



**PROJECT DEVELOPMENT FACILITY
REQUEST FOR PDF BLOCK A FOR AN MSP**

AGENCY'S PROJECT ID: P097136
GEFSEC PROJECT ID: 3044
COUNTRY: Zambia, Botswana, Namibia, and South Africa
COUNTRY ELIGIBILITY: Zambia – 6/13/1994, Botswana – 7/12/1994, Namibia – 4/30/2001 and South Africa – 7/6/1994
PROJECT TITLE: Open Africa North South Tourism Corridor (OANSTC)
GEF AGENCY: World Bank
OTHER EXECUTING AGENCY(IES): OPEN AFRICA
DURATION: 4 years
GEF FOCAL AREA(S): Biodiversity
GEF OPERATIONAL PROGRAM(S): OP#2 (Coastal Marine and Freshwater Ecosystem); OP# 3 (Forest Ecosystem) and OP#4 (Mountain Ecosystem)
GEF STRATEGIC PRIORITY(IES): Mainstreaming Biodiversity in the Production Landscape (SP2)
ESTIMATED STARTING DATE: February 2006

FINANCING PLAN (US\$)	
GEF PROJECT	
PDF A	50,000
<i>Sub-Total GEF</i>	
CO-FINANCING	
GEF Agency	
National Contribution	
In Cash ()	
In Kind ()	
Others	10,0000
<i>Sub-Total Co-financing:</i>	10,0000
<i>Total PDF Financing:</i>	15,0000

RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENTS:

Toefilus Nghitila, Director, Ministry of Environment and Tourism, Namibia	August 29, 2005
Z Fakir, Director General, Department of Environmental Affairs and Tourism, Republic of South Africa	November 15, 2005
Mushanana L Nchungu, Executive Secretary, Department of Environment Affairs, Botswana	September 15, 2005
N Nkowani, Director/GEF Operational Focal Person, Environment and Natural Resources Management Department, Ministry of Tourism, Environment and Natural Resources, Zambia	October 13, 2005

This proposal has been prepared in accordance with GEF policies and procedures and meets the standards of the GEF Project Review Criteria for PDF Block A approval.

Steve Gorman 
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Date: January 6, 2006

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SUMMARY BACKGROUND ON OPEN AFRICA

Open Africa is a registered tax exempt Public Benefit Institution obliged to adhere to the Companies Act of South Africa. Its vision is to link the splendours of Africa through a network of tourism routes, with the mission of doing this in a manner that conserves and nourishes their resource base, for which purpose it devised and is implementing a unique system that functions at community level and utilizes integrated Geographic Information Systems (GIS) and Internet technologies. It launched its first route in 1999 and now has 59 in the network, which stretches across five countries and includes 1 457 SMME's that together support 12 163 direct full time and 4 831 part time jobs.

For more information on OPEN AFRICA's mandate, capacity, experience, methodology and marketing strategy please refer to Part 3 and Appendix 2 of this PDF A Request.

Community Route Development

The development of a tourist route begins when a specific community agrees to a partnership with Open Africa. Typically, the community is comprised of existing and aspirant small and micro enterprises that have identified the potential for tourism development in their area. These communities can be rural or urban. Open Africa's process facilitates the community's drive to bring tourism into the area and helps to focus on the strengths of the area with the ultimate objective of 'branding' the community and its tourism features as a unique and interesting location for people to visit. Open Africa collects information on the community's tourist attractions (which in Africa are primarily nature based), products (accommodations, tours, artisans, etc.), and on the geographic area, using GIS technology, digital photography, and first-hand story collection. This information is collated, edited and then placed on the system's easily navigable website.

"Classic" route development methodology

After a preliminary site inspection and informal meetings with individuals interested in developing a route in an area, a date is set for a workshop which the main instigators are asked to organize and at which as many existing and potential interested parties as possible are invited. This is the first of three workshops prior to the launch of a route, all structured according to the systematized process. At the first workshop the system is explained thoroughly, culminating in the introduction of a method through which those present identify the potential tourism assets at their disposal. This is an illuminating process, for most will know little or nothing about what motivates tourism and are usually surprised to find how much they have that could be of interest, especially regarding nature and cultural assets. Those present then elect a temporary Route Forum from among their ranks to continue the process of identifying 'products' in readiness for the second workshop.

