh with the objectives of the Cape Nature Stewardship Programme.

Inge Kotze says that the BWI has no legal mandate to stop development of land on wine farms earmarked for conservation. One of the reasons given for the move away from direct involvement in the wine sector is that after the initial audit, the BWI had no way of holding farmers accountable – a weakness mentioned by Estate People in this study. Lack of capacity is one reason given for failure in this regard. Inadequate manpower is also the reason that the BWI leadership has decided to move the initiative to another level as a mentor of larger conservation projects within which individual wine farms may be encompassed. An example of such an envisaged mentoring project is a scheme whereby seasonal labour could be employed year round in alien clearing programmes that can be linked with the Working for Water campaign. The BWI hopes to promote capacity building through such programmes as this, which may enable employees to become independent alien-clearing contractors (Inge Kotze, pers. comm. 18 August 2008).

With the shift away from activities requiring immediate involvement in the wine sector, a number of new goals have appeared. Having now achieved the conservation of approximately 75 000 hectares of land from the wine sector, the BWI is concerning itself

with the protection of this land into the future. Amongst possible means to achieve protection, is a plan to persuade farmers to sign off the land for perpetuity. However, in a political climate favouring active land reform, some farmers are reluctant to work with Cape Nature – seen as a quasi government organisation. To offset these fears and farmer distrust of government supported signoffs, the BWI now aims to create a trust into which farmers can cede the earmarked land to be conserved for posterity. Another goal of the BWI is to research the problem of adequate farmer incentivisation. Among options presently under investigation are direct payments for ecosystem services; proactive means to obtain premiums for biodiversity-friendly wine; conservation incentives such as valuable firebreaks from clearing alien vegetation (Inge Kotze pers. comm. 18 August 2008).

Further, the issue of certification of wines produced according to BWI principles has proved to be problematic for the initiative. In another shift, the BWI has moved from encouraging wine producers to use the sticker and simply hoping that consumers will respond positively, to identifying gatekeepers (sellers of wine) who will actively support the use of the sticker. The original design of sticker for wine bottles was a minutely detailed illustration of a sugar bird on a protea; however the response to the life-like image was not positive, so the image became stylised, as seen below in Figure 3.3 and Figure 3.4 respectively. According to Inge Kotze: *The importance of the label is that it empowers consumers to favour wines that are 'fynbos-friendly' and so contribute to the conservation of our unique Cape Floral region. By supporting BWI members who display this label, consumers make a significant contribution to the long-term conservation of critical natural habitats and species in the Western Cape winelands. At this stage, [August 2008] approximately 30 farms are displaying the label. Obviously as marketing drive continues this number will increase.*

With reference to the use of the stickers seen below, the BWI is utilising the services of an MBA student from UCT, to attempt to track the worth of the sticker and concurrently, the value of differentiation in an economic niche market.



Figure 3.3 Champion sticker
Source: Meropa (2008)



Figure 3.4 Member sticker
Source: Meropa (2008)

Another concept under consideration by the BWI at present is an association with the Fair Trade movement that is internationally recognised by consumers. However, at least one participant was openly non-sanguine about this concept. An Informed Outsider wrote in a follow-up email to an interview: *People acquire everything in context. More champagne is sold because it says so on the label, than because of anything else. But I think a BWI label is very far from being a champagne label, or for that matter a Fair Trade label.*

3.6 CONCLUSION

Chapter Three has identified the nature and functions of the BWI; placed the initiative in context and provided a discussion of developments and outlooks. The following table adapted from Morris and Potter, (1995) tracks BWI progress towards meeting incremental mainstreaming challenges over the four years of existence. The stages of the Biodiversity and Wine Initiative's hierarchy of priorities approximately mirror the identified research indicators A, B, C, reiterated as follows:

- A) Reductions in levels of threat to biodiversity in the CFR through BWI efforts
- B) Level of adoption of BWI principles: Attitudes towards the BWI
 - Identification of barriers and resistance factors
- C) Evidence of sector-based mainstreaming outcomes

In Table 3.1 the indicators shown previously are compared with the Biodiversity and Wine Initiative's fulfilment of strategic priorities in: Early Phase; Consolidation Phase and Results Phase. Accordingly, data for analysis were organised into the following matched order: Indicator A - Early Phase

Indicator B - Consolidation Phase

Indicator C - Results Phase

Table 3.1 Matching BWI priorities with research strategy

STAGES	EARLY PHASE	CONSOLIDATION	RESULTS
BWI PRIORITIES	<p>Maximise value of wine production schemes and biodiversity benefits</p> <p>Raise rates of participation</p>	<p>Adjust to ensure max environmental value for market return</p> <p>Extend participation</p> <p>Maximise additionality effect</p>	<p>Safeguard environmental benefits</p> <p>Inculcate stewardship</p> <p>Create regional conservation</p>
INDICATORS	A	B	C
RESEARCH PRIORITIES	<p>Numbers of farmers</p> <p>Levels of uptake over time</p> <p>Amount of land conserved</p>	<p>Profiles and comparisons of participants and non participants</p> <p>Identification of resistance factors to entry</p>	<p>Evidence of sustainable mainstreaming indicators</p>

Data were categorised and ordered in this way so as to fulfil specific research objectives; to enhance a reasonable assessment of sustainability and to enable an overall improved understanding of the BWI. This structure permitted separate analysis of each indicator for every stage of development, in the light of its contribution to the study objectives.

CHAPTER 4 CASE STUDY

Chapter Four describes a comparative case study of Vergelegen with Graham Beck Wines. This pair of estates was of particular interest because they were the first two estates to achieve BWI champion status. The objective of the comparative case study was to deepen understanding of the sustainability potential of Biodiversity and Wine Initiative by studying the two estates with the longest running BWI conservation projects. These two estates have had the most time of all the champion estates to find approaches to wine production that complement natural environments, enhance ecosystem function, and improve rural livelihoods. Conceptually, the choice of case subjects - Vergelegen and Graham Beck Wines - was made in that both claim to have achieved effective integration of wine production and biodiversity conservation.

Early research indicated that these two estates could be used as best practice examples, including benefits and costs and information on trends like site outreach and educational opportunities. It is obviously not the case that other wine estates do not practice effective conservation. Indeed, some other estates that conserve biodiversity are mentioned in Chapter 5. There are however, thirteen champion estates and time did not allow for intensive studies of each one. Thus it was decided to use these two real-world case studies to improve research understanding of the applicability of BWI concepts and to compare how similar principles are put into action on two different estates. Further, Vergelegen and Graham Beck were chosen because funding is not an obstacle to implementing best practice activities in either site.

4.1 BWI CHAMPION STATUS

In 2005, Vergelegen attained the status of the first BWI champion estate, closely followed by Graham Beck Wines. To become a champion, applicant estates must have an ecologically viable portion of natural vegetation that is intact and that comprises no less than ten per cent of the total farm size. This intactness status must be verified by a BWI extension advisor or a similar certified conservation practitioner. Champions must achieve a minimum of 85 per cent on the conservation form which is self-assessed, with

the score verified by a BWI officer. Further, the farm and cellar must submit to an external audit and also achieve an IPW Conformance Certificate. Aspirant champion estates need a conservation management plan approved by the BWI, and priorities identified in the plan should be in the process of implementation. Applicants also must demonstrate tangible outcomes from their biodiversity conservation efforts, following at least a two year record of excellent conservation practices. The list of criteria can be found on a copy of the BWI champion application form as Appendix G. A table of BWI estates, including champions, comprises Appendix H and descriptions of the 13 champion estates (in October 2008) comprise Appendix I.

Mr Mossie Basson and Mr Gerald Wright, conservationists at Graham Beck Wines and Vergelegen respectively, confirmed that the process of building a champion estate was painstaking from the outset. Gerald Wright said: *Initial identification of biodiversity value has been followed by investments in conservation activities and education.* Mossie Basson expressed similar thoughts; *Prevention is better than cure. We are proactive in educational development and experimentation. We're not just building a brand; we're building a sense of responsibility.*

4.2 GRAHAM BECK WINES

Graham Beck Wines' Robertson estate became the second BWI champion estate and was thus selected for comparison purposes. Visits were made three times during the course of the study and in November 2007, Mr Mossie Basson invited the researcher out to the Robertson estate for a day tour of the estate and the conservancy. Mossie has an holistic approach to biodiversity conservation, people and project management, coupled with enthusiasm for what he does and a vast inventory of knowledge about the estate and environment.

4.2.1 The property

Mr Graham Beck, first established in the coal industry, purchased Madeba Farm in the Breederiver Valley near Robertson, 25 years ago. Mr Beck now owns four wine estates,

but the Robertson cellar and farm were his first ventures. Figure 4.1 shows a view of the immediate area. Bordering the semi-arid Little Karoo region the climate is warm and very dry, and in combination with mineral and fossil soils, this area has a distinct character that resonates in its wines.

4.2.2 Biodiversity integration

Like Vergelegen, Graham Beck's four estates have been awarded IPW Conformance Certificates, issued to producers that grow grapes and make wine in an environmentally sustainable manner.

Mossie Basson who energetically drives biodiversity conservation at Graham Beck Wines is an entrepreneurial and engaging refugee from public nature conservation and from the commercial retail sector. Mossie formulates and monitors biodiversity conservation plans for all four Graham Beck estates in the Western Cape. Based on the Robertson estate, this passionate conservationist / philosopher has a number of full time biodiversity projects including overseeing the Graham Beck Nature Reserve, shown below in Photo 4.1.

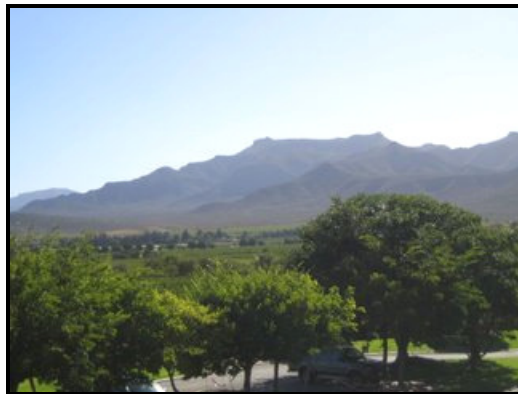


Photo 4.1 Towards the Graham Beck Nature Reserve
Source: Author (2007)

Mossie is as much a people person as he is a nature person and he has integrated biodiversity plans into all levels of farm management - from sewerage treatment to packaging to housekeeping to vineyard management. Farm vehicles such as the tractor

seen below in Photo 4.2, are washed on a slope and the run-off is contained to be recycled on to lawns and vineyards.



Photo 4.2 Bio friendly vehicle washing
Source: Author (2007)

Graham Beck Wine's Conservation Management Plan is a comprehensive programme, formally approved by the BWI, but Mossie conserves according to his own naturalistic rules, among which is the '*vrot appel*' principle derived from his time as Fruit and Vegetable manager at a supermarket chain. *Take out the vrottest bits every time the area is inspected, he says, and eventually, everything will be fresh again.*

Working with Mossie, the Robertson estate manager Pieter Fouché uses environmentally friendly pest and disease control methods and natural predators are bred and released in the vineyards. In honour of Mossie's efforts, wine made from grapes grown as naturally as possible is called the Gamekeeper's Reserve. The label, incorporating sketches of reintroduced game is seen below as Figure 4.1



Figure 4.1 Gamekeeper's Reserve
Source: Graham Beck Wines (2007)

Pieter has dedicated an experimental vineyard block to organic farming practices, which he considers to be yielding results in restoring the natural balance. Pieter uses a state of the art non invasive weather station on the farm, able to predict climatic events which could lead to outbreaks in pests or disease in the vineyards.

4.2.3 Vegetation and wildlife

The 1,885 hectares of natural vegetation earmarked for conservation by Graham Beck Wines comprise almost 50 per cent of the Robertson estate. Large swathes of land which had suffered extensive soil erosion damage have been restored. Together with 28 neighbouring farms, a conservancy has been established to protect natural fauna and flora. Mossie told the researcher that there are many rare and endangered species in the area. One of the unique plants on the Robertson estate is the *Haworthia maraisii* which has been found nowhere else in the world.

Various conservancy innovations are yielding results. The main conservation project is the Graham Beck Private Nature Reserve, which adjoins the Robertson estate and extends to the eastern slopes of the Rooiberg. The area comprises four sensitive vegetation types: Robertson Karoo, Breede shale renosterveld, Breede quartzite fynbos and Breede sand fynbos, an endangered vegetation type. The biomass cover of the entire reserve has risen by 34 per cent since 2001, while erosion problems have been reduced by up to 42 per cent. A variety of indigenous animals have been successfully reintroduced to the area. Game such as springbok, eland and rhebuck and birds like the blue crane have become a regular sight on Mossie's game drives. Even the very rare riverine rabbit, a red data book endangered species, has been spotted (Mossie Basson pers. comm. November 27 2007)

4.2.4 Innovations and insights

Mossie's approach to people is straightforward. *You get what you measure* he says. He believes that if he only measures employees' time, he will get mere clock-watchers. He sets interactive goals with the workers and then provides large incentives. Mossie says he is mostly: *chuffed at how well people respond to responsibility.*

Amongst innovative community projects at Graham Beck Wines in Robertson, is a home for retired workers and a day care centre staffed by people from the local community. A large skills centre under construction will provide computer classes and house a bakery and welding workshop for farm workers to upgrade existing skills or learn new ones to further benefit the estate, or develop private businesses of their own.

4.3 VERGELEGEN ESTATE

Vergelegen is now owned by Anglo American plc. a group of global companies involved in the mining and natural resources sectors. Visits to the site were made between August 2007 and September 2008. The first visit was to see the site and explore the facilities including tourist attractions. The visits thereafter were to eat at the restaurant; study the museum and gardens; join a wine tasting; observe farm and tourist activities. In early December 2007, an extended visit was made to interview Mr Gerald Wright, the conservationist at Vergelegen. Also interviewed were Mr Les Naidoo the chief accountant for Vergelegen and Mr Eddy Turner, the marketing manager.

4.3.1 The property

Vergelegen is a 3,000 hectare wine estate in the Helderberg region, about 50 kilometres from Cape Town. The gracious homestead and the spreading 300 year old camphor trees seen below in Photo 4.3 and Photo 4.4 respectively, provide a picture of the Cape's colonial past that belies leading edge winemaking and conservation practices.



Photo 4.3 Vergelegen homestead restored
Source: T Peacock (no year)



Photo 4.4 300 year old camphor trees
Source: T Peacock (no year)

A definitive modern cellar seen below in Figure 4.5 complements corporate-style offices and reflects a very different picture to Vergelegen 20 years ago, then an estate defunct and neglected. ■



Photo 4.5 Vergelegen cellar
Source: Vergelegen Estate (2007)

The land upon which Vergelegen was developed was originally granted to Willem Adriaan van der Stel, governor of the Cape of Good Hope between 1700 and 1706. Van der Stel used his horticultural knowledge and access to the Dutch East India Company's resources to create a farm; that was agriculturally advanced in its time. Although recalled to Holland in disgrace, his knowledge as a horticulturist, botanist, agriculturalist and the vision with which he planned, contributed greatly to the viticultural development of the Cape (Minnaar, 2004).

The Theunissen family owned the farm from 1798 to 1899 ensuring that the vineyards flourished during their tenure. However, by the time that Sir Lionel and Lady Florence Phillips acquired the property in 1917, it had been badly neglected. The Phillips' restored the homestead and the present wall was rebuilt upon traces of the original foundations. Vergelegen was purchased by Charles Barlow in 1941. Anglo American Farms Limited became corporate owners of the property in October 1987 and recreated the farm as it is today.

4.3.2 Global and local significance

Lauded for its architecture, cultural heritage and for conserving indigenous vegetation and protecting natural habitat, Vergelegen has reached pinnacles in the world of viticulture. Apart from being a BWI champion, the estate was judged the Best New World Winery in 2007 by *Wine Enthusiast*. It was also the top performer in the 2007 Old Mutual Trophy Wine Show. Vergelegen received two awards in 2006 from South Africa's *Mail and Guardian* newspaper for its role in 'greening the future' in the category for companies and organisations with the most improved environmental practices, plus a merit award for work on water. Vergelegen is the only wine estate in South Africa where the hospitality divisions, cellar, and vineyards seen below in Figure 4.7, are all environmentally certified.



Photo 4.6 Vergelegen vineyard
Source: Author (2007)

Following a comprehensive vine-planting programme, Vergelegen produced its first wine in 1992 (Gerald Wright, personal comm. Dec 8 2007). At present, Vergelegen is known as one of the country's finest wine estates, producing impressive wines, including the multi-award-winning 'V' blend, below in Figure 4.2, a New World wine icon, retailing at about R 1500-00 per bottle.



Figure 4.2 Vergelegen's iconic V
Source: Vergelegen Estate (2008)

The amount of money invested in Vergelegen by Anglo American plc. is not exactly hidden. Deep pockets are apparent in the creation of Vergelegen's magnificent cellar, beautifully restored homestead and gardens and the impressive but costly large scale conservation actions.

4.3.3 Vegetation and wildlife

Gerald Wright reveals a store of knowledge about farm management, including such diverse aspects such as pest control and cattle-breeding. On the morning of the first interview, Wright had been up almost all night with a sick Nguni cow. Wright said that over the past decade Vergelegen has made huge conservation advances through a programme eradicating alien invasive plants, thus making it possible for indigenous plant and animal species to return. Wright added that no vines have been planted on identified patches of threatened renosterveld.

At Vergelegen, 2 000 hectares - three quarters of the land area - have been set aside for conservation purposes thus creating a mosaic of habitats including fynbos, renosterveld,

wetlands and afro-montane areas. A current BWI inspired project on Vergelegen is to return all land that is not arable, to as near pristine an example of Cape fynbos as possible. This project is the largest private conservation project in the Western Cape, and overall, only the Table Mountain/Cape Peninsula project is larger. Vergelegen contributes to local biodiversity, by facilitating the flow of goods and services that emanate from speedily recovering ecosystems. For example, after alien vegetation had been cleared from the section of the Lourens River crossing the estate, water began to run for the first time in over 50 years. Not only did birds and indigenous fauna and flora return, but by supporting natural ecosystems, Gerald Wright says that the conservation action at Vergelegen also enables the viticulture practices on the estate to become more sustainable.

4.3.4 Innovations

Finding appropriate people to fill key positions at Vergelegen has been a Human Resources coup. Gerald Wright in particular, is not only experienced and knowledgeable in conservation, but altruistic towards students and others in his professional sphere; as well as being a committed champion of the natural environment.

Don Tooth, Vergelegen CEO, makes his claims for Vergelegen's sustainability in terms of sustainable development. The Vergelegen Environmental Trust has been established, to ensure that at least one third of the 3 000 hectare estate accurately reflects the natural heritage of the area. This project complements the sustainable development goals publicly subscribed to by Anglo American and also creates a base from which students and conservation practitioners undertake research.

Support of local suppliers is the management approach adopted towards community development and engagement on Vergelegen. A mainstay initiative is an ongoing project to remove alien vegetation on the estate. According to Gerald Wright, this project led to the establishment of a business owned by Zille Roos, a woman from the local community. Roos currently employs approximately forty people to work fulltime on veld management at Vergelegen. Further, most construction work for the estate upgrade was

undertaken by a Black Economic Empowerment group, B.L. Williams Construction. In an industry still plagued by relatively poor labour standards, Vergelegen provides jobs for about 400 seasonal and 230 permanent labourers, many of whom are housed with their families on the estate.

4.3.5 Cultural heritage

The Vergelegen estate includes a museum that details the history of the estate and the archaeological work funded by Anglo-American that was conducted to uncover its 300 year life. Willem Adriaan van der Stel erected an outbuilding that resembled a 17th century European *hallehuis* - a large three aisled barn-like structure with a thatched roof reaching almost to the ground. This slave lodge housed up to 200 slaves at a time. The slaves at Vergelegen worked as cabinet-makers, tailors, cooks, masons and labourers. The lodge was excavated for the Anglo-American De Beers Chairman's Educational Trust in 1989. The remains of a slave woman were discovered under the floor of the site and she was re-buried on the farm in a marked grave. Visitors are also allowed into the core heritage area - the homestead, cellar, library, restaurant and expansive gardens.

4.4 COMPARISON

The concept of sustainability has considerable appeal, but it is a meaningless phrase unless indicators are made available to track the performance of agricultural production systems towards this ideal (Dumanski *et al.*, 1998).

Indicators on Table 4.1 following on page 80 were adapted from the GEF (GEF Biodiversity Strategy) to ascertain sustainability of mainstreaming objectives on the estates³. Indicators employed in these case studies were selected to discover if the conservation interventions are: cost-effective; strategically planned/integrated; operational and monitored.

⁵ The Global Environment Facility is part of the World Bank Group and supporting development projects and activities that enhance protection of the global environment in the Focal Areas of Biodiversity, Climate Change, the Ozone Layer, International Waters, Persistent Organic Pollutants and Land Degradation.

Table 4.1 Sustainability indicators

	Vergelegen	Graham Beck
Indicator 1 Self funding	Minimal Owner is a major, international, commodities-based company Initial R3 million for conservation was from wine sales Ongoing costs not covered by wine sales or returns from conservation projects	No. Label covers four estates owned by businessman Wine sales do not cover conservation projects
Indicator 2 Replication strategies	Potential No direct replication strategies Research facility may encourage replication and improvements	Yes
Indicator 3 Range of conservation approaches	Yes Protected areas on farm. Development of habitat networks Modifying agricultural practices Capacity building/community development projects in place	Yes Nature reserve Large nature conservancy
Indicator 4 Barriers identified	Yes	Yes

4.4.1 Discussion

The sustainability indicators shown here are pointers for comparison purposes. The case study is a snapshot of the BWI and these indicators were therefore employed to flag existing conditions on the two estates. The intention was to identify gaps and to assess quality; however, these indicators also acted as entry points for further research considerations in related areas. Another albeit indirect result from using these indicators was to provide additional transparency in the case study report.

Indicator 1: Self funding

Conservation projects on Vergelegen do not cover the economic costs of adopting a mainstreaming approach. The initial three million rands earmarked for conservation was

generated from wine sales, but the ongoing costs are not covered by wine sales or by any returns from the conservation projects. Financial and marketing managers at Vergelegen said that there had been neither an increase in sales nor noticeable premiums realised from biodiversity-friendly wine. It was emphasised by management that conservation activity on Vergelegen was motivated by principle and not profit.

It is probably worth noting that although neither estate fulfils the self-funding indicator, the ability to self fund becomes less important than would be the case in projects struggling to become self sufficient. The reality is that conservation efforts on these two estates do not need to self fund. The owners are able to sponsor conservation projects regardless of profits from those conservation projects or from resultant wine sales.

Indeed, both conservationists identified the same factor. In their opinions, the continuous source of ample financial support by wealthy backers was the single most important factor that transformed of two derelict and undeveloped estates. Hence the amounts and sources of investment required to adopt sustainable on-farm conservation projects become a major consideration for this study. For both estates, sustainable economic indicators clearly depend, at least in part, upon non-sustainable economic factors.

Indicator 2: Replication strategies

The conservation model at Vergelegen is innovative and cutting edge (Kent Reeves, personal comm. July 27 2007). Possibly because of those reasons, there are no strategies for replication of conservation activities, but that is not to say that replication is not possible. Vergelegen's new research facility will be made available to the wider community – researchers will use Vergelegen's facilities and their work may in turn benefit the estate and the wine sector. Vergelegen participants were hopeful that other wine estates will benefit too. However, in the relative absence of farmer familiarity with exchanges of ideas and best-practice, mutual learning might be difficult at present.

Indicator 3: A range of strategic approaches

An important indicator of sustainability is that a range of strategic approaches is used by the conservation project. As champion estates, Vergelegen and Graham Beck Wines have met and surpassed BWI requirements and Vergelegen participants are in agreement that empowering local suppliers is a demonstration of community development and engagement with grassroots initiatives. For the purposes of this study it was useful to find additional means of measuring on-farm conservation strategies. The following criteria were adapted from Ecoagriculture Partners, a Washington DC research agency specialising in on-farm conservation. Field observation and interviews with the respective conservationists shows that in addition to the BWI audit requirements Vergelegen and Graham Beck Wines meet the criteria listed here:

- Creating protected biodiversity areas on-farm
- Developing surrounding habitat matrices
- Removing marginal viticultural land from production activities to assist regeneration of natural habitats.
- Consciously altering farming systems to reduce environmental damage

Indicator 4 Identification of barriers

Identification of barriers to the success of a project is integral to sustainability assessments but there are very few barriers to the success of Vergelegen. The winery has won local and international awards for wine and for conservation activities. Conservation plans are in action. Research is underway on the estate. Communication with the wider civil society and academic institutions is expanding. Staff members are loyal and enthusiastic. Funding is readily available.

