

NMMU GEORGE CAMPUS

CAN BIODIVERSITY PLAY A ROLE IN THE FUTURE OF SOUTH AFRICA?

Authorised by:	M.J. Cameron
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Student:	Luigi Lottino
Student no:	s207038853

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1. INTRODUCTION

The purpose of this report is to identify whether or not biodiversity can play a role in the future of South Africa. It is intended to give a brief background to biodiversity within South Africa, and the economic value thereof.

South Africa has one of the richest biodiversity counts in the world (The Department of Biodiversity & Conservation Biology, 2001). The country is a main attraction for many for this reason, as well as its diverse cultural entities and backgrounds.

This report strongly motivates the economic value of South Africa and looks at diversity as an advantage in the current economy, whether it be via harvested goods, raw materials or tourism. It further motivates the current disturbances mainly caused by man (for example: agriculture, urbanisation and invasive species), and finally looks at possible struggle for the future of South Africa.

After this introduction, a greater background on the purpose of this report follows. The study area is then discussed, as well as a definition of biodiversity and the current economic value thereof within South Africa. The report will then deeply discuss the future of biodiversity in South Africa by addressing the current and future threats to biodiversity. The report lastly motivates possible challenges for the future, and concludes briefly with recommendations from the author of this report.

2. PURPOSE OF THIS REPORT

The purpose of this report is to identify and explain the current importance of biodiversity within South Africa and whether it will play a significant role in the future of this country or not. The question of discussion is: "Can biodiversity play a role in the future of South Africa?". The issue is looked at from an economic point of view with the aim of identifying the current value of biodiversity within South Africa as well as what issues present actions may create for the future. The following section will: a) introduce the area of study, b) define the term "biodiversity" and explain the richness of it in South Africa, and c) give an explanation of the current economic value of biodiversity within South African borders.

2.1 Study Area

South Africa is the study area of this report. The Department of Biodiversity & Conservation Biology (2001) states that South Africa comprises only 1 percent of the world's land area but accommodates for approximately 10 percent of all known bird, fish, and plant species. The Department of Biodiversity & Conservation Biology (2001) further motivates that a combination of great fluctuations in the climate and a wide-ranging topography across the country provides an opportunity for large diversity in living organisms. The mean annual rainfall for South Africa is 497 mm and is predominantly a semi arid region, with only the eastern and southern coastline receiving a higher, more constant rainfall (Olivier et al., 2009).

2.2 Biodiversity of South Africa

Biodiversity is a very vague word, but is used as a definition for the variety or diversity of all living organisms, as well as all ecological processes on earth (Algotsson, 2009). Algotsson (2009) suggests that the term biodiversity includes all vertebrates and invertebrates (terrestrial and aquatic), as well as all plants, fungi, and bacteria. Both the Department of Biodiversity & Conservation Biology (2001) and Algotsson (2009) agree that South Africa has a great deal of diversity: the country is home to 24000 plant species (of which 10000 are endemic to South Africa), as well as 243 mammal species, 800 bird species, and 220 fish species within the country's boundaries.

South Africa depends greatly on the biodiversity of the country as it plays a major role in the economic growth of local communities (Algotsson, 2009). Turpie (2009) indicates that this can be achieved through local agriculture, tourism and recreational wellbeing.

2.3 Current Economic Value of Biodiversity in South Africa

When looking at the biodiversity of a country, it is important to take into account the economic value of the area. The economic value describes the welfare or wellbeing of a society and incorporates the livelihood or satisfaction of a group (Turpie, 2009). Turpie (2009, p. 44), terms this concept "ecosystem goods and services," and further describes ecosystems as a natural capital that can add to economic growth. The

headings “goods,” “services,” and “attributes” pertain to this concept and are summarised in the following Table 1:

Table 1: Tabulated Presentation of Ecosystem Goods, Services and Attributes. (Costanza, 1997, as cited in Turpie, 2009, p. 45)

	Ecosystem goods, Services and Attributes
Goods	<ul style="list-style-type: none"> • Water, food plants, medicinal plants and grazing.
Services	<ul style="list-style-type: none"> • Estuaries as natural nurseries for fish populations, or • Wetlands as natural purifying systems
Attributes	<ul style="list-style-type: none"> • Species diversity • Areas suitable for recreation • cultural heritage

As Table 1 shows, the goods that South Africa can draw from are primarily harvested resources and raw materials (Turpie, 2009). These items can greatly benefit local communities and the economic value of an area. Turpie (2009) motivates that value in the form of natural processes (for example: services such as estuaries working as natural nurseries to stock surrounding populations with fish species) is also a major positivity in South Africa. Wetlands are another form of a service, as they can save money in communities by naturally purify water (Turpie, 2009). Turpie (2009) and Algotsson (2009) also refer to the recreational value of an area (its attributes), which further add to a community’s wellbeing, cultural, and spiritual needs.