At the second workshop, by which time many more people are usually involved, the information gathered is laid out and the shape, features, characteristics, size, and scope of the route decided upon, whereupon Open Africa's Route Developer visits each of the participants, conducts personal interviews, collects their data, takes photos and GPS readings, all of which information is transferred to the africandream.org website. This spatially oriented data also constitute the benchmark indicators of the route's status, against which measurements are made thereafter.

Finally a third ‘where to from here’ workshop takes place that is followed by an official launch function. Handbooks, toolkits and other material get distributed at this meeting, at which the Route Forum chairperson is also elected and the members confirmed. Thereafter Open Africa’s route networker constantly pulses the rate of progress made and performs other tasks associated with the networking function.

“New” route development methodology with biodiversity mainstreaming

Project development under the PDF A will focus on development of an expanded methodology that more comprehensively addresses the biodiversity dimensions such as specificity, threat, opportunities, mitigations, M&E, etc. This will be captured in a new manual entitled “OPEN AFRICA Nature Conservation Methodology”.

Whilst we anticipate following the “classic” procedures as they normally apply to Open Africa’s methodology, the approach contemplated in regard to OANSTC will contain certain variations specific to the project. In the first instance it will build on the knowledge of the country and local agencies and affected parties, government, NGO, and private, concerned with conservation in each of the ecoregions identified. Thereafter these parties will be assembled with the intention of explaining the project and securing their buy in. Via these bodies, contact will then be made with communities identified through this process as being key to the accomplishment of the objectives of the project at the grassroots level in the same way that Open Africa operates generally. The aforementioned parties will be included from the outset and throughout the processes that follow. It is expected that over a four year period, this will result in approximately twenty new routes being developed across the length of the nine ecoregions that are described in Part 1 and in Appendix 3.

PART I: PROJECT INFORMATION

1. PROJECT LINKAGE TO NATIONAL PRIORITIES, ACTION PLANS AND PROGRAMS

Zambia, Botswana, Namibia and South Africa were chosen for this project because each of the four countries (1) have identified tourism as a key industry for economic development and more particularly nature-based tourism and (2) are endowed with globally significant ecosystems and biodiversity that are under increasing pressure. Tourism development usually benefits from well-preserved biodiversity and contributes to its conservation.

OANSTC aims to contribute to biodiversity goals in sensitive areas of the proposed corridor by positively affecting the behavior of communities living in, adjacent to and between protected areas (PA’s). The proposed corridor will be comprised of approximately 25 routes, of which 20 would be additional, within nine adjoining ecoregions starting from Northern Zambia and including Central and Southern Zambia, parts of Northern and Southwestern Botswana, run along the Caprivi Strip and then southwards via Central and Southern Namibia, passing through the Northern Cape on to the Western Cape in South Africa. The project will attempt to target buffer zones and gateway communities in or near globally important protected areas in each of the four countries as described in the matrix below (See the section entitled “Project Scope”). Field visits and workshops will be held in each of the ecoregions to determine the exact places the routes will be developed.

The biodiversity resources within the ecoregions currently pre-identified under OANSTC have major global significance as demonstrated in Appendix 3. They also cross provincial and national boundaries, where the economic deprivation threats that apply are similar, as are the limited choices of economic activity. The commonality of these conditions supports the notion of establishing a network among them, also with regard to including PA gateway communities in the efforts to promote conservation. Furthermore, governments in the Southern Africa Development Community (SADC) region are actively engaged in promoting the concept of conservation and tourism corridors through bi-lateral agreements and the establishment of trans-frontier parks. This extends to a recent proposal for a multi-country visa that will allow visitors to travel within the SADC region on a single visa, similar to the Shengen visa in the European Union. While the governments are attending to the macro issues of biodiversity conservation,

which do not necessarily reach the people at grassroots levels, OANSTC's bottom-up approach brings these supranational issues to the community level and vice versa.

In the case of each of these countries the OANSTC fits into the respective national biodiversity, poverty reduction (PRSP) and country assistance (CAS) strategies as follows:

Zambia

The Zambia National Biodiversity Strategy concludes that Zambia is endowed with an abundance of natural resources and a rich biological diversity. In common with other developing countries, Zambia is highly dependent on the exploitation of biological resources for the livelihood of the majority of its people, especially those living in rural areas. Conservation of biodiversity in Zambia is derived from the need to support the economic and livelihood activities of the country's population, who depend on natural resource utilization. Indigenous practices play a critical role in biodiversity conservation, especially outside protected areas. Zambia has identified tourism as a key economic activity that has a low level of biodiversity impact.¹