Without doubt, questions about greenwashing, funding sources and motivation are pertinent and of concern. However greenwashing charges in particular are difficult to substantiate especially when the staff members at Vergelegen are openly enthusiastic about conservation. In terms of people working on the estate, Vergelegen seems to be up

to the challenge of helping maintain biodiversity and striking a balance between human development and biodiversity conservation on site.

4.5 CONCLUSIONS

The literature review in Chapter Two revealed that in theory the integration of ecology and economics towards the sustainable use of biodiversity is desirable, but difficult to implement. Consistent with such a perspective, Pagiola *et al.* contend that nearly all biodiversity management problems have an ecological and an economic dimension. Further, Pagiola *et al.* believe these problems can be better addressed using an approach that explicitly integrates ecological and economic knowledge and captures the feedbacks between the two systems. Towards this end, conclusions here are simple extensions from a study of two estates. There is however, potential for utilising this feedback to aim at further co-ordinated mutual promotion, by utilising the unique advantage of the resources and ecological environment of the CFR.

Chapter Four has shown that the practical process of blending biodiversity into wine businesses has been very much reliant upon individual personalities, and not without operational and ethical challenges. In the project planning stages, initial attempts to identify the biodiversity values on each estate were followed by investments in biodiversity awareness, conservation activities and education. Further streamlined facilitation occurred in both cases mainly because key people, such as the two dedicated conservationists, were engaged from the very beginning and played a central role in the establishment and interpretation of conservation.

Overall on the positive side - if the cost to the environment down the supply line is ignored - field observation showed that:

- i) Dedicated staff members encourage successful on-farm conservation processes that include a range of strategic approaches

- ii) Land management at both estates is at the leading edge of best conservation practice in viticulture in the following areas:
- Encouraging diverse landscapes and spatial differentiations
 - Opening wild strips
 - Reducing pesticide usage
 - Protecting/creating natural habitats for pollinators and natural predators
 - Exploiting areas differently.
 - Enriching the soil by natural means
 - Working with minimal machinery
 - Recycling waste
 - Activating ongoing alien removal

However, on the negative side, some interview participants expressed doubt about both the first two champion estates. Some participants are uncertain that Anglo American Farms will continue to support Vergelegen and strongly indicated that they have ethical problems with the owners. During an interview for this study, a farmer/winemaker from an estate nearby Vergelegen in the Helderberg area said: *You watch. Within five years, Eddy and all of them will be looking for new jobs. The wine is expensive and boring; and they can't claim to be biodiversity friendly - it's a mining company just putting on a pretty face.* Additionally, a Robertson based farmer/winemaker commented: *Mr Graham Beck lives in America – he's an absentee landlord. Other people make his wine and look after his horses. How much does he really have invested here – apart from money?*

Further, with respect to the sustainability of conservation on these farms, the following two unresolved issues arose. Both issues have more to do with the economics of sustainable farming as a whole, rather than specific viticultural farming practices.

- i) The indicators set for these mini case studies did not entirely capture the data needed to address Indicator 1. In theory, both estates fulfil the indicators of best practice, except that neither estate is self-funding and it is a fundamental problem that finances for these conservation projects are thus sourced from extractive industries on an ongoing basis.

Can Vergelegen and Graham Beck Wines be rightly used as examples of the success of the BWI? Or are the successes of these two estates those of Anglo American plc. and Mr Graham Beck respectively? The environmentally destructive sources of finance probably mean that, regardless of the successes of individual on-farm projects, responsible use of natural resources cannot be fully claimed by either estate.

ii) There exists a problem with replication strategies from these two estates. There is established theoretical acknowledgement that biodiversity services remain essentially a public good, even if private initiatives contribute to conservation thereof (Cromwell *et al.*, 1999). However, in the real-world, there is no *a priori* institutional principle at either champion estate of sharing the conservation benefits and information available to them. There is definite evidence of academic collaboration and outreach, especially at Vergelegen. Nevertheless, interview data showed that staff at both estates feel that to maintain perceived market advantages, defensive knowledge gate-keeping between on-the-ground practitioners of viticulture is justified. Thus a lack of co-operation might cause asymmetries in collaboration towards viticultural biodiversity conservation.

Finally, whilst the literature and discourse of biodiversity conservation is replete with theory, these case studies provided opportunities to learn through direct interaction with real-life humans and experiences. The fact that these two particular estates are, in all likelihood not truly sustainable, is less important for the essence of this study than having the opportunities to link conservation concepts with the empirical experiences of on-farm projects. If, through seizing this opportunity, it becomes possible to contribute to wider understanding of conservation interventions, then the case studies were productive.

CHAPTER 5 PERSPECTIVES AND PERCEPTIONS

Chapter Five reports on results and findings from the study, describing how the research aims and objectives were fulfilled. This chapter is arranged in three sections, each addressing a mainstreaming indicator. First, specific reductions in levels of threat to biodiversity through BWI efforts are investigated. Following is an analysis of attitudinal responses from participants that highlights levels of farmer adoption of BWI principles. Finally there is the outcome of an analysis of the BWI as a model of a mainstreaming initiative. When considered together with the case studies from Chapter Four, the collective findings reported in Chapter Five form the basis for an appraisal of the Biodiversity and Wine Initiative that follows in Chapter Six.

5.1 INTRODUCTION

Literature reviewed in Chapter Two showed that biodiversity loss is an accelerating global problem. Furthermore, although farming depends on biodiversity, it is also considered to be a major contributor to biodiversity loss. The literature provided strong reasons to conclude that mainstreaming practices can reduce biodiversity loss caused by viticultural practices and expansion. Moreover, improved understanding of mainstreaming for on-farm conservation (Scherr & McNeely, 2006) may facilitate evaluations of biodiversity conservation interventions across the viticultural landscape of the Cape Floristic Region (Cowling *et al.*, 2008). In this regard, Jackson *et al.* (2005) contend that mainstreaming partnerships between researchers, scientists, economists, farmers and other stakeholders are needed to integrate ecological and economic research. Partnerships also enable researchers and practitioners to evaluate ecosystem services, tradeoffs between management scenarios and recognition for the provision of ecosystem services. Reflecting such interdisciplinarity, Chapter Five will show that conservation is only partially based upon measurable increases in protection and provision of ecosystem goods and services. Human attitudes also have a major role in determining the success of conservation activity (Najam *et al.*, 2002; Pannell *et al.*, 2006). Data from this study indicate that whilst individual wine farmers, with other stakeholders and interest groups,

do understand a need for collective conservation action, they typically make personal judgment calls on conservation in viticulture and the motivations for biodiversity conservation in the wine sector.

To briefly reiterate aims: The overarching aim of the study was to achieve an improved understanding of the sustainability of the BWI as an implementation agency. Other specific aims were:

- To provide a robust literature-based background to the integration of business and biodiversity conservation principles in the wine sector
- To provide a critical appraisal of the BWI as a mainstreaming initiative

Chapter Two fulfilled the aim of providing a literature review. The contribution of Chapter Five is in providing an evaluation of the identified mainstreaming indicators, towards a critical appraisal of BWI sustainability.

5.2 EVALUATING IMPACT: MAINSTREAMING INDICATORS

Indicators are the means by which the presentation and management of complex information can be achieved in a simple, clear manner. The researcher acknowledges dangers in adapting off-the-shelf indicators; however adaptations of existing monitoring mechanisms can be expediently employed to decrease redundancy and increase validity. Individual indicators obviously vary depending on what is being studied, but many valid indicators tend to follow the SMART guidelines i.e. specific; measurable; achievable; relevant; timely³. In this study it was attempted to ensure that the indicators A, B, C shown hereafter were SMART and also specifically objective-led so that data obtained would efficiently indicate successes or failures of actions. Indicators were selected for this study following a strategy developed by the Global Environment Facility (GEF) to assess funded conservation projects.

⁶ GEF Evaluation Office, GEF Secretariat, and Implementing and Executing Agencies have developed toolkits on SMART indicators for flexible use in project designs and management. Source: [online] [www.gefweb.org/Monitoring and evaluation/MEPoliciesProcedures/MEPTools/meptstandards.html](http://www.gefweb.org/Monitoring%20and%20evaluation/MEPoliciesProcedures/MEPTools/meptstandards.html)

The mainstreaming indicators selected for this study were as follows:

INDICATOR A: Reductions in levels of threat to biodiversity

INDICATOR B: Level of adoption of BWI principles:

Attitudes towards the BWI

Identification of resistance factors

INDICATOR C: Evidence of sector-based mainstreaming outcomes

These indicators were selected to enable: measurement of conservation impact; data collection regarding differing opinions and prioritisations among stakeholders and interested parties; identification of obstacles to farmer adoption of BWI principles; an appraisal including mainstreaming outcomes. Although not indicators *per se*, the case studies reported in Chapter Four informed the entire study through improved understanding of conservation in action.

Indicator A focused upon specific measurable conservation results that are immediately accessible and of straightforward relevance to assessing the success of on-farm interventions by the BWI. Indicator B included a range of human concerns and perceptions amongst stakeholders. Indicator C was selected to show clear, discernable mainstreaming outcomes from inputs made. The effects of dynamic processes were appraised by use of Indicator C. Here, an organisational-level model was employed to collect data and to report accordingly on the approach taken by the BWI towards biodiversity conservation at strategic levels.

In summary, data collected through fulfilment of indicators A, B, C made it possible to:

- i) Monitor gains for biodiversity conservation in the CFR through BWI efforts
- ii) Investigate stakeholder attitudes and also identify resistance factors to adoption of BWI principles
- iii) Assess evidence of sector-based mainstreaming outcomes

5.3 INDICATOR A: REDUCTION IN THREATS TO BIODIVERSITY

Indicator A was evaluated using data collected from document searches, observation and interviews with BWInsiders.

5.3.1 Number of farmer members

The BWI has added members each year and at the time of writing (October 2008) there are 107 members, 9 cooperative members, plus 13 champion members (BWI figures). This number of estates is out of a total 494 private cellars, 65 cooperatives, 17 producing wholesalers (Platter's Wine Guide, 2008) and equals over 30 per cent of wine producers in the Western Cape. The members represent all the wine routes and wine producing areas.

5.3.2 Land conserved

A straightforward means of measuring conservation activity was to obtain calculations of how much land has been put aside for biodiversity conservation as a direct result of efforts by the BWI. According to Inge Kotze of the BWI 104,000 hectares have been set aside for conservation activity.

A significance of this figure is that it equals more than the national vineyard footprint of 101,957 hectares - the total area under vines in the South Africa. The amount of land that wine farmers have kept for conservation is calculated by the BWI and verified by the WWF and the CEPF (Inge Kotze, pers. comm. August 18 2008). Land set aside for conservation by members of the BWI represents areas located in all the wine growing regions in the lowlands of the Western Cape and some further afield. The BWI has recently extended support to the Little Karoo region.

The maps that follow from page 90 - Figure 5.1 to Figure 5.12 - indicate the locations of most estates that are BWI members. Legend: indicates the location of a BWI member wine estate

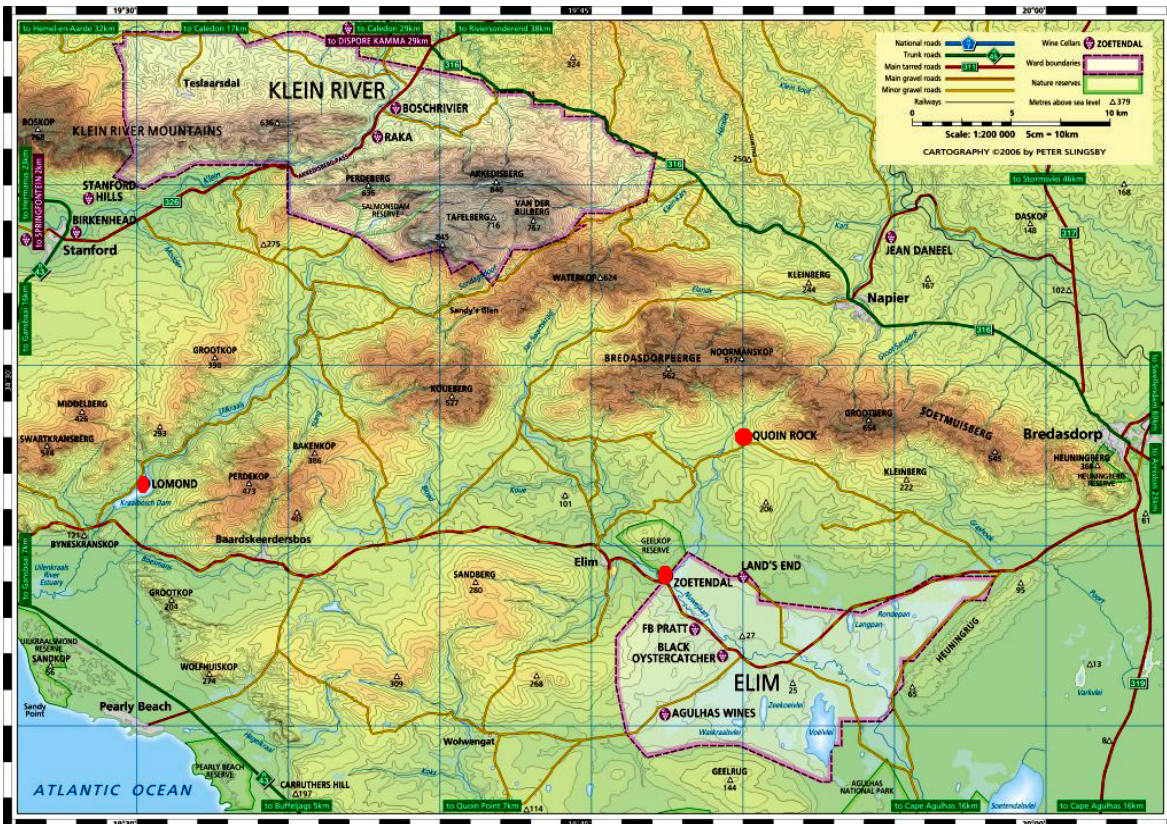


Figure 5.1 Cape Agulhas wine region

Source: WOSA (2008)

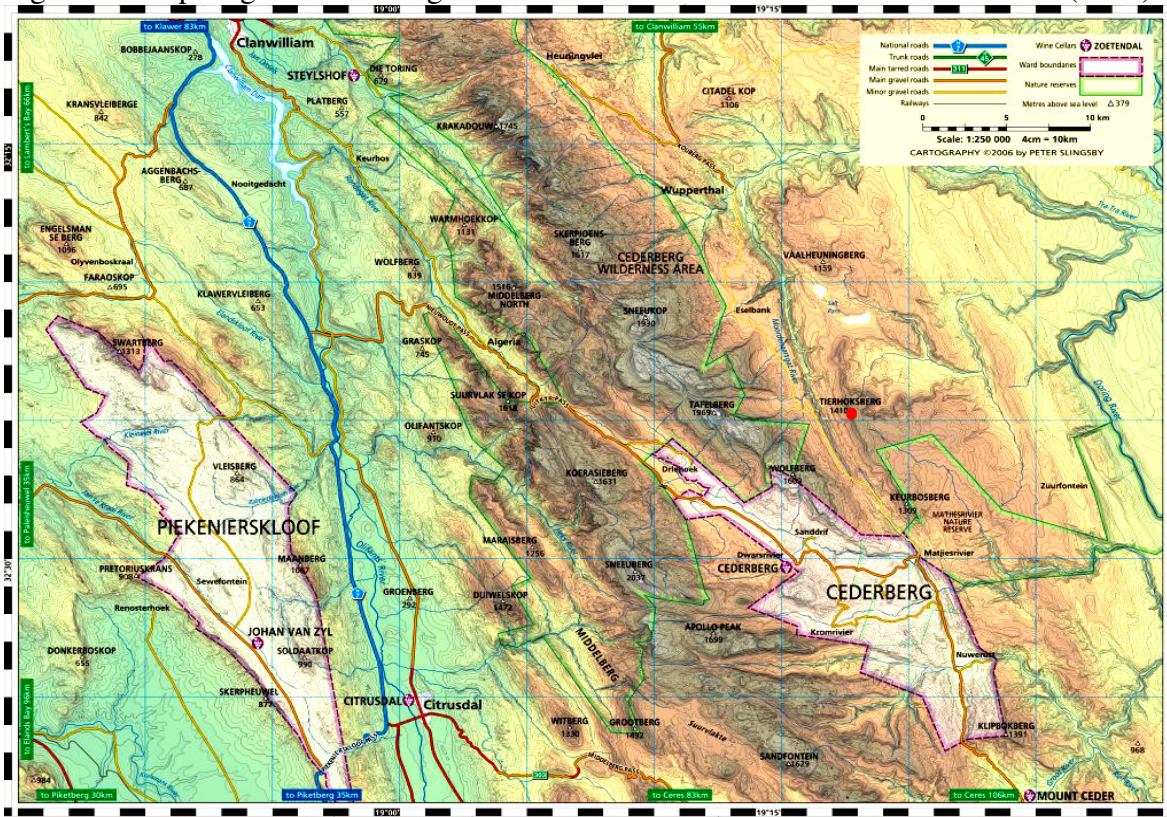


Figure 5.2 Citrusdal wine region

Source: WOSA (2008)

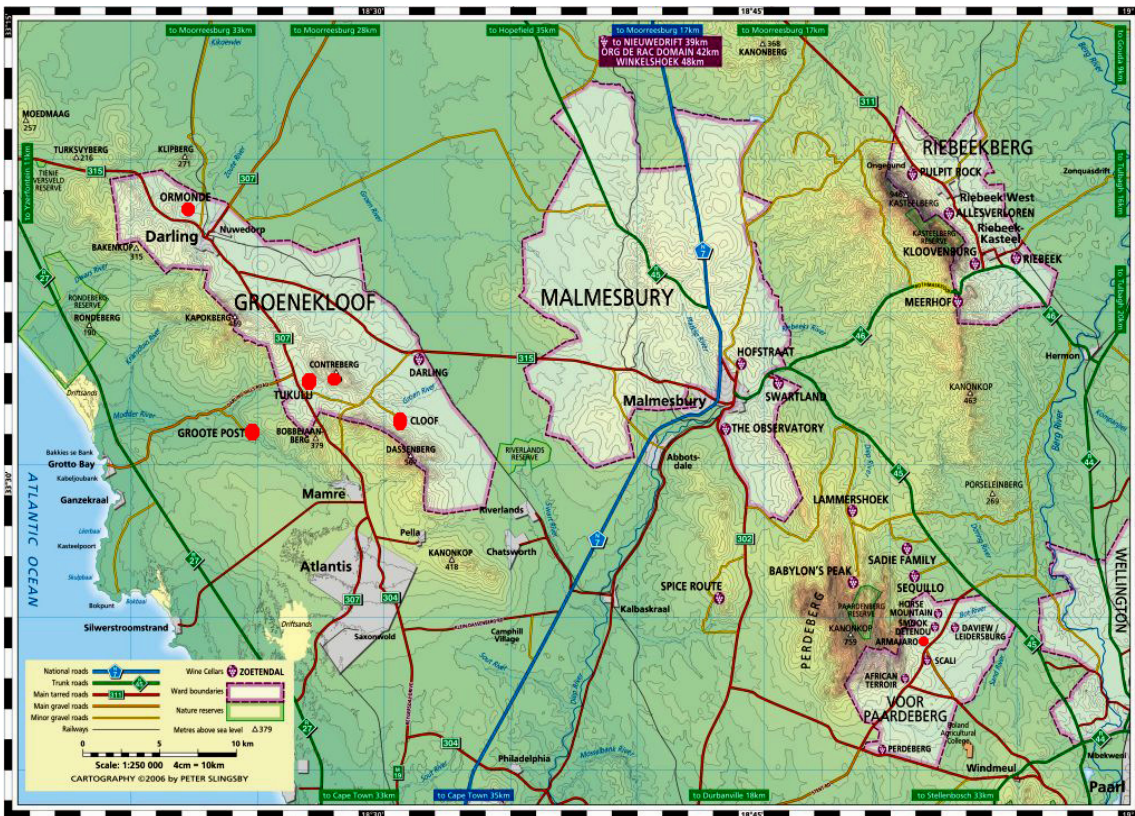


Figure 5.3 Darling wine region

Source: WOSA (2008)

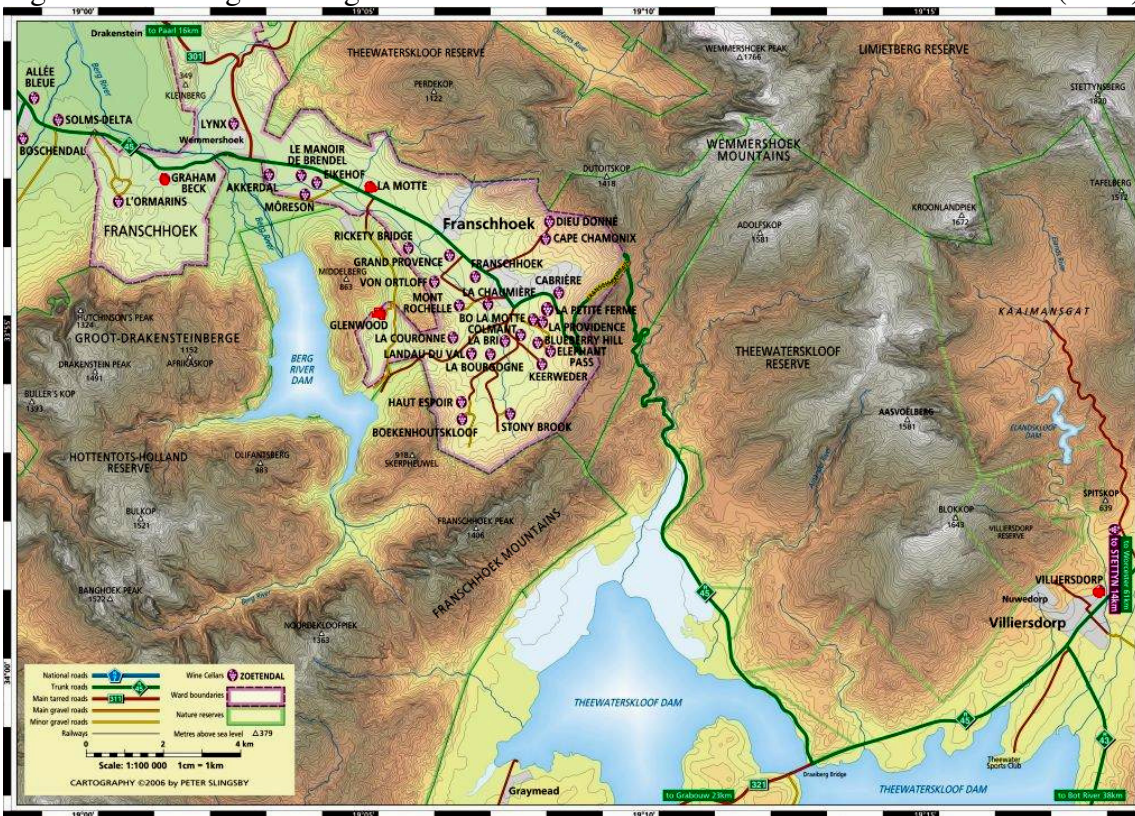


Figure 5.4 Franschhoek wine region

Source: WOSA (2008)