3. THE FUTURE OF SOUTH AFRICAN BIODIVERSITY

Biodiversity in South Africa, pivotal to the sustainability of both the country’s natural and cultural resources, is at risk of being exploited and reduced (Olivier et al., 2009). High demand for agriculture, urbanisation, the introduction of invasive fauna and flora species, and other disturbances such as mining and river damming pose a serious threat to the biodiversity of South Africa (Olivier et al., 2009). The following sections will address the threats to biodiversity, as well as how these threats may affect the future of South Africa. The intention of this report is to identify whether biodiversity can play a role in the future of South Africa.

3.1 Threats to Biodiversity in South Africa

There are three primary issues that can be associated with the current degradation of biodiversity in South Africa. The first is the increase of agriculture to support an ever growing population. According to Olivier et al. (2009), plant diversity is heavily impacted by agriculture in the form of farming and over grazing. This results in bush encroachment, which puts great pressure on the biomes of South Africa (Olivier, 2009). Another study by Rouget et al. (2003, p. 73) defines the future of agriculture expansion within the Cape Floristic Region as a: "...most serious threat for the lowland...". In spite of the signs of decline, laws concerning South African conservation are still lacking the required enforcement (Algotsson, 2009). Urbanisation is the second topic of discussion, as it too is growing immensely (Olivier et al., 2009). South Africa's demand for development is a lose - lose situation, as there is a need for expansion, and damage is irreversible once done (Olivier et al., 2009). Invasive species within South Africa's boundaries have become a major problem (Olivier et al., 2009). Macdonald et al. (as cited in Olivier et al., 2009, p. 354) stated that over 8 percent of South Africa has been invaded by invasive plant species. Another study by Rouget et al. (2003) shows results of invasive species occupying between 27.2 percent and 32 percent of the country's land. This shows an increase in alien plants of approximately 28 percent in the last 18 years. Could this be due to lack of enforcement from conservation management programs, or is it a result of lacking participation by private land owners? The National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA), "...serves as a general framework for biodiversity conservation in the country" (Algotsson, 2009, p. 99). Although this law is expected to bring order to South Africa's "uncoordinated" conservation strategy, the lack of justice in conservation law enforcement is questionable (Algotsson, 2009, p. 99).

3.2 Challenges for the Future

Biodiversity in South Africa is under great stress (Rouget et al., 2003). Although South Africa shows a high economic value due to many ecosystem goods and services, there are major issues that need to be addressed to insure that conservation of biodiversity is successful (Turpie, 2009). Alternatives to certain agricultural methods, such as vertical farming or better managed grazing, should be researched. Although urbanisation is unavoidable, research can be done on more

sustainable development on dedicated areas that exclude rare and endangered species (Olivier et al., 2009). According to Turpie (2009), who explains biodiversity from an economic viewpoint, South Africa should maximise effectiveness in resource use, as this will improve supply and promote growth and expansion. South Africa is rich in both cultural and biological diversity, and both are great attributes to the economic value of the country. The conservation laws for South Africa thus need to be better enforced to ensure that biodiversity remains a viable commodity in the future.

4. CONCLUSION

The purpose of this report was to show whether biodiversity can play a role in the future of South Africa. It gave a short description of the study area followed by a definition of and exploration into the economic value of biodiversity within South Africa. The report then discussed the future of biodiversity by exploring current and future threats to biodiversity, and ends with possible challenges for the future of the country.

One can acknowledge the importance of biodiversity in South Africa, as it contributes to the country's economic value and to its cultural richness (Turpie, 2009; Algotsson, 2009). Although there is a strong indication of increase in biodiversity loss, there are also laws that have been set in motion to protect diversity from any further declines (Rouget et al., 2003; Algotsson, 2009).

The author set out to determine whether biodiversity can play a role in the future of South Africa, and in conclusion to this statement, it can be deduced from this report that if greater effort is put into actual enforcement of South Africa's conservation laws, biodiversity can most certainly contribute to the future of South Africa.

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