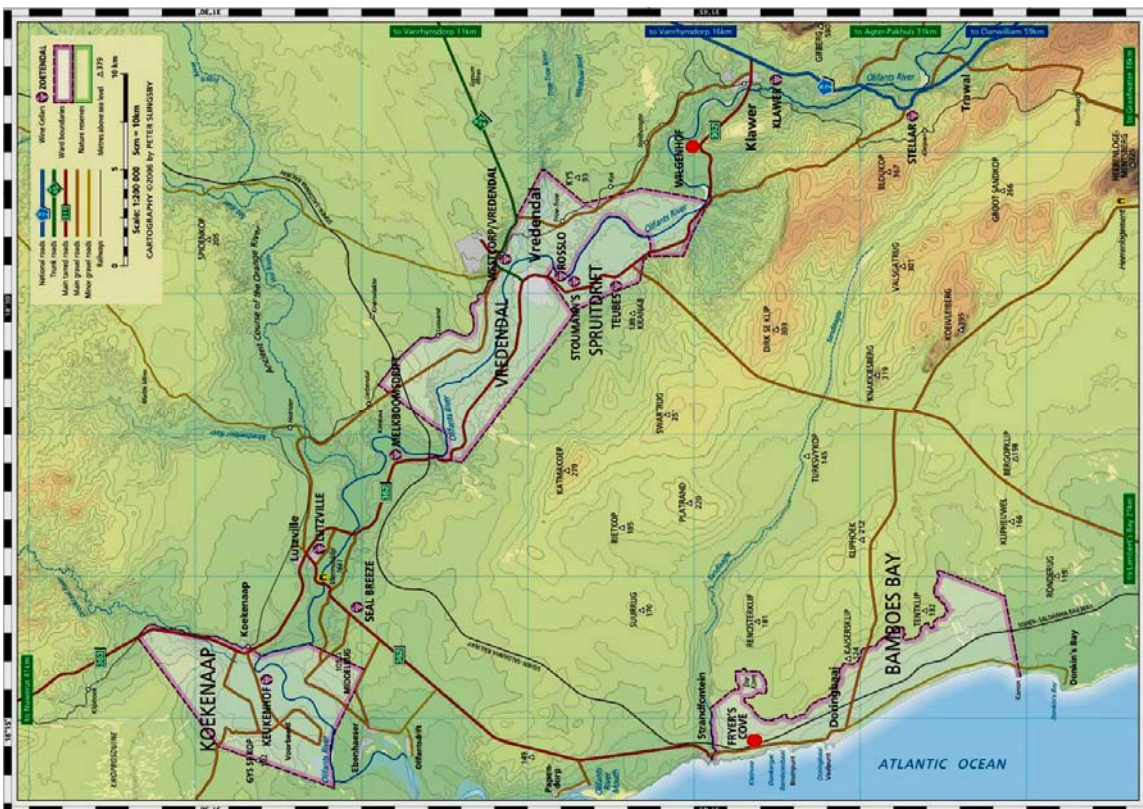


Figure 5.5 Lutzville wine region

Source: WOSA (2008)

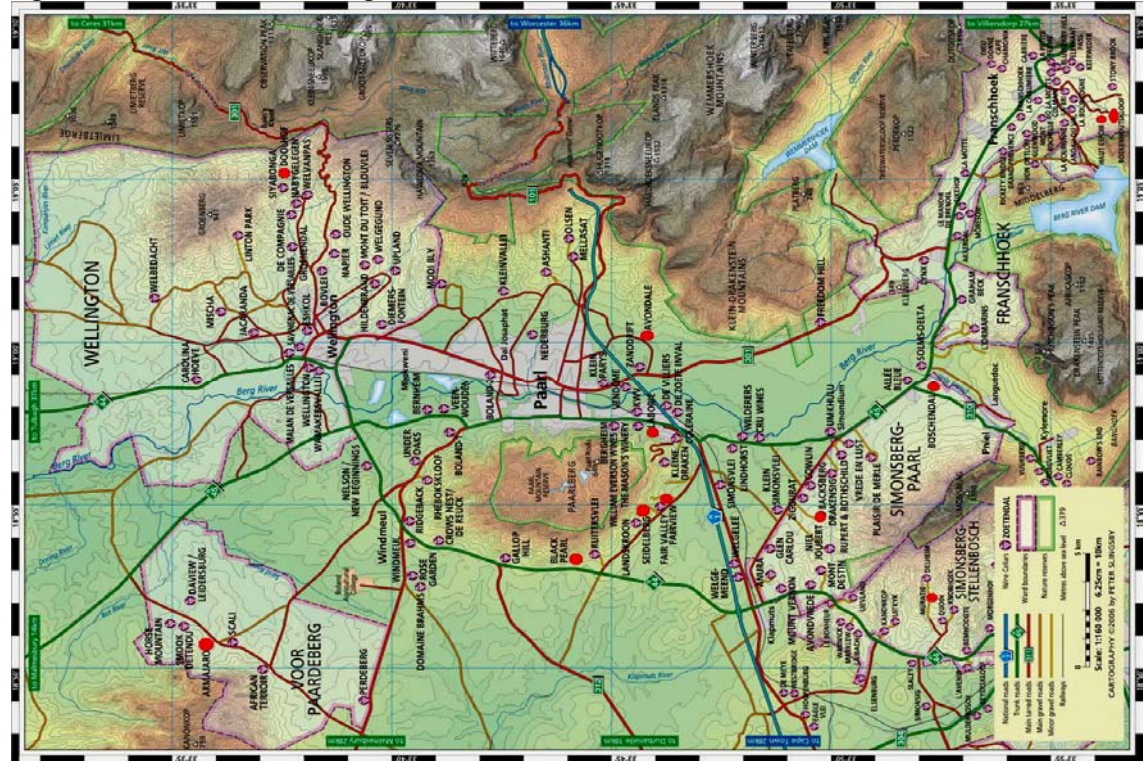


Figure 5.6 Paarl wine region

Source: WOSA (2008)

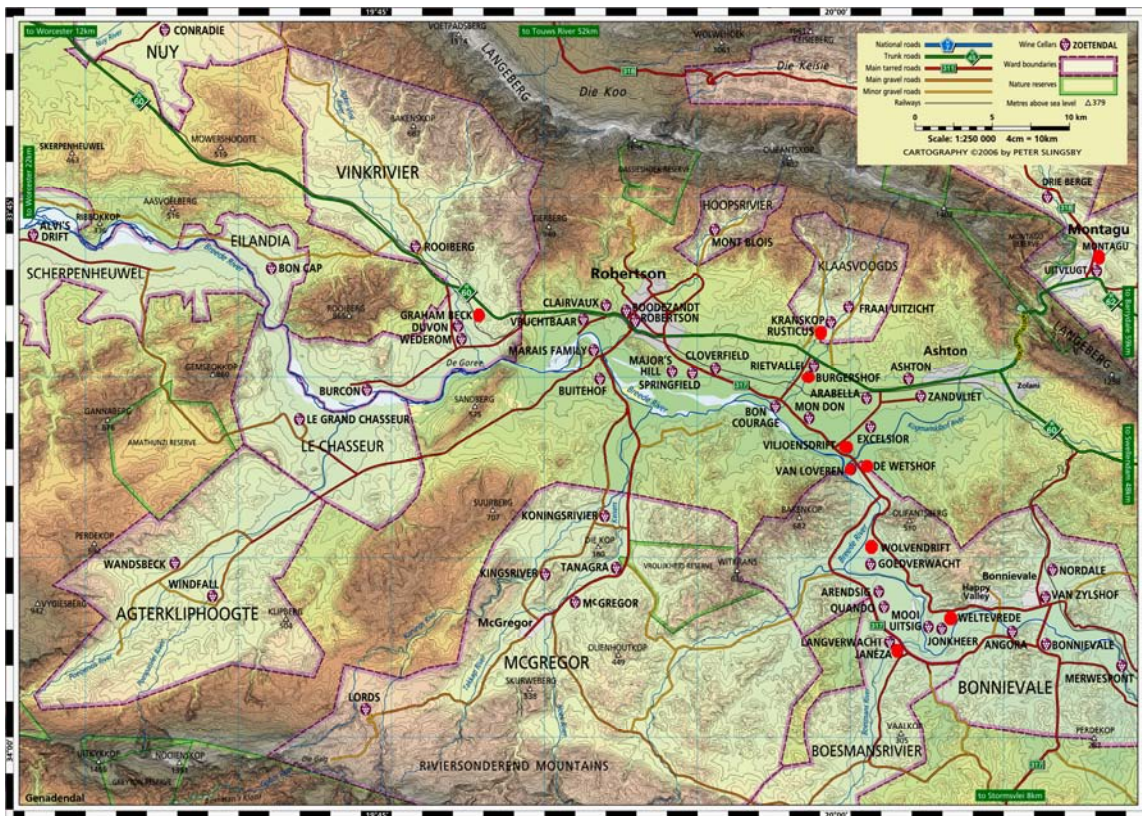


Figure 5.7 Robertson wine region

Source: WOSA (2008)

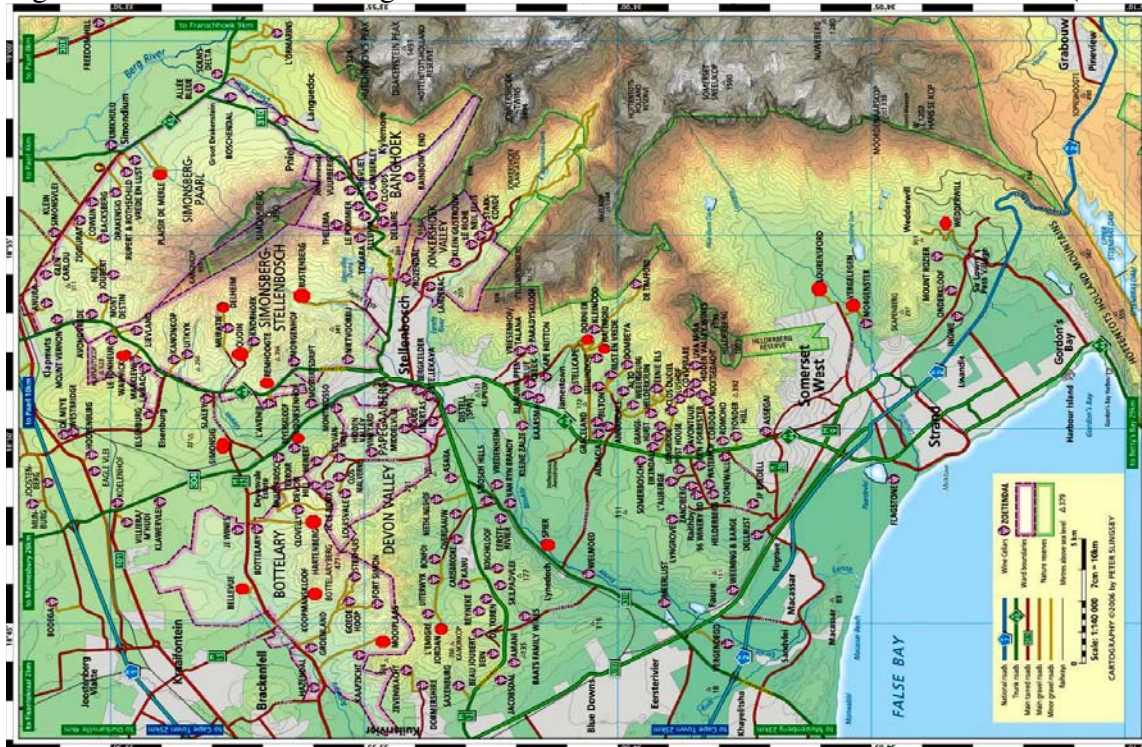


Figure 5.8 Stellenbosch wine region

Source: WOSA (2008)

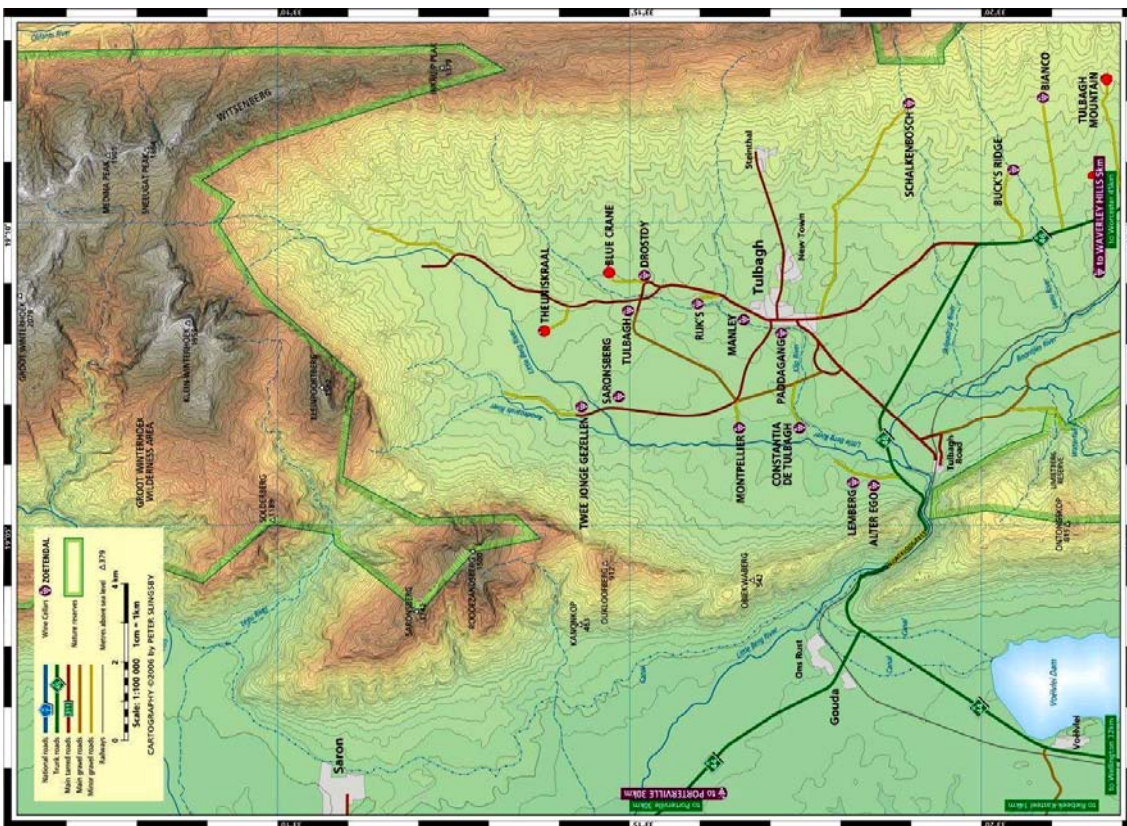


Figure 5.9 Tulbagh wine region

Source: WOSA (2008)

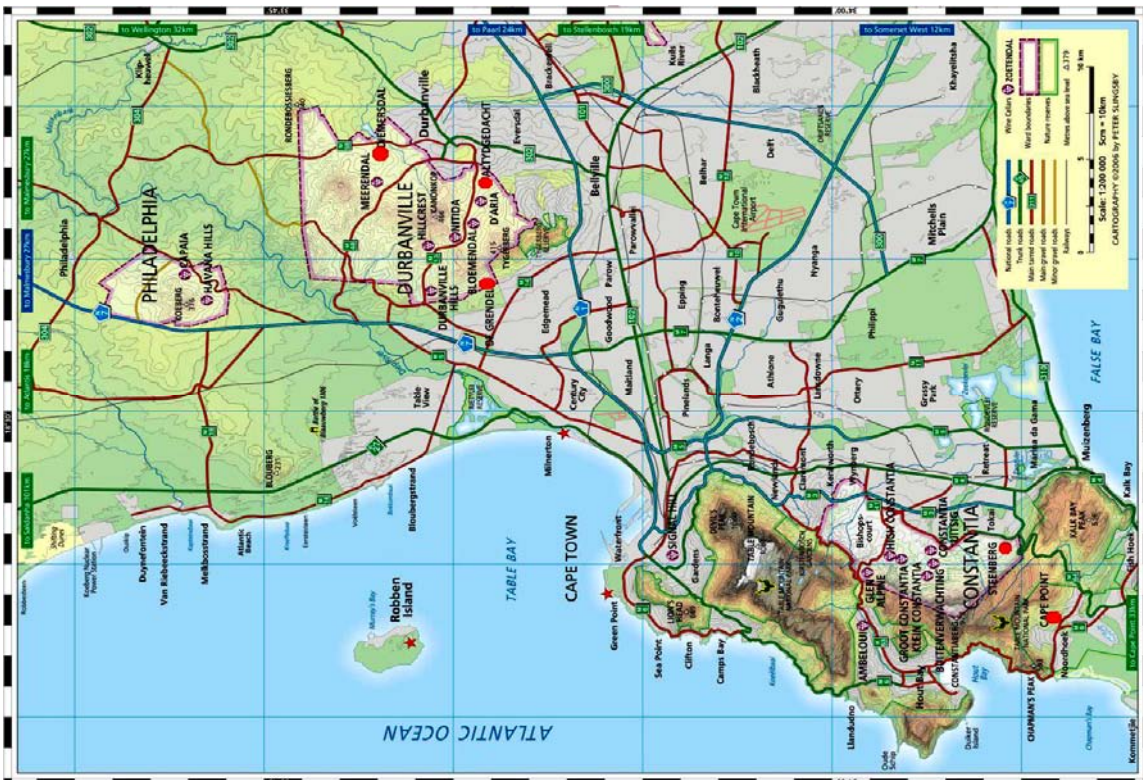


Figure 5.10 Tygerberg wine region

Source: WOSA (2008)

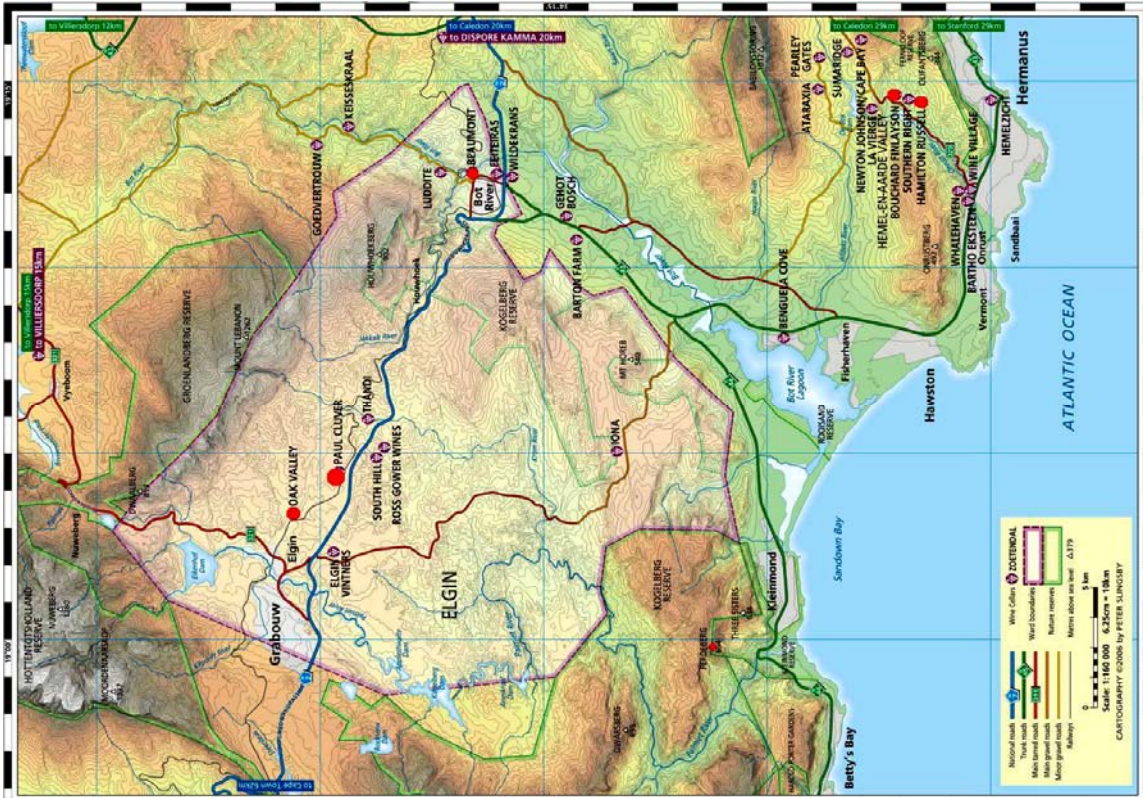


Figure 5.11 Walker Bay wine region

Source: WOSA (2008)

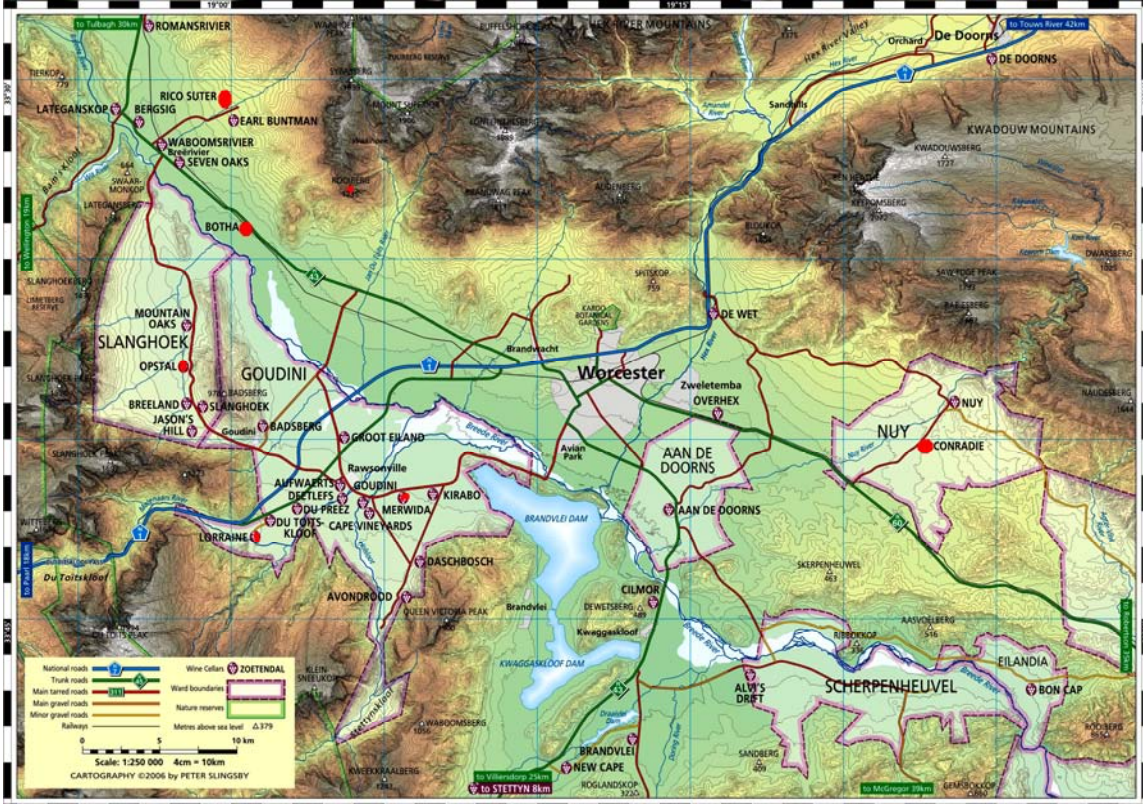


Figure 5.12 Worcester wine region

Source: WOSA (2008)

Appendix H comprises a list of all BWI members and champions, showing the amount of land conserved and in what wine growing regions the estates are located.

5.3.3 Rate of uptake

As a means of substantiating the rate of successful uptake of conservation principles, it is helpful to understand over what period of time the conserved land has been put aside. The BWI was created in 2004. By November 2008, the BWI brokered the setting aside of more than 104 000 hectares for conservation amongst member estates, equalling the total hectares under vines in the Western Cape winelands. In April 2008, the amount of land conserved then equalled approximately 70 000 hectares. At that time, the original wording for this particular section of the thesis was: *The BWI hopes to set aside an additional 30 000 hectares by the end of 2010; however this goal could be reached earlier than anticipated. It would mean that as much land will be saved for conservation purposes as is under vines in the Western Cape.* Between April and November 2008, another 34 000 hectares was put aside to be restored to as pristine a state as possible i.e. almost half of what was achieved in the first four years of the BWI existence was saved within the 9 final months of this study. This amount of 34 000 hectares also represented more land than the BWI had been hoping to save between 2008 and 2010.

5.4 INDICATOR B: Adoption levels of BWI strategy: Attitudes towards the BWI Identification of resistance factors

Indicator B was evaluated using data collected from transcripts of interviews and other forms of communication with participants from all groups identified in the study.

5.4.1 Informed Outsiders

The selection of Informed Outsiders was purposeful and random. The aim was to generate insights into key evaluation issues and the effectiveness of the BWI. There was no intention to draw empirical generalisations between a sample and a population.

Participants not directly involved with the BWI were drawn from the wine sector, the conservation sector and the media. The aim was to obtain data on outsider perspectives of the BWI image and action, from people with sufficient specialist knowledge to reflect in an informed manner. Table 5.1 following on page 98 provides summarised responses from this group. The interview data from Informed Outsiders was collected early in the research process, and the data suggested strongly at the outset of the study, that values in environmental problems, and attempts to solve them, have different impacts depending on what exactly is being conserved and who is measuring. An Informed Outsider commented sharply: *Agricultural businesses have a talent for greenwashing. The (expletive) s even pretend that industrial monocultures like grapes can be sustainable.*

Only marginally more gently, the CEO of the London based Day Chocolate Company (Charlotte Borger, pers. comm. April 21 2006) which sources cocoa beans from a Ghanaian farmers' cooperative now farming by biodiversity friendly methods said: *My own market research indicates that consumers will pay more for upliftment of people than for conservation of natural resources. And rightly so*, she added, rather presciently. Eighteen months after this first interview, WOSA altered the biodiversity marketing message to include human diversity.

Reflecting that no uniform attitude towards the BWI was discovered, Table 5.1 following indicates responses from the Informed Outsider category to the question: For what reasons might you think that the BWI is/is not a sustainable organisation? Unsurprisingly, the five Informed Outsiders most enthusiastic about the Biodiversity and Wine Initiative were participants with strong conservation leanings. Regardless of nationality or knowledge of conservation, those with the most information about the BWI were either in the enthusiastic group, or the dubious group. Those with less or no prior understanding of the BWI fell into the midrange interested and supportive groups. The most intensely dubious participants were the three wine writers. They each openly admitted to cynicism about the motives of BWI members, suspecting greenwashing. In common with some Wine Sellers and Estate People, the wine writers dismissed biodiversity as a marketing message on the grounds that the biodiversity concept is confusing.

Table 5.1 Informed Outsiders responses

Name	doubt	interest	support	enthusiasm	Reason1	Reason 2
Dave B Wine writer SA	x				What has biodiversity to do with selling wine?	What real incentives for this?
Katrina Conservationist US				x	Sustainable? Should be	Join up with working for water?
Carolyn Ecological Economist US				x	Fascinating Resource saving	Eco labels very promising
Dave H Wine writer/ Judge SA	x				Biodiversity confusing message BWI under funded	UK biased against SA wines
Bobby Wine lobbyist US		x			How does this pay?	
Hannetje DEAT SA			x		Heritage status!	Sound reasoning
Charlotte CEO Fairtrade Company UK	x				Nobody will pay for your plants	SA image in UK corrupt. You are not poor enough
John Wine writer/ broadcaster SA	x				Bandwagon	Misleading marketing message
Maggie Wine expert UK		x			Seems worthwhile	We do it differently e.g. maintain rights of way.
Andrew Wine distributor SA			x		Raises awareness	Bunny-hugger marketing message
Ynez Pr Fetzer US				x	Believe it	Works in CA
Kofi African Elder GHANA		x			Every effort makes Africa greener	Wine not exactly grassroots
Pierre Conservation SA				x	Great work. No money	
Kent Conservation US				x	People shape ecosystems	Way to go y'all.

The main conclusion here is that those Informed Outsiders who have more conservation knowledge than wine knowledge supported the BWI, regardless of nationality or professional focus. Those with more knowledge of wine than of conservation were reserved in their support of the BWI or outright dubious - as were those participants more concerned with social upliftment. Mr Kofi Annan, the participant with the broadest international knowledge by far, was interviewed during the annual meetings of the World Economic Forum, May 2007, in Cape Town. He expressed interest in biodiversity conservation in the CFR, but mostly wanted to know how people would benefit from the initiative.

5.4.2 Estate People

Data from 20 Estate People have been used in this report. Although informative, the data collected from four Estate People were incomplete, owing to the lack of knowledge of the BWI on the part of the participant, so 16 data sets were used to complete the model of farmer adoption levels. Results could however be gleaned from all 20 Estate People, often in convergence of attitudes. For example all 20 participants agreed that mainstreaming was an appropriate conservation response in the wine sector. Positive describing words were used, such as: *good, right, responsible, necessary, important, useful.*

Individual participants for the Estate People group were selected to attain a spread of attitudes across professional capacities. Participants are owners, farmers, marketing managers, conservationists, viticulturalists and winemakers, each representing a different wine estate. On smaller estates, some or all of these roles are collapsed into a single position. The participants are estate specific, chosen using the following criteria:

- Defined by membership status

Ten estates are BWI members and an equal number of estates are not members. The intent was to obtain a fair reflection of attitudinal ranges and to enable convergences and

discrepancies to be noted. In this regard an observation was made that all non members practice some form of conservation – made manifest in vineyard management techniques; pest and disease management; use of fertiliser and cover crops. In addition, 6 of the 10 non members have an alien clearing plan in action. Three of the ten non members have alien clearing plans that are dormant owing to funding, manpower, or motivation problems.

- Defined by type

Estates were selected on a spectrum from well funded high-end producers to smaller, less complex estates. Estates are privately owned; locally owned; foreign owned; exporting and non exporting; directly funded by corporations, one owned by Distell. Production volume was not taken into account; but spatially the size of estates was noted. All are individual estates – a modest study could not encompass co-operatives.

- Defined by process

The estates included those employing orthodox modern farming methods and those with organic blocks and purely organic estates. Three estates use organic methods of farming and two of those use biodynamic methods as well. The largest of these three organic estates is a BWI member, the two smaller estates are not members, but all are committed to the same farming principles.

- Defined by area

Participants were drawn from estates on the following routes - Robertson, Somerset West, Franschoek, Paarl, Darling, Stellenbosch, Elgin/Walker Bay, Constantia, Helderberg, and Wellington. Figure 5.13 following on page 102 indicates the extent of the Western Cape wine routes



Figure 5.13 Wine routes of the Western Cape
Source South African Wine (2009)

Time and distances constrained travel to routes farther afield. The participant sample was too small to allow for representivity, but an analytic attempt was made to isolate different understandings of conservation from different areas. There were no noticeable area-dependant differences.

As an introduction to each interview, the researcher explained the relevance of physical location and especially the relevance of BWI membership status. The potential value of a study of a mainstreaming initiative was clarified. Each participant was asked if he or she had a definition of biodiversity. Conversation was then steered towards conserving fynbos.

Only 3 out of the 20 participants knew that the fynbos biome was part of a globally recognised system of hotspots of severely endangered biodiversity. None of the participants knew that 80 per cent of the Cape Floristic Region is privately owned and no participant definitions of biodiversity were the same. Only one Estate Person gave credit first to the BWI for the conservation that was occurring on his wine estate. All the other participants said that a conservation project would have eventually happened anyway. Answers included the following: *with or without BWI membership and because it is the right thing to do.*

Most participants made connections between conservation, farming methods and saving energy. Interestingly, four participants respectively mentioned that *stable; happy; educated; emotionally-invested* workers are kinder to the earth. Estate People are particularly focused on the issue of water management. How they, or more importantly how their neighbours treat water and cellar effluent, is a strong biodiversity indicator for 13 participants, almost equally mixed members and non members. One Stellenbosch participant gave minute directions to find his neighbour's second dam, with instructions to take photos. *My dog would die if she fell in there* he said, *[the neighbour] is lazy and skelm about cleaning his water.* Another participant took the researcher to an elevated area above his farm, where every dam in a wine producing valley was visible and carefully pointed out which he thought were *nice and clean* and which he considered to be *horribly toxic.*

Each participant was asked for a reason, or reasons, for belonging or not belonging to the BWI. Amongst the non members, answers were varied. Three non members cited 'paperwork' as a reason for not belonging. Their comments were: *There's already too much paper in my life. I'd like to, I just haven't got round to it. I know I have the paperwork somewhere ... actually, when you see Joan [BWI extension officer] just ask her to call me.*

Another three non members mentioned that the first two BWI champion estates are backed by funds derived from extractive industries and said that put them off immediately. One of the three said: *That award's a joke!*

One non member winemaker said: *The BWI can do nothing for me; I already have a biodiversity-friendly farm. And I'm a WOSA member, but WOSA doesn't care about small producers. An occasional newsletter doesn't do it for me.* He added somewhat bitterly: *I also can't afford to join their parties in London.*

A non member farm and marketing manager said: *I do the right thing on my land and by my people. Housing and educating my workers doesn't show on BEE scorecards. I don't do BWI, or IPW. I don't need BEE... or any of those three letter words.*

A Constantia landowner and winemaker non member said that he will not become a member because: *[This] is an old, small estate, there's no extra land to set aside and I already do IPW. I have enough issues exporting wine; I sell all over the world - my distributors have more demand than supply and I really don't need more local audits and paperwork.*

Two non member owners mentioned the fact that BWI has no institutional *clout* and both said they knew of BWI members who did things that they, the participants, thought of as biodiversity-unfriendly. There was some annoyance that: *nothing will happen* to the deal breakers.

Non members made considerably less differentiation between the BWI and WOSA than members did. Responses from non members frequently included a reference to WOSA when no mention of WOSA had been made in the question. A non member winemaker said: *I don't know so much about BWI except they are in bed with WOSA.* This participant and another non member used these words identically: *WOSA is out of touch with the industry.*

When members were asked about reasons for belonging to the BWI, the responses were much less varied than non members. There were three basic answers. *It's the right thing to do / way to go / approach to take. The status is nice / worth it / shows the world what I do on my farm. I don't know why - it was my boss's /wife's /winemaker's decision.*

For some members, it seems that formal membership of the BWI requires little more than they have already achieved for conservation on their land. For example, De Grendel wine estate, owned by the conservation-minded Graaff family, comprises 700 hectares, only 100 of which are under vines. Sixty hectares of conserved Swartland shale renosterveld was cleared of the invasive alien Rooikrans almost a decade prior to the inception of the BWI. Because this renosterveld vegetation type is critically endangered, De Grendel has entered into a stewardship agreement with Cape Nature, independently of the BWI, to preserve the conserved area in perpetuity.

A Paarl estate uses ducks as a form of Integrated Pest Management. Beyond BWI requirements, this estate also actively returns natural fungi, bacteria and organisms back to the soil, thus growing vines as indigenous vegetation. The ducks in particular are used to effective marketing advantage, indicated by Figure 5.14 and Photo 5.1 shown below:

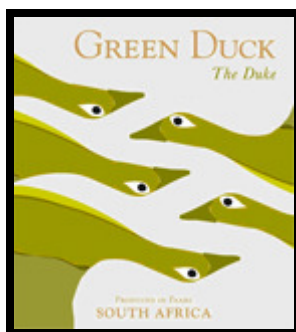


Figure 5.14 Green duck wine
Source: Avondale (2008)



Photo 5.1 Ducks at work
Source: Avondale (2007)

The contrast levels between the respective groups of members and non members were surprising - neither group was uniformly supportive or unsupportive of the BWI. For example, amongst the data from non members were phrases like: *It's the best way for*

producers to go. They're doing the right thing. We don't have the money right now, but we'll get our place up to scratch. We absolutely love Su (WOSA CEO). Compare to the previous answers, the following extract from the data set of a participant from a BWI champion estate: The BWI is like the others (meaning IPW and WOSA). They sit between the money for conservation and the rest of us. They take the right to themselves to give awards and snatch awards. Who gave them that right? Another member said: I don't need an audit to tell me I'm doing the right thing. Moreover, all 10 members said No, in answer to the question: Would it make a difference to your on-farm conservation efforts if the BWI disappeared tomorrow?

The overlap between positive attitudes from non members and negative attitudes from members caused a slight iterative shift in the analytic design. Another category, questioning adopters was added to the model in Figure 5.15 following, utilised to summarise farmer attitudes towards adoption of BWI membership.

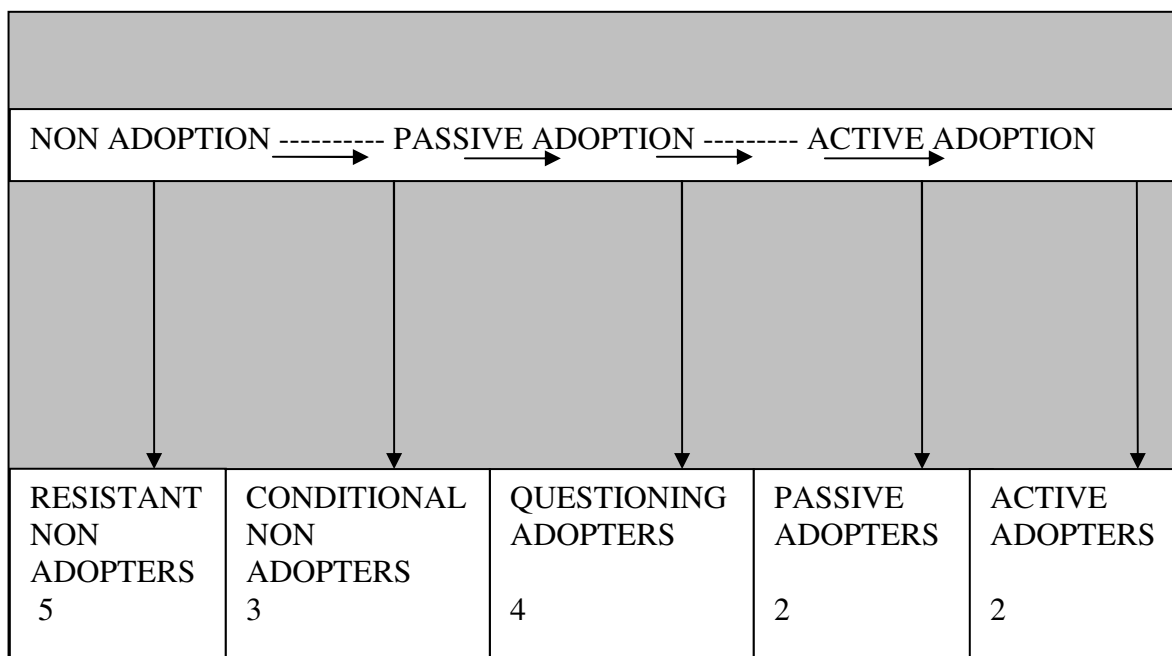


Figure 5.15 Summary of farmer adoption levels:
Self-identified categorisation from 16 participants in the Estate People group

5.4.3 Emerging concerns

Figure 5.2 above does not represent a statistical sample, but some common concerns emerged from the interview process.

Cost

Amongst non members, the main concern and resistance factor seemed to be the cost of conservation. The corollary - profit as a driver (Jenkins *et al.*, 2004) also appeared to have strong implications of scale for adoption of conservation practices even among BWI members. Two owner/farmers who produce high end brands (wines selling at over R100 per bottle) used the words: *I don't really know what's in it for me*. Possibly, the lower the perceived profitability of conservation interventions, the more powerful the conservation goals of the farmer/landowner must be, for adoption to occur. Similar documented examples in the literature illustrate and reinforce these implications (Morris & Potter, 1995). When asked what incentives might work best for him/her, 13 Estate People responded that the preferred incentives would be if the BWI could achieve a tax rebate or reimbursement scheme for conservation activity or for land set side.

Underestimating farmers

A number of Estate People felt that the BWI underestimates farmers and their knowledge of and dedication to the health of their lands. A viticulturalist who said that a problem is that BWI is not respecting what many farmers already do, said...*dis nie roofbou nie*.

Inadequate follow-up and farmer reassurance

Four BWI members quoted problems they had with BWI follow-up. Words used were: *So-so audits; they aren't consistent*. One BWI member said: *I clean my water, I contribute to a conservancy, I clear aliens and the consumer doesn't know this*. Another

member said: *They pat themselves on their own shoulder and I get not one single cent extra and no-one says anything about that.*

Suspicion of conservation motives

Not all farmers completely understand the formalisation of the conservation process, least of all when it comes to signing off on land so that it will be preserved for biodiversity conservation in perpetuity. After receiving information late in this study, that plans are underway to facilitate signing off permanently on land set aside for conservation, the researcher returned to four member Estate People for their opinions on what signing off means to them.

There are some deep suspicions about motives on the part of conservation and government officials. Two responses were: *This farm has been in my family for three generations, I can't give the land away on my watch* and *It's just expropriation by another name*. A third response was: *Might be possible... if they (Cape Nature and BWI) ever get their act together I'll think about it then*. The fourth participant refused to be drawn into conversation beyond saying: *That's one way of doing it (ensuring sustainable biodiversity conservation)*.

Competitiveness, not co-operation

Two Informed Outsiders and four Estate People noted that a twin problem of competitiveness and determined independence leads to lack of cooperation. An experienced viticulturalist who has worked widely in the wine sector said: *In my opinion, the reason that BWI doesn't function at optimum capacity is that South Africans in general and farmers in particular don't believe that one size fits all rules. If you put two South Africans on a desert island, within a week you'll have two houses, two churches and three political parties.*

Personality preferences

Participants rarely confined themselves to discussion of the BWI or the impacts of business upon biodiversity - and personalities evidently count in a small sector where everyone appears to know everyone else. For example, most Estate People responded positively to the information that ex chairman of Distell, Mr Duimpie Bayly is now the chairperson of the BWI. *He's a good man*, was said numerous times. To the contrary, one longstanding BWI member muttered: *Hansen ducked and left a girlie in the office* referring to the current well qualified, award winning female CEO of the BWI.

Relative advantage

For Estate People, two critical perceptions relevant to BWI membership were of conservation costs and relative advantage. Participants repeatedly asked the researcher a variation of this question: *If I don't sell more wine, or sell wine for more, how does biodiversity translate into relative advantage for [my estate]?* Interview data showed that a number of participants think that BWI decisions to promote conservation within commercial wine enterprises should be based mostly on economic reasoning. Amongst sources in the literature, Kinzig *et al.*, (2000) argue in favour of such an approach to conservation. It was concluded that many participants think that conservation will not work as an abstract principle. Kiss (2004) maintains a similar argument.

A wine distributor from Stellenbosch said that he needed more than *wishful thinking about conservation*. A winemaker from the Helshoogte area said to the researcher: *If you can explain in three minutes, what biodiversity conservation is; what it should mean to me; and why on earth I should stick another label on these bottles if it doesn't help sales - you win a bottle of Chenin*. This winemaker's reasoning echoed Simpson (2004), who argues that if biodiversity could be protected by simply having local people make more money from eco-friendly ventures than from destructive activities, then there would not be a biodiversity problem. An Informed Outsider had his own individual take on relative market advantages: *Carrots, crowns and fanfare required for those who conserve! And,*

you know, I think there are enough aware people locally who would respond positively. Everyone likes a good guy/girl.

Another Informed Outsider mentioned cost cutting as a relative advantage, through reduced use of expensive, artificial inputs such as pesticides. The use of more earth friendly farming methods is a relative advantage that was mentioned by only two Estate People. The near absence of comment on this particular benefit was somewhat surprising, given that it can translate into financial gain. Money can be saved by spin-offs from farming practices that can be undertaken effectively and using less expensive means. Other concerns included: wine miles, WOSA's overseas trips and confusion about carbon sequestration and offsets.

What remains puzzling is why it seems to be so difficult to sell biodiversity, when a number of estates effectively leverage biodiversity in their favour. Leverage is achieved by using specific agricultural practices or other natural items of interest as a marketing advantage. For example, a BWI champion, Cloof, from the Darling area is very successfully marketing *Daisy Darling* seen in Photo 5.2 below.

Daisy Darling is a lively, bright Chenin Blanc / Sauvignon Blanc blend that reflects the West Coast *terroir* where Namaqua daisies grow.



Photo 5.2 Daisy Darling
Source: Cloof Wine Estate (2008)

Another BWI member, Jordan Wine Estate, has successfully publicised efforts to conserve chameleons, including saving chameleons from the dangers of automated harvesting machines. Chameleons have become synonymous with Jordan's award winning wines. Laibach Estate, a non member estate uses ladybirds as a form of bio pest

control and the concept has been followed through to wine seen below as Photo 5.3, which has captured local popular imagination. Carrie Adams of Norman Goodfellows, Johannesburg says that: *The ladybird wine just flies off the shelves* (pers. comm. October 3 2008).



Photo 5.3 Laibach Ladybird
Source: Laibach (2007)

As yet another example, Backsberg, a BWI champion, has achieved what must be considered a market coup, by claiming the first carbon neutral state of any wine state in South Africa. It is worth noting that although South Africa had the first Biodiversity and Wine Initiative, another New World producer New Zealand, took speedier action on viticultural carbon neutrality. Grove Mill winery in Marlborough was the first ‘carboNZero’ certified winery in the world (From a speech by the Rt. Hon Helen Clark, 23 August 2007). Like a number of South African estates, Grove Mill supplies a leading United Kingdom supermarket chain Sainsbury’s.

In 2007, Grove Mill reported a rise in sales to Sainsbury’s by over 100 per cent. The researcher further understands that Grove Mill has recently been asked to produce Sainsbury’s house brand, as a result of becoming ‘carboNZero’ certified.

The most obstinate barrier to selling biodiversity wine, made within a certain context, seems to be widespread confusion as to what biodiversity actually means. In the four groups of participants interviewed, no-one except BWInsiders claimed to understand biodiversity as a marketing message. An Informed Outsider said that he thought it might

be possible to attenuate consumers to the biodiversity message, but that it could take too long: *Su Birch always says that the concept [of biodiversity] and the BWI link are for the long term. I think this could be right. This means a more extended and subtle media strategy, for one, and I think they may be able to do it – but only if they can hold on to the support of the producers.*

A marketing manager from an estate in the Darling area said: *At the consumer level, this message needs a huge amount of work. He went on to add: We've had publicity, but I get the feeling that for most journalists it's just another interesting story – been there, written about that, tick the box, move on.*

Moreover, unforeseen data results that emerged from responses by Informed Outsiders and Wine Sellers indicate that biodiversity conservation does not mean exactly the same thing across cultures and geographic locations. Fynbos and renosterveld are not known to many outside South Africa and consumers would need a strong link to be made with biodiversity conservation. Conversely, carbon trading; packaging and transport; personal health and wellbeing are standard joint OECD / European Union conservation responses, and considered to be part of biodiversity conservation by participants who are not resident in the Western Cape. In a buyer driven market for South African export wines (Ponte & Ewart, 2007) confusion over biodiversity is likely to be an ongoing problem.

5.4.4 Wine sellers and sales

Data from BWI member estates addressing farmer reported levels of wine sales show no identifiable improvement on previous sales. Data from Wine Sellers as seen in Table 5.2 following on page 112, also proved less than sanguine about biodiversity as a selling point for wine.

Table 5.2 Wine sellers' responses

Wine Sellers	Good market message?	Customer requests	Other comments	UK/ US
Independent wine shop owner	It's a decent idea	No	I'd might have a display, but I'm a small show, I surf the trends, I don't start them	South Kensington London
London Borough Market stall owner	Sounds good	No but most of our wines are organic	I can offer you a vegan, organic biodynamic wine...	Southwark London
Dept store wine steward	I haven't heard of it...yet	No - organic and some biodynamic	but I'd take some biodiversity wine if I had more information	Knightsbridge London
Manager wine warehouse	Do you mean biodynamic?	No	We have Australian organic wines. The French do good biodynamic	Southwark London
Sommelier world's no. 1 restaurant	Sounds organic - those wines have no legs	No	We select for specific dishes. Complexity, sophisticated diners, those are my concerns	Bray Maidenhead UK
Wine selector cosmopolitan wine bar	Biodiversity? Where's that?	No	I consider quality, origin and price for my wine list, in that order	Bethesda MD US
Wine waiter upmarket restaurant	It sounds too hard	No		Rockville MD US
Sales manager wine store	Yes, I've heard of biodiversity	No	We have some organic wine	Washington DC US
Sommelier Upmarket restaurant	Bio what?	No	We sell Italian wines - why say more?	Bethesda MD US

Chapter Two referred to literature addressing market failures in valuation of biodiversity and internalising conservation costs into commodity production. As the above table indicates, data from this study suggest that at present, biodiversity is far from being fully valued in wine production and sales.

Wine sales and buying patterns

An observable increase in wine sales of wines from BWI member estates or a change in buying patterns towards biodiversity friendly wine might have been a strong indicator that ecosystem services and sustainable production are valued in commercial markets. To discover evidence of increased sales, all participants who are BWI members were asked if they had seen any financial returns since joining the BWI. For every participant the answer was *No*. A Franschhoek viticulturalist said: *People choose wine based on only three things: an appealing label, a decent price and a nice taste.*

Locally, the BWI has not tracked sales and a WOSA representative contacted during this study could not answer the question definitively. Of the 10 BWI member participants from the Estate People category, not one acknowledged any obvious increase of wine sales as an outcome of the biodiversity friendly practices. These responses reflect those of the Wine Sellers in Table 5.2 previously shown.

Further, each participant was asked if biodiversity makes an effective marketing message. Of the full set of 20 participants in the Estate People category, not one thought that biodiversity makes an effective marketing message. With further regard to biodiversity as a marketing message, 14 Estate People responded in general that conservation is good thing, but it does not easily sell wine. Participants from the Estate People group used words such as: *too complicated, unclear, confusing* when describing biodiversity as a marketing message. Moreover, when Estate People were asked what does sell wine, every participant mentioned *quality* and/or *taste*. A marketing manager from a Stellenbosch member estate was of the opinion that: *This biodiversity thing is pointless. People from overseas can't even pronounce fynbos. Why would they care? What sells our wine is the quality.* A young Stellenbosch non member winemaker said that he wants his brand to become iconic and synonymous with quality for its own sake. *When people look at my label, they know they're getting some very special wine. I make wine. Proteas don't make wine.* A Robertson non member farmer who self-markets much of the estate's

wine said: *I sell all my wine within 6 months of release. A lot of it right from my cellar door. The only marketing message I use is quality.*

According to data available, a conclusion is that there has been no discernable increase in wine sales. Buying patterns have not been adequately tracked; however *Estate People* unanimously feel that no noticeable sales benefits have accrued from their conservation efforts. It should be noted that this generally negative response did not translate into disapproval for biodiversity conservation.

A winemaker from the Darling area said he was aware that: *fynbos is a threatened resource*. He added: *It's not mandatory to have a passion for the environment if you are a marketer. I'm a farmer...*

The winemaker is paid a salary and a profitable bottom line is presumably not his problem. Nevertheless it seemed that he understood the dangers of viticultural expansion and that his conservation efforts were not directly connected to marketing products from his estate. Overall it was evident that Estate People did not consider an acknowledgment of the value of biodiversity conservation to be mutually exclusive to expressions of annoyance with the BWI, or about improved sales that did not materialise.

5.5 INDICATOR C: MAINSTREAMING OUTCOMES AND CONCLUSIONS

To construct an appraisal of the BWI, the participant interviews and the two case studies were considered in conjunction with Figure 5.16 following on page 115, Cowling's (2005) model of an effective mainstreaming initiative.

The following model was used to discover if, in the context of the wine sector, mainstreaming outcomes are identifiable.

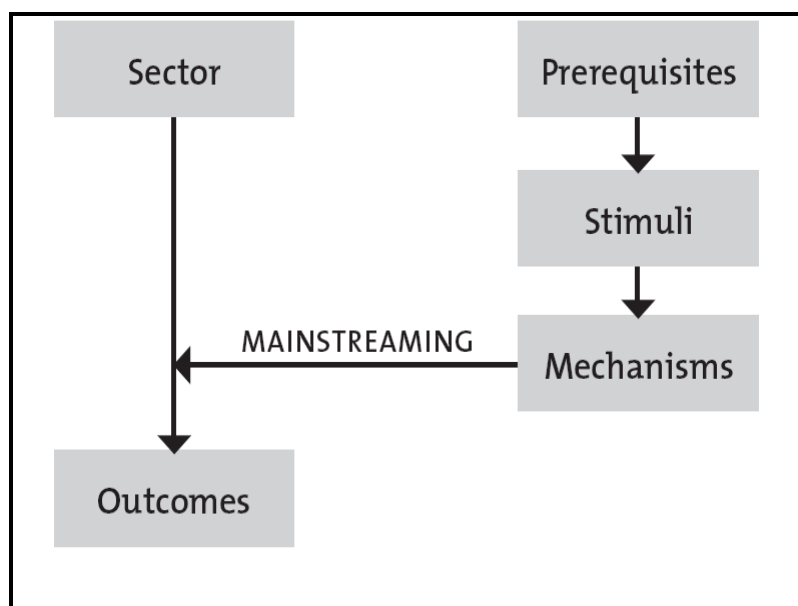


Figure 5.16 Model of a successful mainstreaming initiative

Source: Cowling 2005 (page 20)

Prerequisites

These are factors without which mainstreaming cannot happen. Prerequisites identified for this study are:

Stable governance:

There is stable governance in South Africa, plus legislation and policies are in place regarding conservation of biodiversity at national and provincial levels (Armstrong & Peart, 2000). Central government has South Africa's National Biodiversity Strategy and Action Plan created by DEAT. The Western Cape has sturdily constructed frameworks namely: The Provincial Spatial Development Plan and Sustainable Development Implementation Plan (2005). The Western Cape Government has also undertaken a State

of the Environment report programme. Further, DEAT is proposing the landscape of the Western Cape wine-lands and as a world heritage site.

The problem is not with legislation, policy or outlook. There is however a significant problem in the non-execution thereof (Sandwith *et al.*, 2006). Mainstreaming in South Africa is hampered by lack of capacity at many institutional levels. The theme of lack of capacity emerged strongly during analysis of interview data. Public sector non-delivery was mentioned unprompted, by eleven Estate People and by four Informed Outsiders.

Sector awareness of biodiversity loss:

Despite lack of governmental capacity (Wynberg, 2002), wine sector awareness of biodiversity conservation is very high. Every one of the Estate People knew of the BWI and even non members had a reasonably comprehensive concept of the initiative. Institutional bodies of the wine sector, such as IPW and SAWIC consider BWI principles to be part of their own policies. Moreover, the BWI interacts with a number of effective NGOs and not for profit organisations that contribute to awareness of biodiversity loss - these organisations include the conservation unit at SANBI, CAPE, WESSA and TMF among others. Various wine tourism and eco tourism ventures count the Western Cape as a 'green destination' for example the destination management company, Green Route and the Thebe Tourism Group. There are academic links within the wine sector and BWI to institutions such as University of California, Davis, with research exchanges occurring.

Stimuli

Stimuli are elements that catalyse awareness of the need for mainstreaming and incentivisation was the main stimulus investigated during this study. An Informed Outsider said that the use of incentives by the BWI has largely been of a general value nature such as marketing advantages. There is a niche for 'green products' as can be seen in Appendix E – media clips referring to green markets – but it may not necessarily be counted as a major stimulus because with the shift towards conservation targets, the BWI

is retreating from assisting estates to achieve added financial value for their biodiversity stories. Another potentially effective stimulus has been underused - the explicit financial advantages of integrating biodiversity conservation into cost efficient methods of farming, such as saving on chemicals for spraying or saving water by clearing aliens.

Mechanisms

Mechanisms are actual activities that seek to effect mainstreaming and the main mechanism employed by the BWI is enlisting biodiversity champions. As described earlier in this chapter, the BWI has had success in enlisting champions, adding on average more than three champions per year since inception.

Outcomes

These are optimal mainstreaming outcomes, by which success of a mainstreaming initiative is assessed (Cowling, 2005). Outcomes in this study are estimated within the following areas:

Incorporation of biodiversity considerations into policies governing sectoral activities:

As a direct result of BWI activity, biodiversity conservation guidelines are now incorporated with IPW standards. Integrated Production of Wine (IPW) is a technical, sector-based system of wine production. One of the principles of IPW is that wine production processes should not be detrimental to the natural environment -a principle shared by the BWI. The scheme has existed since 1998 and is published under the Liquor Products Act (Act No. 60 of 1989). IPW consists of guidelines and recommended procedures, including minimum standards.

A recent option added to IPW audit procedures (IPW, 2009) is that wine producers may request an IPW audit for marketing purposes, thereby fulfilling specific sustainability reporting requirements from wine buyers, distributors and retailers. In 2004, a revised version of IPW Chapter 2 was accepted by the IPW committee and is frequently referred to as the Biodiversity Guidelines. It is these specific guidelines that the Biodiversity &

Wine Initiative is seeking to promote and to assist producers in implementation thereof. Although all but three of the twenty Estate People participants do submit to IPW audits, only one participant was truly enthusiastic about IPW. Those participants who export their wine considered IPW a waste of time because international standards have already been met discretely.

The link between BWI and WOSA is strong and the BWI is a presence at WOSA sponsored wine events; however the close links are confusing for a number of Estate People. The BWI is also linked with Nedbank that provides corporate funding for 'green' action in South Africa. The donor link underscores an argument in presented in Chapter Two that the private sector needs to be involved in biodiversity conservation. Additionally, the BWI also has funding links with the World Bank and the Worldwide Fund for Nature among others (Inge Kotze, pers. comm. 18 August 2008).

Simultaneous gains in biodiversity and economic sectors – a win-win scenario:

A specific example of a win-win scenario, such as the Groenberg eco tourism initiative is functioning. Another example is the BWI-generated scheme to certify wines produced by BWI members by using specific labels to indicate that these wines are biodiversity-friendly - thereby to enabling a premium to be charged (Lalich & Westgate, 2005). However, this scheme has obviously met with some dubiousness. Not one of the twenty Estate People – even those few who use it - thought that the labels, seen as Figure 3.3 and Figure 3.4 in Chapter Three, would add much value to their wine products.

Proponents of certification typically refer to willingness-to-pay consumer surveys to promote the economic attractiveness of their proposals (Kruger & Shannon, 2000; Balmford & Whitten, 2003) and approximately thirty BWI members and champions are already displaying the sticker. Conversely, a study by the Conservation and Community Investment Forum (CCIF) found that the track record is not nearly as good as the sum of these types of surveys might suggest (CCIF report, 2002). The CCIF study found that most consumers are, in fact, unwilling to pay premiums or to change brand loyalty, and

most producers, distributors, and retailers are unlikely change their practices unless they have a compelling economic reason so to do (Ayres, 2007).

Sectoral activity being recognised as based upon sustainable use of biodiversity:

There is significant recognition in the wine sector and enabling environment in the Western Cape and nationally. According to Huntley and Petersen (2005), mainstreaming initiatives frequently originate within economic sectors and if successful, involve a broad range of actors. The BWI is typical in both these areas. A number of new partnerships have been formed with and through the BWI. Among the organisations with which the BWI is connected are: SANBI, IPW, SKEP, CEPF, WWF, IUCN, CI, CAPE, CABS at University of Stellenbosch, Winetech.

A situation where sectoral activities result in overall gains for biodiversity exceeding losses for biodiversity:

This field is as yet indefinable. The amount of land put aside for conservation is significant. However, the majority of wine farmers and producers in the Western Cape are not members of the BWI. Moreover, biodiversity has not yet been recognised as an important advantage in selling wine. Most Estate People insisted that qualities other than biodiversity sell wine; and most Wine Sellers seemed to agree.

Overall, the outcomes based on the mainstreaming model shown in Figure 5.16 are summarised as follows:

- The incorporation of biodiversity considerations into policies governing sectoral activities is clearly functioning.
- Simultaneous gains in biodiversity and economic sectors – a win-win scenario is partially valid
- Sectoral activity being recognised as based upon sustainable use of biodiversity seems to be largely true.

- A situation where sectoral activities result in overall gains for biodiversity exceeding losses for biodiversity is as yet indefinable, although a significant amount of land has been put aside for conservation purposes.

5.6 CONCLUSION

The results indicated above showed that the BWI is functioning on all the four levels identified by Cowling (2005) for successful mainstreaming outcomes. Moreover, Dr Jeffrey Parrish, director of a globally active NGO, The Nature Conservancy, recently lauded the BWI: *an exemplary project and partnership is something the four other Mediterranean climatic regions might learn from, to make conservation there happen faster and at a much grander scale* (Parrish, 2008). Concurrently, data also revealed that there is a positive enabling environment in that international consumer trends towards environmental and health concerns increasingly support 'green product' development and marketing (Lybbert *et al.*, 2002; Jenkins *et al.*, 2004; Nicholls, 2004; Demeritt, 2005). See also Appendix E.

It was from the interview portion of this study that the most dissonance emanated. Analytically, it was clear that stakeholder participation and iterative/cumulative human actions were fundamental ingredients of an integrative assessment, impossible to ignore in an inductive process of appraisal described hereafter in Chapter Six, Section 6.1. Further substantive integration of diverse knowledges and values can be found in Section 6.2., where literature-based data and technical assessments incorporate stakeholder perspectives to address opportunities and constraints, and to blend this study with a participative real world process. Evidence suggests that converting potential benefits from mainstreaming biodiversity in CFR into real and perceived value for farmers and society at large will likely require continued careful planning on the part of the BWI to maximise external opportunities and innate potential.

CHAPTER 6 SYNTHESIS

Chapter Six provides a synopsis of the study, followed by a sustainability appraisal of the BWI. Relevant to the findings of the study, opportunities and constraints are addressed. Subsequently, suggestions are offered that may be appropriate for the Biodiversity and Wine Initiative. The final section of this chapter provides some indications of how this research could potentially be taken forward.

6.1 SYNOPSIS

The overarching aim of the study was to achieve an improved understanding of the sustainability of the Biodiversity and Wine Initiative. In fulfilment thereof, a case study was undertaken with the main outcome being a critical appraisal of sustainability. A review of existing literature in Chapter Two addressed global biodiversity loss and conservation responses, therein providing theoretical depth and background for a study of project level integration of business and biodiversity conservation. The literature informed research aims and objectives and also integrated within the methodological framework of this study, considerations of ecology and economics in regard to wine production.

Relevant to the problem of biodiversity loss in the Cape Floristic Region, it was shown that natural conditions supporting the fynbos biome are also ideal for viticulture and that tracts of land in the CFR are subject to a high degree of physical manipulation and inputs inherent in modern wine farming practices. As a result, the wine sector has been identified as one of the largest contributors to the loss of biodiversity (Cowling *et al.*, 2003 a, Cowling *et al.*, 2003 b; Fairbanks *et al.*, 2004). Owing to globally insufficient biodiversity protection thus far (Ayensu *et al.*, 1999) mainstreaming practices and on-farm conservation were highlighted as appropriate conservation solutions for the CFR.

Chapter Three comprised an investigation of the Biodiversity and Wine Initiative as a catalytic opportunity to mainstream ecological goals with economic aims in the wine

sector. To further understand BWI mainstreaming principles in practice, two BWI champion estates wine estates were studied and findings were reported in Chapter Four. Thereafter, Chapter Five provided a discussion of results from the study using data from indicators identified in Chapter One as the core in the following areas of enquiry:

- A: Reductions in levels of threat to biodiversity in the CFR attributable to the BWI
- B: Stakeholder attitudes towards the BWI, with identification of positive reasons and obstacles to adopting BWI principles.
- C: An overall assessment of BWI as a mainstreaming initiative, thereby informing the construction of a critical appraisal.

Data were collected from a range of sources, including document searches, interviews, and observation. Perspectives and attitudes towards the BWI were documented and two case studies yielded information on best practice. The data were distilled into an analysis of a model of a successful mainstreaming initiative for appraisal purposes.

Data show dissonance among existing and potential constituents of the BWI. Stakeholder confusion; patchy support from the public sector; lack of discernible incentives; accusations of greenwashing; conflicting interest groups and goals are aspects that seem to form obstacles. Moreover, extremely inadequate funding resources limit BWI personnel and research capacity. As a simultaneous result of constrained funding, the provision of targeted advice and technical support for farmers is also limited

There have been clear and significant achievements in the amount of land set aside for conservation through BWI interventions. Despite the occasionally puzzling negative participant responses given in one-to-one interviews for this study, farmer motivation seems active, at least in public. BWI membership numbers continue to climb and applications for champion status consistently increase. Market potential appears to be promising, because international markets for 'green products' are expanding fast (Jenkins *et al.*, 2004; Krige, 2004; EU, 2007). Overall, there is a positive and widespread perception that the BWI has raised awareness of biodiversity conservation needs in the

CFR and has strengths in facilitating alliances. Furthermore, data suggested that there might be future possibility for the BWI to act in a mentorship role, also creating fora or spaces of knowledge exchange for stakeholders and interested parties.

Results from this study show that most of the identified sustainability indicators for mainstreaming are present and functioning in the BWI. Therefore it is concluded that the BWI should be sustainable into the future, even if not in present format. Beyond simply counting membership numbers, there is likely a further role whereby the BWI can increase community understanding of biodiversity and its value; provide ready access to biodiversity related information; promote ongoing farmer involvement in bio regional conservation; and help to ensure full and effective implementation of the national and provincial legislation and strategies for the conservation of the biological diversity of the CFR.

6.2 OPPORTUNITIES AND CONSTRAINTS

The Biodiversity and Wine Initiative has achieved some remarkable successes. This study showed that the BWI comprises a range of well integrated internal conservation strategies for building biodiversity. Externally, the BWI provides information, recognition and policy guidance. Specific technical and planning support for farmers is available.

Challenges include the integration of theoretical approaches and varying stakeholder perceptions of real world phenomena. Chief amongst these challenges is the maintenance of a balance between ecological and economic goals including:

- Accessing financing from investors who understand ‘green’ business
- Communicating biodiversity value to interested parties and to financial markets

However these are still early days for biodiversity and business linkages in the South African wine sector and there are ample opportunities to learn by doing. Towards enhancing communications of substance, a synthesis is made here of opportunities and constraints that emerged from this study. Key variables are addressed in no hierarchy other than as each emerged thematically during analysis.

6.2.1 Adoption levels

The study revealed a truly surprising amount of dissonance amongst BWI members that was most notably evident in the gaps between their reasons for joining the BWI and for conserving biodiversity on their land. Moreover, it might have been expected that members would acknowledge BWI influence upon their projects. To the contrary, only one Estate Person gave credit first to the BWI. All the others said that eventually conservation project would have happened anyway, with or without BWI membership, or because it is the right thing to do. Farmer confusion between the roles of the BWI and WOSA also seems to hamper individual decisions to become members.

6.2.2 Incentivisation problems

This study found that incentive design for conservation action cannot be based exclusively upon economic principles. Important human projections for the design of effective conservation incentives include *inter alia*: motivating landowners; overcoming a noteworthy lack of understanding of the biodiversity concept; considering the influence of face-to-face extension work on farmer's decision-making processes; analysing the success of existing incentives; acknowledging individual conservation outcomes.

Simultaneously, it can be concluded that to incentivise sustainable viticultural practices in the CFR, there exists a need to construct workable market mechanisms to quantify and monetise the economic value of viticultural ecosystem services for those who benefit. However, a direct value-added economic incentive does not seem to work efficiently at present. This study found that the market does not yet fully support applications of premiums for biodiversity-friendly wine. The current bottom line is that there are not enough wine consumers to whom biodiversity in the CFR is important. Thus, very few noticeable profits accrue from product differentiation at present.

6.2.3 Enabling environment

Potential for sustainability might exist in lobbying for policy incentives to enable the wine sector to adopt improved management of natural resources. The scope of further development of biodiversity business in the wine sector is likely to be contingent upon future enabling environments - frameworks of regulations, laws, voluntary agreements, social norms, taxes and subsidies and within which wine producers operate. Further, any policy framework needs comprise an integrated range of crosscutting sectors, technologies, and physical regions, to decrease the possibilities of unforeseen perverse or counter-incentives for any one sector. The Biodiversity and Wine Initiative could help to achieve these objectives in policy or lobbyist roles.

6.2.4 Understandings of biodiversity

For the concept of biodiversity to be useful in a management or marketing framework, there should be general agreement among scientists, managers, wine producers, farmers and consumers about what it means. As it emerges from the study, one of the biggest stumbling blocks for the BWI is the widespread and persistent confusion as to what biodiversity means. Only the BWInsiders showed any certainty that they knew what the message was. An effectively delivered biodiversity message should be coordinated enough to resonate with individuals in the viticulture, business and conservation sectors. The high level of confusion among Estate People in particular, indicates that resonance has not occurred. Cynicism was evident in some responses from Informed Outsiders and dismissiveness was discernable in responses from Wine Sellers.

6.2.5 Stakeholder communication problems

BWI has attempted to provide an articulation of its specific and complementary roles within related bodies such as WOSA. Nevertheless, such links appear to be nebulous to many farmers and even to some of those in marketing and conservation sectors. Consistent, clear communication of the coordination team and marketing teams with the

farmers will be an important factor in devising and managing an effective and well-balanced programme of sustainable action.

Extension of the biodiversity message by WOSA and the BWI backing off an initially mandatory 2009 application of labelling were both frequently mentioned negatively. It might be that it takes a while for people to 'change gears', but at this early stage, a number of farmers feel actions by BWI and WOSA in this regard devalues their own efforts.

6.2.6 Funding

The Biodiversity and Wine Initiative is not financially self-sustaining and this will inevitably put an onus on the BWI to ensure that its approach is complementary to donors' ethos. Thus the BWI needs to be foresighted and strategic to create maximum impact within its conservation mandates, for the money provided. According to Inge Kotze, the wine sector has latterly indicated that there is little financial support available to fund the initiative. Nor has support been forthcoming from parastatal or government sources (Inge Kotze, pers. comm. 18 August 2008). Contrast this situation with that of the California Sustainable Winegrowing Alliance to whom the United States Department of Agriculture gave an award in 2008 of \$607,500. There are the finances in place to encourage growers and producers to learn, access and benefit from market based conservation opportunities. This is not the case for the BWI.

The MEA (2005) found that the private sector has potential for contributing significantly to the successes of global and local biodiversity conservation. Therefore, increases in financial and ideological distances from the wine sector as have recently occurred, could create future problems for the BWI, in that achievement of true win-win mainstreaming success still needs to maintain business partnerships. Conversely, it might be possible to claim such at least one such partnership indirectly achieved through funded affiliation with The Green Trust which connects the banking sector with the conservation sector.

6.2.7 Ongoing support

For farmers, the BWI extension officer and project coordinator offer management models and they share news about the process of conservation stewardships. Most farmers interviewed appear to be particularly fond of the BWI extension officer and value their relationship with her. However, it seems that meeting BWI requirements can take some time. Furthermore, obstacles such as inadequate incentive schemes and lack of conservation management skills, inhibits private conservation programmes, especially on the smaller farms. As efforts to increase and formalise the number of stewardships move forward, follow-up to initial momentum might have been slowed by staff overload and a lack of funding. Moreover, with some farmers, conservation action is tardier than might have been expected. Interview data shows that this might possibly be due to uncertainty of how conservation processes actually work, what costs might accrue, and a need for reassurance that potential stewardship arrangements are in farmer interests

6.2.8 Successes

Farmer support

Farmer support can be used as a means of assessing success (Hagmann *et al.*, 2002). The commitments made by farmers who are members of the BWI do vary, frequently according to the size and location of the farm and their management models. This makes very important the engagement of individual farmers who cannot afford conservationists, and the BWI is not well enough resourced to provide intensive support. In terms of numbers, memberships continue to rise. However the rise in numbers is mitigated by data indicated that Estate People feel that they conserve biodiversity on their farms because it is the right thing to do, regardless of input from the BWI. By contrast, the more cynical amongst Informed Outsiders consider that most biodiversity conservation on wine farms is a marketing ploy. A conclusion could be made that the BWI provides a platform that benefits those who have not conserved and adds value for those who do conserve, with a bonus of publicity for their efforts.

Auditing and planning

The area of auditing and planning seems to have had chequered success, with some resistance from farmers. As assessments, audits, certifications and other environmental planning requirements become further integrated into decision-making process for land management, it may become increasingly important that farmers understand the relevance thereof to their individual situations. The provision of integrated information regarding conservation values on their land; attention to their particular concerns; with support for farmers at least through the initial process, will yield conservation dividends. BWI member farmers mentioned that a personal relationship with a BWI staff member was valuable. Further - although it was mentioned during interviews that BWI auditing was '*patchy*', the recent BWI move towards a focused alliance with the conservation sector and away from the wine sector, has returned farm-based auditing problems to the IPW certification process. Despite jettisoning the auditing issue, conservation planning by the BWI in the future will continue to involve farmer decisions about their land. This involvement is evident in the proposed plan to encourage farmers to sign off on land for conservation purposes in perpetuity. Operational mechanisms for this plan are not yet in place however, and for the purposes of this study it is too early to investigate farmer reactions.

Public recognition

Recognition for conservation action by the BWI could be construed as a means of assessing success. In this regard the BWI punches well above its weight in the world of conservation. The initiative has won awards such as the Cape Times/Vodacom award mentioned in Chapter Three, as well as the *Mail & Guardian* Greening Award. The BWI has a visible role in a number of conservation and private sector conferences. BWI efforts have been vital in initiating and supporting on-farm conservation projects. Moreover the BWI has acquired a public profile at gatherings such as the CAPE WINE conferences in 2006 and 2008, sponsored by WOSA. In July 2007 the BWI was also a co-sponsor of a

three day set of talks and workshops in Stellenbosch that brought together parties interested in sustainable viticulture from a number of countries.

Incentives

Farmer incentives featured strongly in the literature and incentivisation for on-farm conservation is a current issue that is hotly debated in the field of sustainable agriculture. As indicated previously, the area of incentives has been problematic for the BWI. Despite ongoing support for conservation, some farmers interviewed for the study were disillusioned and on occasion, outright angry, that expected incentives had not materialised. This situation may be about to change. Although not formally announced at the time of writing, the BWI seems confident that a massive tax incentivisation coup has been achieved by successfully lobbying the South African government in conjunction with other conservation bodies. Possibly from the 2010 tax year, there will be a tax break for South African farmers on land put aside for conservation; moreover such land will also be exempt from capital gains taxes and estate taxes.

6.2.9 Information transfer

A stakeholder problem that was noted by a number of participants is that, mostly as a result of the tight knit conservation and wine industry communities in the Western Cape, there is a great deal of inter-stakeholder coordination and technical assistance; but there is less trans-stakeholder sharing of information. The BWI uses its regular online newsletter as a medium for disseminating data about the achievements of the initiative, thus this type of information is available to a wider audience. Possibly the online mechanism could also be used to reflect on the issue of stewardship, so farmers know what other farmers are doing and through discussions, on-farm conservation action can be enhanced.

6.2.10 Partnerships

The study showed that a great strength of the BWI has been the capacity to inform and implement effective local partnerships as well as conservation initiatives elsewhere.

Despite coordination issues, wide stakeholder involvement has strong potential to promote the development of innovative conservation solutions (McNeely, 1995; Cowling *et al.*, 2008). A simple example might be the inclusion of farmers' opinions to inform the appropriate selection of cover crops and intercropping plant species. In this way the BWI can build on positive links that already exist between societal groups. Partnerships and group cooperation will likely become increasingly relevant to conservation as reduced government and municipal capacity, especially in rural areas of South Africa, impact conservation and sustainable use activities.

Another advantage of a group oriented approach is that when local people become involved in project management, it tends to speed up implementation. The BWI has successfully fed into and capitalised on existing partnership and communication of strategy has benefited from the coordination with local and international conservation bodies like BOTSOC, CEPF, WWF and wine sector bodies like SAWIC. Moreover, the application of this operational mainstreaming model in South Africa's transitional society allows space for innovations that more developed and systematised societies do not support. In a transitional society, pressures shift more frequently than in developed societies. Analyses of Cowling's (2005) mainstreaming model identify an ability to work across boundaries and promote cohesiveness. This ability to be flexible is of especial value in a transitional society.

6.2.11 Replicability

For the BWI, the mainstreaming objective could be furthered by the replication of successful local experiences with an analysis of the conditions under which projects thrive and reflection on the process of individually successful examples of adaptive management. However, the replicability of the BWI model in geographically separate hotspots of threatened biodiversity that differ in institutional capacities and demographic characteristics is a difficult issue. The study showed that there are invisible ethical, personal and knowledge boundaries that form different stakeholder purposes. In the interests of potential replicability of mainstreaming in other areas, it might be valuable to build a strategic portfolio of farmer feedback. For example, a common complaint noted

during the study was the lack of uniformity in auditing processes. Data indicated that most audit systems annoyed farmers, but audits necessary for exporting were more readily accepted and evoked fewer complaints than IPW and BWI audits. Exporters within the Estate People group almost uniformly said that it was pointless undergoing local audits when Globalgap audits were rigorous⁷. Gap is an acronym for good agricultural practices. Globalgap is a farm certification scheme that standardises products to global retail requirements and farmers frequently referred to Globalgap as: *more useful*.

6.2.12 Champion estates

As with membership numbers, those estates aspiring to champion status are increasing. It needs to be said: most champion estates are not funded by extractive industries, as are the first two champion estates studied here. As noted in Chapter Five, greenwashing was a strong charge that some participants levelled at Anglo American plc. Interview data show that some participants are unlikely ever to believe that conservation awards, for Vergelegen in particular, are fully justified owing to the environmentally destructive nature of the underpinning industry. To all overt conservation intents and purposes for this study, the BWI champion strategy is successful - except for the vexing issue of attempting to assess conservation success when the funding for the conservation efforts is derived from extractive industries. This funding issue seems to be a moral morass into which good intentions are sucked. Funding sources comprise a profound flaw for at least two estates that claim biodiversity champion status.

An unforeseen set of data relating to champion status were identified during analysis of the case study data, but not reported in Chapter Five because they fulfilled no specific aim. It was discovered that both Vergelegen and Graham Beck Wines have three additional aspects in common, which might be attributable more to circumstance, personality or 'deep pockets' than to the BWI.

i) Champions at the owner, director or managerial levels were essential to drive conservation projects and they involve all the staff in the process. Amongst employees there is a high degree of ownership of the concepts.

ii) The potential of ‘deep pocket’ estates for showing how it can be done, at no cost to others. This benefit is documented also by Pannell *et al.* (2006) who contend that the observability of results from an innovation is positively related to adoption, at least in part due to the influence of observability upon human willingness to give trial time to a new project. Greater observability means that fewer trials may be necessary to make choices between adoption and non adoption. Observability encourages the transfer of ‘over the fence’ information between farmers, thus promoting more ready diffusion of a practice

iii) Anglo American plc., and a wealthy philanthropic individual, Mr. Graham Beck, have significant capacity for marshalling ecological knowledge and economic power for their own ends, arguably doing this far more effectively than the BWI because the financial backing, management structure and human capital support are stronger. These two corporate estate owners show, ironically, that effective biodiversity conservation activity can happen because of money, even if the funding originated in extractive industries.

6.2.13 Interest conflicts

Including data from the case studies, it is evident that is that many farmers who practice conservation, do it in their ways and for their own reasons. However, in wine production landscapes, there are more points of view to consider than those of the landholders. There are those constantly present, such as: other resource users, governments, sector-specific bodies, labour and consumers. In addition, there are environmental champions, politically astute individuals, investors and external donors. The formidable task of coordinating biodiversity conservation in such settings seems to require integrating at least the three themes that are illustrated in Figure 6.1 following on page 133.

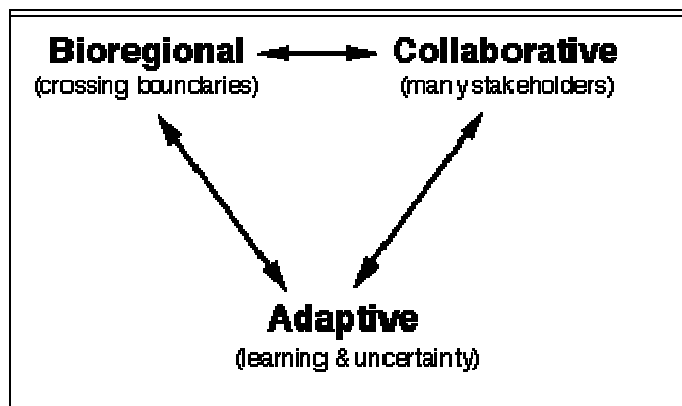


Figure 6.1 BWI facilitation challenges

Source: Adapted from Lee (1999). Appraising adaptive management

Certainly, with its strengths in promoting partnerships the BWI has had success in connecting all three themes shown in Figure 6.1. However, a collaborative approach can complicate experimentation because it can take a long time to develop cross sectoral programmes. Markets can be volatile; marketing messages change; business trends towards biodiversity are largely nascent (Jenkins *et al.*, 2004). The art of a conservation initiative in these circumstances would be to amalgamate a range of objectives, at least temporarily, so as to facilitate the establishment of co-operation on land use and sustainable conservation actions.

Nevertheless, despite problems and pressures, the results of the study show that the BWI is a well integrated organisation with principles rooted the development of economic and environmental discourse as well as current theory and that are in line with results from leading edge research in biodiversity conservation and consumer studies. All participants from the Estate People group, including those from Graham Beck Wines and Vergelegen, agreed that the BWI had been successful in raising sector-based consciousness of biodiversity loss in the CFR. The result is an increasing awareness that biodiversity valuation and use could contribute to long-term conservation. Overall, appreciation for agricultural biodiversity in the CFR seems to have grown because of the existence of the BWI and a sustainable future for the initiative seems highly likely.

6.3 SUGGESTIONS

Based on this study, the following suggestions are towards furthering conservation of viticultural biodiversity resources, strengthening local management and encouraging an enabling environment for agricultural biodiversity conservation. To enhance the sustainable future of the BWI, the following areas may need further research:

Communication

This is arguably the area where the most serious challenges exist. Data show that communication and stakeholder engagement on biodiversity issues are central to the successful integration of biodiversity into the wine production process. Various forms of communication and engagement are not discrete stages, but should be activities that run throughout the BWI conservation strategy. Efficient internal and external communications can make scientific findings and data available to farmers, stakeholders, consumers and the wider community, thereby creating a virtuous cycle of events: more informed people tend to value biodiversity conservation more, which in turn facilitates improved implementation of conservation interventions.

Stakeholder communication facilitation

Estate People indicated that a useful role for the BWI could be as a facilitator of some kind of forum to assess and share lessons learned from individual projects. It was expressed that such a forum could benefit smaller and less well funded farmers in particular, by improving the flow of scientific and investment information. The study showed that it might be especially useful to devise cost effective means for the provision of ongoing, updated development and technical services to those who manage eco friendly wine estates.

The recent move by the BWI towards the conservation sector is no doubt a wise financial move. However, the BWI should not neglect a synergistic ‘people’ strength that may further enhance sustainability (Pretty & Smith, 2004). A key strength of the BWI is that the initiative encourages a common vision and facilitates communication between local

stakeholders, institutions with divergent objectives – equally as much as it targets saving quantifiable pieces of fynbos or renosterveld. In the social setting of agricultural landscapes without high poverty levels, such as wine farms in the Western Cape, the aspect of land stewardship is often positively perceived by peers, even when indirect use values are not clearly known. Further, when people are connected in supportive groups and networks, their combined knowledge can enhance the planning and implementation of conservation activities. Thus with the BWI acting as a catalyst, sustained stewardship of natural resources may be even more likely to occur over the long term.

Market-oriented communication

In the past, most definitions of wine quality have emanated from wine producers. However globalisation with instant access to information has created many alert and empowered consumers with sophisticated understandings of product values (Makower *et al.*, 1993). Thus, the definition of what comprises quality in wine seems to have shifted towards wine consumers. Not only do consumers seek products that are enjoyable in sensory aspects; they now increasingly expect wines to be produced by environmentally and socially responsible means. The means by which the fulfilment of such expectations is communicated to wine markets and to consumers will likely become increasingly important drivers of profitability in the wine sector (Jenkins *et al.*, 2004). It could be concluded that the BWI may be missing some opportunities to develop the production-market connections described here, in favour of a more directly conservation oriented approach.

Technological communication

It is unlikely that any wine farmers in the Western Cape do not have internet access. Thus, an increase in the use of information and communication technologies in extension work is possibly an innovative way for the BWI to go forward, especially with the existing staffing shortages. An advantage of integrating ICTs into agricultural extension work is that the collecting, processing and transmitting of data becomes energised. Not only does this result in rapid dissemination of extension information to more farmers, but

farmers' decision making benefits from the immediacy of an interactive form of communication. By this means, customisable farm management plans and projections can be distributed, as can useful market tracking figures. ICTs may be a good way for farmers to access numerous information sources that are affordable and useful. Although not part of the direct aims of this study, a general 'techno-gap' was uncovered. A digital information commons that guarantees unhindered access to conservation data and information by a community of users within a defined information space could bridge the divide between researchers and practitioners of biodiversity conservation (Moritz, 2001).

Making the business case for biodiversity

The literature showed growing evidence that market prices for goods that depend on biodiversity in viticultural ecosystems are below their true value or social opportunity cost, and that this has led to insufficient biodiversity conservation (Gowdy 1997; Jenkins *et al.*, 2004). However, even if markets do fail to adequately value biodiversity - without any markets at all, farmers are unlikely to be able to afford biodiversity conservation in the short term. Almost conversely, BWI has moved towards prioritising conservation targets i.e. taking ecological approach rather than an economic approach to biodiversity conservation in wine production. The adoption of a more ecological approach appears to be viable; however the BWI seems to be leaving a gap in the vital process of making the business case for biodiversity conservation in the wine sector. Likewise, cross-sector coordination is clearly hard won and difficult to sustain but the BWI should not lose a business perspective on conservation activity; nor ignore opportunities to influence the markets

In this regard, it is impossible to overlook the strong influences on conservation decisions that are exerted by people outside viticultural ecosystems. Farmers' conservation decisions are determined by economic signals such as the relative market prices of wine; the transfers offered under various policies; and culturally driven consumer behaviour. Furthermore, the literature showed that reward mechanisms for conservation interventions are most likely to work when there is clear identification of

wine producers with conservation of ecosystem services and also identification of beneficiaries willing to pay for such conservation.

There may now be space for a facilitator within the BWI to research an economic problem collectively faced by the wine sector: How to understand what motivates consumer choices and to produce wines of high quality and appeal, whilst simultaneously devising conservation interventions and improving sustainable production practices for grape growing and for wine making? Communicating to consumers what their choice of wine truly represents is a vast and multi-faceted task.

6.4 CONCLUSIONS

Successful conservation of biodiversity in the CFR appears almost inevitably to require making a viable business case for biodiversity. Whilst acknowledging the impressive coordination and research role of CAPE and other NGOs, one of the main conclusions of this study is that there is a specific role for the BWI in monitoring and organising a range of learning and communication activities around the development of criteria and indicators that evaluate progress toward common goals. Success in such a role will necessitate determining intrinsic and extrinsic factors that underlie biodiversity loss in viticultural landscapes. Information on conservation and commercial options, human preferences, perceptions and behaviours can be collected and then put into practice. Such multiplier strategies will not only contribute towards an effective global conservation system, and reach wider audience; but also enhance the organisational capacity of the BWI. Therefore, bearing in mind the current funding limitations, options for the BWI to consider in the future might include:

- Encouragement of innovative financing
- Development of a range of information sharing and communication channels
- Articulation of the benefits of biodiversity
- An expanded set of farmer incentives

- Provision of a core for producer / consumer enlightenment that includes targeted research exchanges.
- Fostering availability of flexible project instruments
- Construction of strategies that are demand-driven and that develop the interactive participation of stakeholders at all levels of decision making. Such strategies may include mentoring, policy and lobbying activities.

From the above list of considerations the aspect that probably most needs to be highlighted is communication. Information sharing and communication channels were found to be crucial assets for the BWI to develop. Ecoagriculture Partners⁶ considers knowledge management to be the vital link between the experiences and capacities of multiple situational interest groups: researchers, educators, technical service providers, input suppliers, wine buyers and wine producers. How these relationships are configured and coordinated to induce learning and create new competencies will consistently affect the successes of conservation interventions promoted by the BWI. A single underfunded mainstreaming initiative quite obviously does not have the scope to crosscut full sets of these different aspects. There are however more approaches to address a range of issues: ecological principles; interdisciplinarity; stakeholder involvement and biodiversity science, than are typically now used by the BWI.

Corrective design is easy to suggest and difficult to do. It is not simple to reconcile profitability with an urgent decline in species, least of all when faced with pressures within a transitional society, such as land and wealth redistribution and limited institutional capacity. Nevertheless, in a wine production landscape of extreme ecological value, the stakes are too high not to fully engage even if the process is economically complicated. In this respect, a conservationist in the Cape Floristic Region is not only a scientist. And the Biodiversity and Wine Initiative is more than a conservation initiative.

⁸ Washington DC-based Ecoagriculture Outcome Measures Project identifies and field-tests practical indicators and methods for ecoagriculture initiatives.

6.4 FURTHER STUDY

The research field is active – bursting with rapidly emerging ideas, initiatives and policy shifts where economic and ecological systems compete for space and resources. This study has sought to contribute to the debate on developing an economic case for biodiversity conservation in hotspots of severely endangered biodiversity. A number of avenues for further research emerged during the course of the study. This section includes a brief gap analysis, followed by specific research possibilities, listed in no particular hierarchy

First, in conducting the literature review it was noted that sustainable agriculture and agricultural biodiversity have most often been studied in two definite types of settings:

- i) Where land users are disadvantaged and the local markets function erratically if at all - common in developing societies
- ii) Where the land users operate in highly regulated societies with strongly functioning markets - such as those in North America or Western Europe

There are few such studies made in transitional societies with emerging markets, of which South Africa is one of a number - where the land users tend to be neither disadvantaged nor intensively regulated and where the end product is nonessential to life. Biodiversity that exists in these viticultural areas is worthy of protection, but there is almost no reference in the literature to conservation interventions by wine farmers/producers in transitional societies, despite the relatively high levels of influence that these groups of land users exert upon local economic and ecological actions and values.

Second, during the study it appeared that the location of exurban development often seems to be non random, relative to biodiversity, because both are influenced by biophysical factors in that they are concentrated in more equitable landscape settings. Specifically there is space for a study of an exurban development in a viticultural area in the CFR, which may have even more biodiversity impacts than in the metropolitan urban

fringe, because of the elevated influence on lands dedicated to conservation that are rare in more human dominated landscapes.

Third, there may be space for research that documents some aspects of the economic geography of South African wine. Specifically it could be demonstrated that money has a geography - spatial structures of financial systems are not neutral, but influence allocations of funds, capital and credit across localities. There are claims that globalisation and advances in information and communications technologies increasingly make geography and location irrelevant. However, wine is a good example to use to contest such assertions and to argue theoretically and empirically that space and place still matter, possibly even more so for financial and economic transactions concerned with wine.

Fourth, there could be a study of viticulture at the Cape of Good Hope - from colonial outpost to modern ecotourism destination - possibly focusing upon the role of viticulture in the rationalisation of the socioeconomic system in the Western Cape. The study could explore how theories of commerce (or maybe labour) in the colonies and later into the apartheid system and democratic South Africa are intertwined within the practice of viticulture. Whilst at one level the study would be informed by the relation of modernity to colonialism, at another level it would be the story of an important South African agricultural commodity, wine.

Fifth, document searches undertaken for this study showed that research is scarce concerning the valuation of biodiversity in agricultural landscapes from both biophysical and socioeconomic perspectives on short and long-term time scales. For example, very few researchers seem to have investigated the impact of mechanisms that add value, such as on-farm processing and direct marketing. Few studies have evaluated the price premiums and expanding market shares that benefit producers around the world, who participate in sustainable farming labelling initiatives including the practice of ecolabelling.

Sixth, a study of wine ecolabelling could formulate clear targets for the environmental topics within the different labels. Acceptably standardised eco-labelling communicates in a commonly understood format, the ethical manner in which the product was made. However, the development of ecolabelling is restricted, tardy and unstructured in South Africa. At present, valuation seems to be subjective and not all the relevant environmental topics are considered. If ecolabels are to become manageable and effective instruments for sustainable viticulture, there should be some kind of common scientific framework for analysing their environmental impact and market potential. The conservation value of this study would be that for businesses to integrate biodiversity sensitive practices, it must prove to be more profitable to conserve biodiversity than to ignore or destroy it. A combination of targeted rewards for conservation, enforced penalties for biodiversity loss and improved consumer information will help to build a biodiversity-friendly economy.

Seventh, whilst participants for this study are all computer literate and connected to the information society, the inherent communication problems faced by the BWI sparked a research interest in how science is communicated in South Africa. It can be argued that the difference between developed and developing countries is their ability to absorb and utilise technology. Further, the differences between countries' abilities to engage appropriately with the global science and technology agenda creates an ever growing divide between regions and between countries. South Africa faces a profound challenge in the training and integration of large segments of this society for whom it has not been possible to transition into the global information society. Although the digital divide is glaringly obvious in South Africa, the dimensions and distribution of ICT access have not yet been systematically analysed.

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WEBSITES

BBC: www.bbcnews.org

BWI: www.bwi.co.za

Critical Ecosystem Partnership Fund: www.cepf.net

Conservation Farming: www.sanbi.org/consfarm

Conservation International: www.panda.org

Global Environment Facility: www.gef.org

IUCN: www.iucn.org

SANBI: www.sanbi.org

SAWIC: www.sawic.co.za

SAWIS: www.sawis.co.za

United Nation Environment Program: www.unep.org

World Wildlife Fund: www.wwf.org

World Bank biodiversity portfolio: www.go.worldbank.org/80D0HM2WN0

Convention on Biodiversity: www.biodiv.org/convention/default.shtml

APPENDICES

APPENDIX A AIDES DE MEMOIRE

APPENDIX B INTERVIEW TRANSCRIPT

APPENDIX C LIST OF PARTICIPANTS

APPENDIX D RAPID PROJECT ASSESSMENT CHART

APPENDIX E MEDIA CLIPS, MARKETS FOR GREEN PRODUCTS EXPANDS

APPENDIX F BWI IMPLEMENTATION STRATEGIES

APPENDIX G BWI CHAMPION APPLICATION

APPENDIX H TABLES OF BWI MEMBERS

APPENDIX I BWI CHAMPION ESTATES

APPENDIX A: AIDES DE MEMOIRE

1 A: BWI MEMBERS:

i) Your reasons for joining the BWI?

Researcher can suggest ideas:

- Good image for advertising wines
- Good niche for marketing wines
- Good for the ecological processes on my estate
- Good for the environment of the Western Cape
- To protect the CFR hotspot
- To encourage wildlife
- Attract more visitors
- Part of the IPW, (so I'd be audited anyway.)

ii) Other reasons?

iii) Have you seen any increase in visitor interest or wine sales because of the biodiversity story attached to your wines?

iv) What does biodiversity mean to you?

v) How do you understand biodiversity as a marketing message for wine products / Is it good marketing message?

vi) What is it you do to conserve biodiversity on your farm? Researcher can suggest ideas:

- A species list
- IPM
- Water treatments
- Energy saving
- Recycling
- Spraying and harvesting methods
- Worker education
- Conservancy
- Reintroducing game
- Alien clearing
- Intercropping

vii) Do you see a role for the BWI in the long term?

viii) Can you elaborate on the reasons for your answer?

1 B: NON BWI MEMBERS

Your reasons for not joining the BWI ? Thereafter, pick up the line of interview at: iv) above

APPENDIX B: INTERVIEW TRANSCRIPTS

1) WITH: Neil Moorhouse, Winemaker at Zorgvliet



I first met Neil at WINEX, September 2007. I introduced myself and the response from him was *EXTREMELY* negative. Neil was the only person of all the Estate People participants, who indicated any annoyance and said directly that he didn't wish to be interviewed. Upon asking him for the reasons, it became obvious that the negativity was because he thought I was conducting a survey on behalf of WOSA or BWI. Evidently I need to reword my introduction!

I explained that I was a neutral researcher seeking data for a study of biodiversity in the wine sector, with a focus on the BWI as a mainstreaming initiative. Neil is a passionate person, but after he had vented about both BWI and WOSA, he agreed to talk with me. Three months later, after being repeatedly unable to contact Neil by phone, I drove out to find him in the Zorgvliet winery and we set a date for a future interview. I was especially keen to interview Neil because he seemed to hold very strong opinions. I thought of him as 'an outlier' who could add especial interest to the data.



I met with Neil again in January 2008 at Zorgvliet estate in the Banghoek Valley. Because of the late harvest in 2008, Neil was in a hiatus, waiting to bring in the first grapes of a slow season, and I was fortunate to get some time with him. We sat and talked in his comfortable eyrie above the cellar. The friendly, energetic winemaker at Zorgvliet has a self assurance way beyond his years and he shows an upbeat, practical approach to tackling problems. He is very outspoken. Neil was the only Estate People participant who told me that: *It's totally fine if you use my name. In fact, it's more than fine. I'd like some of those people to know what I think.* Neil added a proviso that I also state clearly that his opinions are his own opinions and not necessarily those of the estate owners.

Of all the individuals in the participant groups, Neil had the most strongly anti-WOSA view and if not the most negative view of the BWI, his was very close to it. He was well prepared for the interview and arrived armed with notebook, press clippings, wine samples, label mock-ups and a lot of spunk! Neil is upfront about his opinions and reasons and came out, with his metaphorically gloved fists swinging. His first statement was a question: *How do you see biodiversity as an effective marketing tool?* I laughed because

that was one of MY questions for study participants, but I gave him a synopsis of various viewpoints from the literature and document search I had compiled; then I asked him what he thought about using biodiversity to sell wine. Neil simply responded: *It's all a load of *****. Proteas don't make wine, nor do sugarbirds – I do.*

Neil said in the beginning that he had: *less beef with BWI than with WOSA*, but in answer to my questions about whether he thought the BWI is sustainable he answered “*probably not, in its present form because it lacks relevance and clout in the industry and biodiversity is hellish hard to use as marketing message- we're the laughing stock of the international wine world because we can't get our marketing act together*”. Like Dave Hughes, he quoted the Australian brand Jacobs Creek and Penfold as successfully marketed wines, even though Neil's personal opinion of most Australian wine is that: *they taste Australian: rough, in- your- face and hard to swallow.*

Neil blames Su Birch specifically for what he termed: *a marketing disaster*. Neil assured me: *I'm really conscious of conservation and stewardship and I completely treasure the fynbos. I regard it all as my heritage, I just think it's a terrible marketing message, confusing to the consumer, impossible to explain and generally messy*. He says that Su Birch is: *out of touch with the industry and is an extremely poor brand ambassador for South African wine.*

Neil feels that: *WOSA has it favourites*. He produced evidence from attachments to press releases and verbal from feedback from other farmers. *When WOSA brings international wine journalists on visits – they seem intent on skipping the larger farms and going to the smaller and boutique estates. Neil claimed that: and then, only some favoured small estates get included. Those that WOSA doesn't like because they're not part of BWI, they get left out.*

Neil feels that: *given that WOSA is an industry funded body, this is unfair*. He says: *I'm not concerned that Zorgvliet isn't in favour because it makes no difference to my wine sales, but smaller farmers don't not have the marketing resources that we have.*

Neil is: *delighted that my wines do not depend upon WOSA for marketing. Zorgvliet is possibly unique in the wine sector that nothing is outsourced in growing, producing packaging, transporting and distributing our wine. Even tourism is largely in house because Zorgvliet has its own travel agency with a branch in the UK that doubles as a wine club, supplying UK buyers and also when tourists from their trip to SA get home they can have our products delivered.*

Neil had brought bottles to show me that Zorgvliet has its own specially shaped labels -missing the upper left hand corner. He told me: *There is a bird logo for Zorgvliet that is on every label and the motto 'special wines for special people' is also on every label.*



Neil said: *I'm not in favour of stickers on bottle except Wine of Origin labels and possibly an internationally recognised logo like Fair Trade...if the SA industry could get themselves together enough to redistribute profits to the community it would be good.* When I suggested that he newly expanded WOSA message might include something along those lines, Neil said: *it would be wonderful if WOSA could do that but I doubt it.*

When I asked how he felt about audits, Neil was outspoken. Like Johnathon Grieve at Avondale, Neil thinks: *IPW is the worst waste of time...except for WOSA.* He says *no one knows or cares what their sticker is.* Like Grieve, Neil told me: *I'm certified for export to Europe and America and as far as local audits are concerned, I keep an open cellar door. Anyone is welcome at anytime to walk in and see what I do.* Neil told me that: *engineers were asked to develop a winemaking process with minimal intervention, so we now use the slope of the land for a gravity fed system. And it actually enhances the quality of the wine because there is less mechanical interference.* He said that: *if there is cleaner cellar in South Africa, I would like to see it.*



Neil's cellar practices are impressive and what I found fascinating was that in his cellar cleaning toolkit is the use of hydrogen peroxide, not ascorbic acid which is more abrasive and corrosive.

Neil drew me little molecular sketch of hydrogen peroxide to dynamically illustrate how the cleaning happens. H_2O_2 is allowed to oxidise, until it loses an O and the PH value is 6, whereupon it become H_2O and is simply flushed away with other water. Neil said: *I have no effluence trouble as result and we use the cleaned water on the lawn and vines.* He said: *I'm extremely proud of what I do and of how I do it. I don't*

need anyone else's sticker to prove that I can make good wine under good conditions. Neil is one of the few – about 905 of wine farms do IPW, some I spoke with seemingly under the impression that its mandatory, one or two pleased that it is not. Pressed for ideas on what role BWI might best play in the wine sector Neil said: *Lobbying government for enforced biodiversity legislation would be one thing and an increase campaign of awareness would be another.*

When asked what happens at Zorgvliet that conserves the natural environment Neil mentioned an alien clearing program on the Simonsberg mountain behind the estate.

At the conclusion of the interview, Neil took me on a tour around the cellar.

Doing some later research on Zorgvliet, I discovered that, like the first two BWI champions, this estate was also originally funded through dealings in an extractive industry. In 1996 Zorgvliet owner, Mac van der Merwe, bought the President Steyn gold mine in Welkom for R180 million and then spent an additional R45 million getting it to run at optimal capacity. Two years later, he sold it again at 40% more than its original price – which enabled the purchase of a portfolio of properties, including Zorgvliet.

2) WITH: Melvyn Minnaar, author, wine journalist and expert in South African culture

After interviews occurred, I transcribed the results into what emerged as types of mini-monographs, attempting to reflect the personality of the participant and retain the originality of the conversation that occurred during the interview. All Estate People interviews took place face-to-face. In most cases Informed Outsiders were contacted by email. During participant analysis and for reporting, I used original wording from the emails, an example of which is shown below.

-----Original Message-----
From: Melvyn Minnaar <minnaar@gem.co.za>
To: Corianda2@aol.com
Sent: Mon, 10 Dec 2007 5:43 pm
Subject: Re: re questions

[Sorry, I started writing some comments, but then it slipped on the back burner...](#)
[Below some remarks following your comments/questions. I'm happy to respond more....](#)

Good morning Melvyn, Cynical is fine! Its indifference that kills. I welcome any comments, cynical or otherwise, on my responses and questions about your thoughts:

Yes, I think it is valid that you say that wine, like SA sport, is historically characterised by dissent and distraction. Is the situation improving? What factors or combo of factors do you see as the major drivers/ problems in forming a healthy, co-ordinated wine sector?

It is difficult to say whether it is improving. Maybe the historic fractures cannot be fixed in the existing paradigm - much like the rugby conundrum. On the one hand, there is the so-called free-market dynamics which compels that wine be traded (globally) as a simple commodity; on the other hand, there is, for lack of a better word, the culture that has fixed it in the pre- and post-apartheid agricultural landscape. That 'culture' comprises everything from enjoying and appreciating wine (the 'uniqueness' of pinotage, for example), to the silliness of the 'papsak' as symbol of the 'dop' system to the question of (white) land ownership. It is convoluted; different things pulling in different directions.

I sometimes think one would move quicker towards a state of equilibrium by accepting some of the existing parameters and radically challenging others.

Although the free-marketers think it is poison, consensual regulation could be a key. Involving government from the bottom up, could pull things together. We are seeing small signs - like Kadar Asmal's soliciting government funding for research.

Austria is a brilliant example of how such wine regulation works and has worked to the advantage of both market and culture. (The Austrian wine industry was nearly wiped out before.)

Agreed that WOSA's expandable diversity message is comprehensible in theory... and further I don't believe that humans can be excluded from any consideration of ecosystems. However, I do think that people-diversity and plant-diversity should probably be discrete marketing messages, if at all. As you say, the message is already nebulous in practice - so how would the housewives who buy wine at Tesco/Giant/Makro figure out plant-people diversity?

At this level, I think it is a message wasted because it is too nebulous. Of course, the Fairtrade label is working, and 'organic' has fashionable appeal. Those are simple messages and easy to follow.

As far as I know, even those in the know don't know. From May through August 2006, immediately following the WOSA launches of the *variety is in our nature* message, I spoke with literally dozens of wine-sellers in the UK and the US - from the sommelier at the *Fat Duck* restaurant where I was lucky enough to have dinner, to the chief wine steward in Harrods. From the owner of *Grapeseed*, a chichi wine bar in DC, to the owners of a tiny wine shop on the San Francisco waterfront. I inquired at wine stalls at the London borough market, where organic/holistic items are for sale - nothing there either. Not a single interviewee recalled any customer requests for biodiversity-friendly wine and most initially thought I was referring to bio-dynamically produced wine or organic wine. Some thought I meant terroir.

Yes, this is the essential problem of Wosa's tricky slug line.

I also asked about sales of biodiversity-friendly wine at Majestic Warehouse's flagship store in Southwark dockside. I was surprised to find that the manager there had never heard of SA biodiversity wine. I'd listened to the CEO's speech at Cape Wine 2006 supporting the biodiversity message, and I visited his store during the same week that WOSA put the huge flowery ads on the walls of the London underground.

I question that WOSA's support of BWI principles currently yields significant sales dividends. Would a BWI label on a bottle of wine help buyer/consumer understanding? Or might our wines, as Jancis Robinson suggests, do fine by simply standing on their own individual merit?

Of course, it is not as simple as JR suggests: people acquire everything in context - more champagne is sold because it says so on the label than anything else. But I think a BWI label is far from being a champagne or for that matter a Fairtrade label.

Sue Birch always say that the concept and BWI link are for the long term. I think this could be right. This means a more extended and subtle media strategy, for one, and I think they may be able to do it - if they

hold on to the support of the producers. To do the latter, it means rewarding and acknowledging those who do the right thing on their farms.

I've found a number of farmers who conserve anyway, for personal or wine tourism reasons, regardless of the BWI. Plus I don't foresee that all BWI farmers will continue to conserve if it doesn't pay them somehow. The majority live on their wine and grape sales and some *in situ* tourism and they cannot all afford, as one BWI member told me, R250 000 to clean cellar water. What would you say to this?

As I said above, carrots and crowns and fanfare are required for those who do. And I think there are enough aware people locally who would respond positively. Everyone likes a good guy/girl.

From your perspective, what motivations would you ascribe to wine producers who choose to market wines to the 'green niche'? How honest are they?

Like all evangelists there are those real and those play-play. Of course, there is a strong emotional factor involved and it will work if the message can be easily put across. The message will, of course, be more effective backed by a broader generic strategy.

As I see it, many estates already include community upliftment in their overall conservation plans... satisfied, educated workers are kinder to the earth. How do you see conservation principles stacking up against BEE principles/practice in the wine sector? Compatible?

In some instances South African wine farmers have been pioneers both in terms of worker and conservation projects. The ethical trade initiatives have not had due recognition. I don't see any clash, if people are honest. Of course, BEE in the wine production business is extremely tricky. It simply is a question of economics. And, as well all know, there is too much vanity around and producers in it for status. Unless there is direct (governmental) intervention, related to land restitution, I can't soon see real black wine farmers.

It was expressed to me that the BWI/ IPW/ SKEP/CAPE type initiatives are opportunistic entities - that these bodies have appropriated the right to make agricultural audits and awards, and have thereby hijacked funding that should flow directly from donors and private sector to conservation efforts. What do you think about this?

I'm not sure there will be other funding forthcoming for conservation. The onus is really on the farming individual and personal ethos. There is clearly some opportunism, but if one looks at a place like Lomond near Gansbaai, the conservation as well as community developmental projects are part and parcel of the entire operation. Interesting, these vineyards have only been planted on previously cultivated, but run-down soil. And rehabilitation of fynbos continues. They do not use any of this for publicity or obvious marketing and the wines could possibly be certified organic, but they don't bother right now.

A society in transition typically struggles to adequately prioritise resources and frequently lacks institutional capacity to execute legislation. However, South African viticulture offers an opportunity for the embattled conservation sector to join with private sector to mutual advantage during ongoing political and social transition. Isn't there much promise here?

I agree. As I said, some of this is internationally pioneering. If there could be better collaboration, egos set aside, a legal framework could be developed. Legislation is the way to go.

Thank you again Melvyn, for your willingness to correspond. I really do appreciate it.

APPENDIX C: LIST OF PARTICIPANTS

NAME	POSITION	ESTATE	BWI	AREA
Jan	Winemaker/viticulture	Asara	N	Stellenbosch
Jonty Grieve	Owner/viticulture	Avondale	N	Paarl
Cathy Marshall	Owner/winemaker/ viticulture	Cathy Marshall	N	Independent
Oscar Foulkes	Marketing	Cloof	Y	Darling
Dr Paul Cluver, Paul Cluver Jr Liesl Cluver Andries Burger	Owner Manager Marketing Winemaker/viticulture	Cluver	Y	Elgin
Nora Sperling Victor Sperling	Owner/marketing Owner/viticulture	Delheim	Y	Stellenbosch
Chris Kelly	Winemaker	Delaire	N	Stellenbosch
Bruce Jack	Owner/marketing	Flagstone/ Kumala	N	Independent
Mossie Basson	Conservationist	Graham Beck	Y	Robertson
Boella Gerber	Winemaker	Groot Constantia	N	Constantia
Andrew Gunn	Owner	Iona	N	Walker Bay
Ken Forrester	Owner/winemaker	Ken Forrester	N	Helderberg
Duggie Jooste Lowell Jooste	Owner Owner/viticulture	Klein Constantia	N	Constantia
Edmund Terblanche	Winemaker	La Motte	Y	Franschhoek
Anton	Conservationist	Lourensford	Y	Helderberg
Tielman Roos Louis Roos	Owner/viticulture Owner/winemaker	Mooiplaas	Y	Bottelary
Christine Stevens	Owner/ winemaker	Mountain Oaks	N	Slanghoek
Victor Titus	Marketing	Nelson's Creek	N	Wellington
Hannes van Rensburg	Viticulture	Plaisir d' Merle	Y	Franschhoek
Ross Gower Sally Gower	Owner/winemaker Manager	Ross Gower	N	Elgin
Cerina de Jongh	Winemaker	Seidelberg	Y	Agter Paarl
Jeanette Bruwer Abrie Bruwer	Owner /marketing Owner/ winemaker	Springfield	N	Robertson
Gerald Wright	Conservationist	Vergelegen	Y	Helderberg
Werner	Marketing	Waterford	Y	Stellenbosch
Neil Moorhouse	Winemaker	Zorgvliet	N	Stellenbosch

NAME	BWI	WINE SELLER	INFORMED OUTSIDER
Arnault		Harrods	
Kofi Annan			AGRA Chairman
Andrew Baker			Wineworx owner
Charlotte Borger			CEO Day Chocolate Co.
Katrina Brandon			WWF conservationist
David Bristow			Wine writer
Tanja Beutler			Garagiste
Pierre de Villiers			Cape Nature
Hannetjie du Preez			DEAT
Carolyn Fischer			Resources for the Future
Malcolm Gluck			Wine writer
Tony Hansen	BWI Founder		
Dave Hughes			Wine judge/writer
Joan Isham	Extension officer		
Inge Kotze	CEO/projects		
Bobby Koch			Head -US Wine Institute
Kristoff		Organic wines	
Maggie		Denbies taster	
John Maytham			Wine writer/judge/radio host
Melvyn Minnaar			Wine/culture writer
Kent Reeves			Central Valley Trust CA
Clive Torr			
Tom		Shop owner	
Ynez		Fetzer PR	
Sue Winter	Co-ordinator		

APPENDIX D: RAPID PROJECT ASSESSMENT CHART

High sustainability		Medium sustainability		Low sustainability	
Ecological Pristine		Ecological Recoverable		Ecological Degraded	
Economic Profitable		Economic Cost-recovery		Economic Loss	
Community Empowered		Community Resilient		Community Disempowered	

High sustainability

Pristine Ecological

Systems are largely unchanged since European colonisation. Biodiversity and species richness are high, and ecosystems are intact and sustainable.

Profitable Economic

Systems are functioning well and delivering strong and sustainable profits.

Empowered

The community is able to participate in decisions and actions that affect them. Community issues are addressed and the outcomes meet community needs.

Medium sustainability

Recoverable Ecological

Values have been altered from their original states. But ecological values such as good air and water quality, some indigenous biodiversity and species richness exist. Agricultural lands, rural residential areas and other semi developed areas are included.

Cost-recovery Economic

Systems are returning as much as they cost - sufficient to continue operating existing economic systems, but no strong incentives for conservation action.

Resilient Community members are reasonably well informed about issues that will affect them. However few have real capacity to influence decisions, or ensure that decision makers address their needs.

Low sustainability

Degraded Ecological

Values are entirely altered from their original state. Few, if any indigenous species are present and the prospects of their return are poor. Industrial areas, waste sites, and inner city areas are examples.

Loss

The economic systems cost more than they earn. There is no benefit in continuing investment in these conditions.

Disempowered

Community members know little of the policy decisions and actions taken by landowners or by governments. There is scarce access to information.

APPENDIX E: MEDIA CLIPS - MARKETS FOR GREEN PRODUCTS EXPAND

<http://www.independent.co.uk/>

**Tesco invests £500m to create 'green consumer revolution' By Susie Measure, Retail Correspondent
Friday, 19 January 2007**

Tesco will plough £500m over the next five years into turning the fringe green lobby into a mass consumer movement in the biggest attempt yet by any British business to combat climate change. The retailer, which is frequently berated for the harm it causes the environment, intends to devise a "carbon calorie counter" that will allow shoppers to opt for a low-carbon lifestyle.

Switzerland - Environmental Markets are Growing

Source: [EEP European Environmental Press](#)
Published Feb. 6, 2006

Environmental markets are booming, and especially in Switzerland, they are an economic factor which must be taken seriously, concludes the report "Environmental markets in Switzerland – perspectives for the economy, jobs, and education" published by the WWF training centre.

According to the study, environmental market are growing faster than the rest of the Swiss economy. The annual market turnover is 21 billion francs (13.5 billion euros), growing at 3.6% a year, and the sector employs 95,000 people. On the basis of this, WWF has asked the Swiss Federal Council to take the sector seriously and encourage the environmental market as a growth factor in its political and economic plans. The research looked at environmental markets from 1998 to 2002. For the first time, markets using sustainable resources and labelling products accordingly were taken into account.

The Environmental Services Business: Big and Growing International Trade Centre, International Trade Forum - Issue 2/2001

Though hardly known to the general public, environmental technologies, products and services have, in 20 years, grown to match the aerospace and pharmaceutical industries in size — a US\$ 450 billion global market in 2000. By 2010 it is expected to expand to US\$ 640 billion. Developing and emerging markets represent over 15% of this total.

The Commission on Environmental Markets and Economic Performance (CEMEP)

Executive Summary

The Commission on Environmental Markets and Economic Performance was established by the UK Government in the light of the Stern Review on the Economics of Climate Change. The findings and recommendations of the Commission are set out in this Report. A transition to a low-carbon, resource-efficient economy is needed to meet the global challenges of climate change and sustainable development. There will be winners and losers, but there are considerable opportunities for those countries and businesses with the foresight to seize them. These exist not only for businesses competing for market share in providing environmental goods and services, but across all industry and commerce as new approaches transform environmental performance and the way natural resources are used.

<http://www.theaustralian.news.com.au/> September 13, 2008

I take another sip of the delicious Gemtree Moonstone Albarino (\$25) and hits me: you couldn't find a better example of how dramatically Australian wine has changed in the past 20 years -- and how our wine industry is readying itself for the next 20. Like many of the other 2000 or so wine producers established since 1988, Gemtree is a family-owned business of grape-growers-turned-winemakers, attracted by the wine boom of the mid-1990s. The grapes for this wine were grown using the biodynamic method of organic farming. Gemtree also works with Greening Australia regenerating a wetland area on the property. In 1988, no one in the industry had heard of biodynamics or biodiversity. And the wine itself was made in as "natural" a way as possible: wild yeast

fermentation, no acid addition, no filtration. Just the flavour of a grape perfectly suited to place, grown in a sustainable way, and with mass appeal. I'll drink to that future. www.gemtreevineyards.com.au Max Allen

Natural Products To Be Billion Dollar Industry **Thursday, 4 September 2008, 4:32 pm**
Press Release: Natural Products NZ

Natural Products To Become Billion Dollar Industry

New Zealand's natural products industry is on the brink of massive expansion with a five year plan to grow to a billion dollar local and export industry. Natural Products New Zealand, the industry body representing a significant proportion of New Zealand natural health product manufacturers, commissioned PricewaterhouseCoopers to investigate the industry's current and emerging capabilities with a view to developing an implementation plan to grow the industry. The report was launched by Hon Phil Goff at a reception at Parliament this afternoon.

Times Online

December 17, 2007

Raising a glass to organic wine; Peter Richards

"Is it the task of the winemaker to put a wine naked into the bottle or to give it clothes?" The question is put by Jean Meyer, charismatic and shock-haired CEO of the famous Alsace winery Josmeyer. "The safer a wine is, the less interesting it becomes. If you're not ready to accept risk, you shouldn't become a winemaker. Life," he concludes – arms aloft, fire in the eyes – "cannot be managed."

Winemaking in the 21st century is a complex business. More than ever before, today's winemaker is faced with a multitude of choices at all stages of the grape-growing and winemaking process, all of which he or she is expected to manage precisely in order to come up with the ideal wine in the bottle for any given purpose or market. One such choice concerns the environment in which the vines grow. Should they be farmed conventionally, using pesticides, herbicides and chemical fertilisers, in order to offset nature's vagaries and encourage consistency in both vines and wines? Or would organic, even Biodynamic cultivation be better? Is there a middle way? And are there other ways of being environmentally responsible? Given that the answers to these questions could not only influence the yield, price and potential market of the wine but also something as fundamental as its flavour means that this is a vital issue for any wine producer, just as it is for wine drinkers. And as awareness of climate change, health issues and consumer responsibility has grown noticeably in recent years, the result is that the green issue is fast becoming one of the hottest topics in the wine industry-----

When the Wine Is Green
By ERIC ASIMOV April 25, 2007

YOU'VE taken your hybrid car out to run some errands. You've stocked up on organic produce and non-toxic cleaning supplies at the supermarket. You've stopped at the Home Depot to take advantage of its new Eco Options plan, picking up energy-efficient light bulbs, paint that is low in pollutants and wood

harvested according to the principles of sustainable forestry. You've dropped off the recycling. One more stop to make, the wine shop. Why should wine be any different?

Green has not yet replaced red or white or even pink as the most important color in deciding which wines to buy, but people have started to think about it. That's largely because the growing number of producers who practice some form of natural grape growing and winemaking do so not just because they see it as environmentally responsible but because they believe these methods make better wine. Wine distributors, the essential marketing arm between producers and consumers, are beginning to highlight winemakers who follow environmentally conscious methods. Restaurants are starting to single out these wines on their lists or even devote their lists to them, while wine shops now often call attention to wines made in this fashion. One shop, Appellation Wine and Spirits in Chelsea, has even dedicated most of its inventory to these sorts of wines. "All you have to do is look at the success of Whole Foods to see how organic has moved from a crunchy granola fringe to mass consumer acceptance. And all you have to do is look at different business segments, like lawn care and Home Depot, to see that consumers care for health reasons and environmental reasons .-----

NATURAL PRODUCTS NEW ZEALAND 06/22/2006 04:21 PM

Minister for Trade, Hon Phil Goff said that overseas, New Zealand is already perceived as clean and green and has a reputation for integrity and safe products and he believes the potential is there for transformational growth for New Zealand's natural products industry. "The industry has real advantages in New Zealand, such as a unique bio-diversity combined with this country's reputation for high quality, safe natural products and a growing international market. This contributes to a positive outlook for the industry. Achieving the industry's vision will require sustained investment of both resources and time across the natural products businesses, the industry, from the government and Natural Products New Zealand," says Mr Goff.



U.S. Natural Products Industry Grows to \$51 Billion in 2005

Today's News Stories:

2005 was a great year for the U.S. natural product industry - it grew 9.1% to \$51.4 billion, according to Natural Foods Merchandiser's annual Market Review.

Natural products retailers account for half the sales at \$25.5 billion and, for the first time since 1999, they experienced double-digit growth at 10.9%. Internet sales are growing rapidly, reaching \$558 million. Mass-market (food, drug, club and convenience stores) rose 8%; direct-to-consumer sales rose 6.4%.

Whole Foods Market, of course, led chain sales growing 22.4% to \$5.03 billion in revenue. Little sister Wild Oats grew 7.3% to \$1.12 billion in sales. The number of specialty stores that carry natural products, such as gourmet food retailers, personal care stores, and health clubs, jumped from 4,014 in 2004 to 18,300 in 2005 and over \$1.2 billion in sales

APPENDIX F: BWI IMPLEMENTATION STRATEGIES

BWI Implementation Strategies

1. Establish an enabling environment:

The BWI partners have established an enabling environment to assist the South African wine industry with adopting biodiversity best practices. This process includes defining partner's roles and responsibilities, securing funding, opening a BWI office, employing a project co-ordinator and extension officer, and building capacity to meet the objectives.

2. Incorporate biodiversity guidelines into the Integrated Production of Wine (IPW) Guidelines:

The BWI is working closely with the wine industry to include relevant biodiversity guidelines in the IPW environmental guidelines. The biodiversity guidelines will be practical and realistic for growers and producers to implement, with maximum conservation benefits. The first draft of biodiversity guidelines have been incorporated into the current IPW guidelines.

3. Identify and enlist biodiversity & wine champions:

Through marketing the BWI in wine industry publications, the BWI will enlist interested producers and growers to champion the initiative. These "champions" will be guided through the implementation of the biodiversity guidelines, and assisted with building a biodiversity story into their winery identity. The role of champions is to test the implementation of the biodiversity guidelines, and to demonstrate the tangible benefits to the wine industry.

4. Extend conservation stewardship to the wine industry:

Cape Nature's existing Conservation Stewardship Programme will be extended to wine grape growers with endangered renosterveld and lowland fynbos on their properties. Stewardship encourages land owners to enter into formal contracts with Cape Nature to conserve critical sites. Although this might only be a small portion of a land owner's farm, benefits to the land owner could include property rate rebates, securing the area for conservation, assistance with land management, alien plant clearing and positive media coverage.

5. Integrate biodiversity into Brand South Africa:

The BWI aims to incorporate biodiversity into Brand South Africa, thus giving South Africa a competitive marketing advantage in the global wine market. The advantage is based on the unique attributes of the scenery and biodiversity of the Cape Floral Kingdom, a recently listed World Heritage Site. The BWI will build on the fact that South Africa's complex terroir, unique in the world, results in complex biodiversity and complex wines.

6. Develop a biodiversity wine route:

The BWI aims to establish a biodiversity wine route where visitors are exposed to both the wine and the biodiversity experience of each participating producer. For example, guides from the local community will conduct tours of the natural vegetation, communicating the producer's story and the role of biodiversity conservation in sustainable wine production. The biodiversity wine route is an opportunity to create employment and develop a new ecotourism angle for South African wine tourism.

APPENDIX G: BWI CHAMPION APPLICATION FORM

APPLICATION TO BECOME A BIODIVERSITY & WINE INITIATIVE CHAMPION

Company / Farm Name:	
List of registered brands:	
Farm/Erf numbers:	
Full Name of Owner, CEO or Managing Director:	
Name and position of BWI contact person:	
Contact details: (phone, cell, email)	

Please tick the appropriate block below:

Are you a grape producer (only supply grapes)	
Or a Wine producer Please list all cellars used:	

I, (name) in my capacity detailed above, hereby formally apply to become a CHAMPION of the Biodiversity & Wine Initiative (BWI).

In submitting this application, the company has fulfilled the following conditions on the above mentioned land and is aware of the following commitments:

- 1.) The property must have an ecologically viable portion of natural vegetation still intact, but which is **not less than 10%** in area of the total farm size. A **map of the property** indicating the location of the conserved area must be attached.
- 2.) A minimum score of **85%** must be obtained on the **biodiversity self assessment form**, verified by the BWI extension officer/consultant.
- 3.) To obtain an **IPW certificate for the farm (and cellar, where applicable¹)** for the most recent harvest year by fulfilling all the IPW requirements, and supply the BWI office with a copy of the certificate. The producer must score a total of **75%** or more for both the farm and the cellar components of IPW based on a self-assessment score. The producer needs to have been independently audited by an IPW auditor within the last three years, (i.e. 2005 – 2008). If the

producer's own farm and cellar have not been independently audited by IPW, or they have been audited prior to 2005, then the member may request an independent self-funded audit to verify the 75% self-assessment or wait until a random IPW funded audit is performed.

- 4.) The Producer must provide proof of authorization for the disposal of winery wastewater (General Authorization document obtained from DWAF) or demonstrate that they have submitted a formal application to DWAF in the last 6 months. Any additional conditions of approval stipulated in the General Authorization document must be included in the conservation management plan discussed in point 5 below, with specified actions and timeframes to meeting these conditions.
- 5.) A **Conservation Management Plan** must have been developed, approved by the BWI extension officer and, most importantly, the champion applicant should have **started IMPLEMENTING key scheduled activities** from the plan. Champions must be able to show tangible results of their commitment to biodiversity conservation and provide a **summary of actions implemented** to the BWI office. This also includes completing the spreadsheet template provided for describing and reporting on **management targets**.
- 6.) Champions should, where appropriate, **consider giving conservation status** to their pristine natural area through one of CapeNature's Stewardship Programme options. At a very minimum, the natural area should be registered as a **Voluntary Conservation Site** under this Stewardship Programme.
- 7.) Provide a short **"biodiversity story"** of the property including the **history of conservation actions** on the property and other unique features (which will be used for the BWI website, marketing purposes and press releases). Champions should have a **minimum two-year track record** of good conservation practice.

The application will be evaluated by the **BWI review committee** once the BWI office has received the following:

- Map of property showing the 10% natural area on the property
- The completed biodiversity self-assessment form.
- Copy of the conservation management plan

- Summary of conservation management actions implemented & management targets table
- Latest IPW Audit Results and Self Assessment Forms for Farm & Cellar.
- Biodiversity story
- Signed copy of the application

Each successful applicant will be awarded with a **BWI champion certificate**, and their biodiversity story will be added to the website.

After receiving the champion certificate, BWI champions may:

- a. refer to their association with the Biodiversity & Wine Initiative in all marketing & promotional material
- b. include text such as "*Proud champion of the Biodiversity & Wine Initiative*, www.bwi.co.za" on the wine bottle back label.

BWI may act against an individual or company that misrepresents the BWI or their association with it.

BWI championship is valid for a period of 2 years, from the date on which the champion certificate is signed. A BWI internal audit will then take place to reassess membership status.

NOTE: All accountability for complying with relevant National Legislation remains with the landowner.

Date of site visit by BWI extension officer/consultant:

..... (date)

Signed:
(CEO/MD)(print name) (date)

I hereby give permission for BWI to access the IPW audit results for the farm and cellar and for IPW to provide BWI with copies of the reports.

Signed:
(CEO/MD).....(Print name) (date)

Signed:

(BWI Ext¹ If a grape producer, that supplies grapes to another cellar or co-operative, is applying for individual membership based on the farm name, not the wine brand name, then an IPW cellar certificate is not needed. However, if a producer wants their membership to be attached to the wine brand name, than an IPW cellar certificate is necessary for each cellar involved in grape crushing. All estates and private cellars must supply an IPW cellar certificate.

APPENDIX H: TABLES OF BWI MEMBERS (Nov 2008)

Amount of land conserved is expressed in ha²

N/Av = figures not available at time of writing

BWI CHAMPIONS (13)

NAME	WINE DISTRICT	CONSERVED
BACKSBERG	PAARL	30
BURGHERSPOST	DARLING	405
CLOOF	DARLING	105
DELHEIM	STELLENBOSCH	89
GRAHAM BECK	ROBERTSON	1885
HERMANUSPIETERSFONTEIN	AGULHAS	220
LA MOTTE	FRANSCHOEK	35
OAK VALLEY	ELGIN	500
VERGELEGEN	STELLENBOSCH	581
WATERKLOOF	STELLENBOSCH	75
WEDDERWILL	STELLENBOSCH	237

BWI CO OPERATIVE MEMBERS (9)

NAME	WINE DISTRICT	CONSERVED
BOTHA WINE CELLAR	BREEDEKLOOF	1776
DARLING CELLARS	DARLING	N/Av
MONTAGU WINE CELLAR	KLEIN KAROO	3851
PERDEBERG WINERY	SWARTLAND	1135
ROOIBERG WINERY	ROBERTSON	6343
SLANGHOEK WINES	BREEDEKLOOF	670
UITVLUCHT WINES	KLEIN KAROO	2884
UNIWINE	BREEDEKLOOF	4942
VILLIERSDORP CELLAR	OVERBERG	788

BWI MEMBERS 103

NAME	WINE DISTRICT	CONSERVED
ALMENKERK	OVERBERG	15
ALTYDGEDACHT	TYGERBERG	35
ARMAJARO	PAARL	132
AVONDALE	PAARL	25
BEAULIEU	OVERBERG	2
BEAUMONT	OVERBERG	311
BELLE VUE	STELLENBOSCH	10
BERGSIG	BREEDEKLOOF	437
BERGWATER	SWARTLAND	288
BLACK PEARL	PAARL	184
BLIJDSCHAP		N/Av
BLUE CRANE	TULBAGH	N/Av
BOEKENHOUTSKLOOF	FRANSCHOEK	55
BOSCHENDAL	PAARL	1024
BOUCHARD FINLAYSON	WALKER BAY	100
BWI PRODUCER CELLARS	DARLING	2860
CAPE LION		N/Av
CAPE POINT VINEYARDS	CAPE POINT	50
CEDERBERG	CEDERBERG	5000
CONRADIE FAMILY	WORCESTER	4500
CONTREBERG	DARLING	15
DE GRENDEL	TYGERBERG	150
DE HEUVEL	TULBAGH	220
DE KRANS	KLEIN KARROO	5
DE MORGENZON	STELLENBOSCH	N/Av
DE WETSHOF	BONNIEVALE	422
DEETLEFS	BREEDEKLOOF	32
DIEMERSDAL	TYGERBERG	75
DOELHOF	PAARL	300
DORNIER	STELLENBOSCH	20
DRUMEARNS	OVERBERG	4
EENSGEVONDEN	WORCESTER	402
EIKENHOF	OVERBERG	70
ELGIN ORCHARDS	ELGIN	N/Av
FAIRVIEW	PAARL	N/Av
FAURE WINE FARMS	SOMERSET WEST	50
FRYER'S COVE	LUTZVILLE	800
GLENWOOD	FRANSCHOEK	8
GROOTE POST	DARLING	2175
HAMILTON RUSSELL	OVERBERG	52
HARTENBERG	STELLENBOSCH	30
HAUT ESPOIR	FRANSCHOEK	15
HELDERBERGKLOOF	STELLENBOSCH	6
HEROLD	OUTENIQUA	280
JANEZA PRIVATE CELLAR	ROBERTSON	181
JORDAN WINES	STELLENBOSCH	3,5
JOUBERT TRADAUW	KLEIN KARROO	1000
KAPEL	LUTZVILLE	400
KEERMONT	STELLENBOSCH	120
KOOPMANSKLOOF	STELLENBOSCH	70
LABORIE	PAARL	8
LANZERAC	STELLENBOSCH	35

LOMOND	AGULHAS	200
LORRAINE PRIVATE CELLAR	BREEDKLOOF	1823
LOUISENHOF WINES	STELLENBOSCH	50
LOURENSFORD ESTATE	STELLENBOSCH	400
MODDERVLEI VINEYARDS	ELIM	1305
MOFAM TRUST	OVERBERG	100
MOLTENO BROTHERS	OVERBERG	500
MONS RUBER	KLEIN KAROO	400
MONTAGNE	FRANSCHOEK	80
MOOIPLAAS	STELLENBOSCH	60
MURATIE	STELLENBOSCH	3
NEWTON JOHNSON	OVERBERG	20
NUWERUS	CITRUSDAL	970
OPSTAL ESTATE	BREDEKLOOF	443
ORMONDE VINEYARDS	DARLING	300
PLAISIR DE MERLE	FRANSCHOEK	500
QUOIN ROCK	STELLENBOSCH	110
REMHOOGTE	STELLENBOSCH	3027
RICO SUTER WINES	BREEDERIVIER	10
RIVERSTONE VINEYARDS	BREDEKLOOF	400
ROBERT STANFORD ESTATE	OVERBERG	35
ROSEVILLA	CALITZDORP	7,8
RUSTENBERG WINES	STELLENBOSCH	500
RUSTICUS VINTAGE CELLAR	ROBERTSON	2800
SCHALKENBOSCH WINES	TULBAGH	350
SEIDELBERG	PAARL	40
SHANNON VINEYARDS	OVERBERG	12
SILKBUSH MOUNTAIN	WORCESTER	25
SIMONSIG	STELLENBOSCH	12
SLENT FARMS	PAARL	50
SOUTHERN RIGHT	OVERBERG	57
SPIER WINES (PTY) LTD	STELLENBOSCH	180
STEENBERG WINERY	CONSTANTIA	50
STORMHOEK	PAARL	60
STRANDVELD VINEYARDS	ELIM	180
THEUNISKRAAL	TULBAGH	70
TIERHOEK	CITRUSDAL	350
TOWERS	DARLING	345
TUKULU	DARLING	150
TULBAGH MOUNTAIN	TULBAGH	45
VAN LOVEREN	BONNIEVALE	245
VANZYLSDAMME	KLEIN KARROO	8 500
VILJOENSDRIFT WINES	ROBERTSON	50
VOGELFONTEIN	CITRUSDAL	22 218
WALLOVALE VINEYARDS	OVERBERG	2
WARWICK WINE ESTATE	STELLENBOSCH	10
WATERFORD	STELLENBOSCH	40
WAVERLY HILLS	TULBAGH	16
WELTEVREDE WINE ESTATE	ROBERTSON	180
WILGENHOF	LUTZVILLE	120
WOLVENDRIFT CELLAR	ROBERTSON	10
ZOETENDAL WINES	ELIM	543

APPENDIX I: BWI CHAMPION ESTATES

BACKSBERG

Michael Back owner of Backsberg has spent much effort re-establishing natural vegetation, re-greening and clearing alien vegetation. Ten years ago, a full-time horticulturalist (Sandra Moss) was employed at Backsberg to attend to the estate's landscaping. This work has evolved into large alien clearing efforts and considerable progress has been made. Michael Back is also proud of the hundreds of trees that have also been planted on the estate to "re-green" areas and counteract the removal of indigenous trees over the previous decades. Birds are noticeably being attracted back to the farm by this re-greening project. The main biodiversity feature of Backsberg is their approximately 35ha of Swartland Alluvium Fynbos which is also a critically endangered veld type, due to its association with the sought-after soils of the lowlands. This fynbos area, one of only a few patches left in the area, has been preserved over the generations and will never be ploughed even though it might hold soils suitable for more vines – such an act of conservation certainly deserves fitting recognition.

CLOOF and BURGHERSPOST

Indigenous vegetation and endangered Atlantis Sand Fynbos are being actively conserved at Cloof & Burgherspost jointly. A full-time conservation manager has been employed to implement their conservation management plan and manage the 750ha game camp that has been established on Burgherspost. The granting of Champion status under the Biodiversity & Wine Initiative cements the conservation conscious manner in which neighbouring Darling properties Cloof and Burghers Post have been farmed under the management of Peter Duckitt. While they are managed as a single unit, they have individually qualified on their own merits. The property contains important fragments of Swartland Granite Bulb Veld, a vegetation type classified as Critically Endangered in the 2004 National Spatial Biodiversity Assessment. Swartland Granite Bulb veld originally covered originally 494 577 ha, but today only 45 587 ha remains which represents only 9% of its original extent. However, none of this vegetation type is under formal protection. Cloof and Burgherspost Wine Estate are now privately conserving 355ha of this dwindling vegetation type, and are formally registering the site as a Voluntary Conservation Site with CapeNature. During 1999-2000, a game camp of approximately 750 ha was fenced-off, and a number of game species have been successfully introduced. Since cattle were removed from the area, the renosterveld biomass has increased by at least 45%. The neighbouring communities have also benefited from conservation actions taken on the farm, as ten job opportunities have been created to undertake alien clearing activities & construct fire breaks. To further environmental education, guided walks will also be conducted on the farm. Guided game drives are available to make the general public, tourists and neighbouring communities aware of the importance of conservation and the unique natural heritage.

DELHEIM

Delheim is situated in the Simonsberg region and owned by wine veteran, Spatz Sperling. Today, his daughter and son, Nora and Victor Sperling, are helping him to continue this work with even more gusto and environmental sensitivity. The Sperling property extends over 364 hectares (consisting of the farms Delheim and the Delvera), of which, at least a quarter are fynbos conservation areas, 150ha are planted to vine and the rest is a pine plantation. In 2004, Spatz Sperling collaborated with local farmers and founded the 54-hectare Klapmutskop Conservancy in order to help protect the Swartland Shale Renosterveld originally found there, before the gum plantations took over. Together with Cape Nature Conservation and the LandCare programme of Department of Agriculture, the landowners elected to rid the area of alien vegetation. This conservation initiative also gave way for the Delvera Vineyard Trail and the Agri-Tourism Centre, which offers everything from a cheesery, a nursery, café, a wine tasting area, a wine trail, a hiking trail and a mountain bike trail, and cottage accommodation on the farm. A portion of the hiking and biking permit fee is donated to the conservancy.

HERMANUSPIETERSFONTEIN

The wine farms, Waboomsrivier and the adjacent Waterval in the Sunday's Glen wine ward near Stanford, now known as Hermanuspietersfontein Boerdery, is rich in biodiversity, with a variety of different ecosystems and processes that allow life to persist. Hermanuspietersfontein is the first wine farm in the Walker Bay wine region to be declared a champion. The Environmental Management Plan was drawn up by the well-known author and nature conservationist, Gerald McCann. Hermanuspietersfontein Wynelder has been named after the original name given in 1855 to Hermanus in Walker Bay, South Africa. Hermanus Pieters came to the Cape in 1815. He was a Dutch school teacher at Boontjieskraal near Caledon. During his travels between farms, Pieters discovered a spring and grazing for his sheep on these shores. The present conservation area consists of 170 ha pristine Mountain fynbos. A further 50 hectares comprises one third natural (mostly in pristine condition) corridors (streams/seasonal wetland areas) and two thirds land previously planted with fynbos species for the flower market. Some of these areas have already recovered well and fynbos has re-established well.

LA MOTTE

La Motte has always been interested in conserving the natural environment and they are committed to blend all commercial activities with nature. Yearly alien clearing operations are taking place and the ultimate aim is to clear all of the 35 hectares (vegetation type: Hawequas Sandstone Fynbos) conservation. Since 2004 they have started with the clearing of alien vegetation. They are making use of a professional person (Mr. Barry Stander) to assist them with their alien clearing operations. They are also involved in the rehabilitation of some of the cleared areas. All seeds are collected on the farm and propagated in their own nursery. Some of the species they have planted are: Buchu, Protea species, including an endemic Blushing Bride species. They've also started a nursery, specifically for the commercial cultivation of Disa species.

Some of these plants will also be re-established into the conservation area. The view is to do everything as natural as possible, and by implementing the BWI biodiversity guidelines, to have minimal negative effects on the environment. Both the cellar and farm has been externally audited and all recommendations implemented. They've obtained a General Authorisation for the end-use of their cellar effluent from the Dept. of Water affairs and Forestry.

LOURENSFORD

Area conserved - 1200ha of mainly Boland Granite Fynbos (endangered veldtype, poorly protected), as well as some Kogelberg Sanstone Fynbos. Other important natural areas conserved: Pristine sections of the Lourens and Landdors rivers, wetlands, indigenous forest, as well as fragments of critically endangered Lourensford Alluvium Fynbos. Conservation actions on Lourensford started in 1977. Some of the conservation actions on the estate:

- Alien clearing has always been a priority and a program to eventually rid all natural areas of alien vegetation will be followed. At present some 1000 ha of natural vegetation has been cleared.
- All wetland areas on the farm were identified in 1996 and cleared of alien vegetation, with annual follow up to keep them in a pristine condition.
- Some areas previously utilized for forestry, will now be left for fynbos to recover.
- All indigenous riverine forests have, since 1978 a non-harvest policy, and alien trees are removed annually from these areas.
- Species lists of flora and fauna are updated on a regular basis.
- Environmental Education: Schools of the areas have been introduced to fynbos and members of the Friends of Helderberg assist in taking the public on nature tours, as well as updating species lists.

In 1977, the Lourens River, from its headwaters to the sea, became the only complete river in South Africa to be declared a Protected Natural Environment. The protected area extends 45m on either side of the centre line of the river. A single example of San art as well as an early stone midden, with artifacts dating back to 11000 BC was discovered. The stonewalls are up to 4m high and it is believed that this site has some chronological/astronomical importance. Sections of the riparian zone have been rehabilitated with planting of indigenous trees previously found in this area. Invader Fallow Deer have been eradicated. A variety of wildlife is regularly spotted on the farm.

OAK VALLEY

Founder member of the Groenlandberg Conservancy and part of the Green Mountain Eco Route, the worlds first ever biodiversity wine route. Red data book species include *Linconia cuspidate*, *Taminophyllum multiforum*, *Protea stokoei*, *Nivenia concinna*. Oak Valley Estate, owned by Sir Anthony Rawbone-Viljoen, is located next to the N2 in the Elgin Valley. The estate is named after the approximately 30 hectares of Oak trees planted at the turn of the century by the original owner, Oak Valley Estate is a founder member of the Groenlandberg Conservancy and is one of the producers that form part of the Green

Mountain Eco Route, the world's first ever biodiversity wine route, formed to promote conservation of fynbos, eco-tourism and wine. The mountain area of the property consists of 500 ha of Kogelberg Sandstone Fynbos, which is directly adjacent to the provincial Groenlandberg Nature Reserve on the Groenberg mountain. Oak Valley's fynbos is in the process of being systematically cleared of alien species and the work is continuing annually. Oak Valley has recently obtained the assistance of Flora Fanatics, a group aligned to the Botanical Society of South Africa, to undertake a detailed survey of the flora found on the Oak Valley, and they were excited to discover 4 Red Data Book species in 2005.

PAUL CLUVER WINES

One of the first farms in South Africa to enter into a stewardship contract agreement with CapeNature to conserve the pristine habitat in perpetuity. Paul Cluver (Snr) is the chairman of the Groenlandberg Conservancy and assisted in the formation of the Green Mountain Eco-Route. Paul Cluver Wines is situated in Elgin on the De Rust estate. De Rust has been in the family since Dr Paul Cluver's great grandfather's time. Dr Cluver has long since been a conservation supporter, having started undertaking conservation measures on the estate since 1970. Dr Cluver is still the chairman of the Groenlandberg Conservancy, which he helped initiate in 1998. Today the conservancy spans some 34 000ha, named after the Groenlandberg and Nature Reserve, which is the core of the conservancy. Furthermore, Paul Cluver Wines falls within the Kogelberg Biosphere Reserve area, declared by UNESCO.

De Rust is one of the first farms in South Africa to enter into a stewardship contract agreement with Cape Nature to conserve the pristine habitat on the property in perpetuity, by means of provisions attached to the property's title deeds. The conserved area is in excess of 1000ha, and is now called the Cluver Family Reserve. It is being managed according to a management plan that was drawn up by staff of the Cape Nature Stewardship Programme. This reserve includes a game camp for antelope that used to occur in the area. The property has 3 types of vegetation: Elgin Shale Fynbos, Western Ruens Shale Renosterveld and Kogelberg Sandstone Fynbos, the first two of which are critically endangered. Paul Cluver Wines is a member of the Green Mountain Eco Route which has as its slogan "blending wine and biodiversity". This is a new project that the Cluvers have helped initiate, which has developed a tourism wine route that is strongly linked to the biodiversity values of the area, and also promotes the Groenlandberg Conservancy.

WATERKLOOF

Waterkloof joined the Wine & Biodiversity Initiative at its inception. 50% of the farm is set aside for conservation purposes. Waterkloof is situated on the Schaapenberg, overlooking False Bay. It is within the Cape Floral Region, one of the world's foremost biodiversity hotspots because of its exceptional natural diversity on the one hand, and dangerously high levels of habitat destruction on the other. Predominantly Boland Granite Fynbos, an endangered vegetation type; members of the -Sir Lowry's Pass Conservancy. Waterkloof is an example of a new vineyard development where habitat conservation was

taken into account from the outset during the farm planning stage. Measures introduced to complement the concept of Sustainable Farming include;

Installing drip system ; biological control of pests as an alternative to chemical spraying; a formal Nature Conservation plan; clearing alien invader species; providing migration corridors for species between isolated areas of natural vegetation; mulching of winter cover crops to create a healthy environment for the natural predators of vine pests; installing perches for birds of prey in order to use natural rodent control measures ; cellar water treatment plant will be a wind-powered bioreactor facilitating environment friendly treatment of water

WEDDERWILL

At Wedderwill, commitment to biodiversity ensures a less wasteful, enriching and 'nature-friendlier' farming method. Biodiversity is a guiding philosophy which serves the purpose of providing Wedderwill with strict guidelines in all of our environmental contacts and behaviours, and always in support of the ecological surroundings. There is a dedicated conservation plan to re-establish wild life and natural rehabilitation in designated areas across the length of the property. From massive alien clearing, to plant species surveys, to river rehabilitation, to fire risk assessments, to a stewardship program with Cape Nature, to a field herbarium and a re-stocked wild life reserve, a total area of 237 hectares (or 68% of our total farm) which is natural or in the process of rehabilitation. Wedderwill's management strives to incorporate an holistic approach, believing that farming should not in any way be in conflict with ecology- safeguarding what is inherited for a common future.