The main objective of the Zambian PRSP is "to promote growth and diversification in production and exports."² Tourism has been identified as a viable industry for diversification, and the government's long-term vision for the tourism sector is "to ensure that Zambia becomes a major tourist destination of choice with unique features, which contributes to sustainable economic growth and poverty reduction."³

Similarly, the Zambia CAS "places strong emphasis on the enabling environment for the private sector to drive growth and wealth creation. For instance in the energy sector, the approach shifts from an exclusive focus on household electrification to covering social (health, education, water) and income generating (SMME's, agriculture, agro-processing, tourism, etc) activities."⁴

Botswana

In 1998, Botswana prepared the First National Report on Measures taken to Implement the CBD to the fourth Conference of Parties to the CBD (COP4). Botswana's Second National Report on Implementation of the Convention on Biological Diversity has also been prepared and submitted to the Secretariat of the CBD in May 2001. Botswana is now expected to prepare a National Biodiversity Strategy and Action Plan.⁵

There are currently no World Bank projects in implementation in Botswana, nor has a CAS or PRSP been prepared. However, the conditions prevalent in the area to be covered by the proposed corridor are similar and closely related to the issues of poverty reduction in sensitive biodiversity environments.

A draft Community Based Natural Resource Management (CBNRM) Policy has been developed for Botswana. The CBNRM development approach fosters the creation of incentives for the sustainable use and conservation of natural resources. This approach realizes that efforts to conserve natural resources can only flourish if poverty is eradicated or kept at a minimum. Communities are encouraged to enter into joint ventures with the private sector to realize optimal economic benefits. The Botswana Government recognizes tourism as the next potential engine of economic growth. Currently tourism is almost entirely based on wildlife and the wilderness resource.

Namibia

Namibia is dedicated to conservation and economic development and the two concepts have been inextricably linked to one another. The Namibia National Biodiversity Strategy includes conserving biodiversity in "priority areas (especially the Sperrgebiet and Namib escarpment regions); the sustainable use of habitats and species; monitoring, predicting, and coping with environmental change in an arid

¹ Department of Environmental and Natural Resources, Zambia National Biodiversity Strategy, pg 2

² Zambia PRSP, Pg. ii

³ Zambia PRSP, Pg. 66

⁴ World Bank, Zambia CAS, pg. 14-15

⁵ UNDP, http://www.unbotswana.org/bw/undp/environment_projects_high.html

country; sustainable land and wetland management; sustainable coastal and marine management; integrated planning for sustainable development.”⁶ Tourism development has been identified as the fastest growing and greatest potential industry to concentrate on, as a means to reach the country’s environmental and development goals.⁷

As of June 2004, the World Bank did not have a CAS for Namibia. However, the Bank’s first operation in Namibia is a Global Environment Facility (GEF) grant for the Integrated Community-Based Ecosystem Management Project (ICEMA) for \$7.1 million. The global objective of ICEMA is “to restore, secure and enhance key ecosystem processes in targeted conservancies with biodiversity and land conservation and sustainable use as a goal.”⁸

South Africa

In South Africa “The Biodiversity Act provides for the management and conservation of South Africa’s environment, through biodiversity planning and monitoring, the protection of threatened ecosystems and species, the control and management of alien and invasive species, the regulation of bioprospecting, fair and equitable benefit-sharing and the regulation of permits. The Act allow(ed) for the establishment of the South African National Biodiversity Institute (SANBI).”⁹

South Africa has not prepared a PRSP.

The World Bank’s strategy in South Africa has been to pilot a new Bank strategy by acting as a knowledge Bank. In terms of identified areas of sustainable growth the Bank has identified that “sustainable utilization of the impressive natural heritage of South Africa [...] is a major asset in the efforts to stimulate job creation and economic growth.”¹⁰ The Bank is currently engaged in three conservation projects through the GEF and directly in the Addo Elephant Park, Drakensburg-Maloti area and through support of the C.A.P.E. (CAPE) initiative. Already Open Africa is in close collaboration with C.A.P.E. regarding the SKEP (succulent Karoo), and Cape Floral Kingdom biodiversity initiatives, which form part of the proposed Corridor.

In the construct of the MSP each one of the targeted region’s biodiversity content, PA’s and gateway communities will be detailed.

PROJECT SCOPE

Most of the threats applicable to all the ecoregions involved have something to do with poverty and therefore the desperate need to find additional sources of income, in respect of which tourism is one of the best options.

The core attraction for tourism to these areas is in their nature resources, the conservation of which is therefore vital in developing the potential of this sector, which gives rise to a codependency and inescapable equation where the one cannot survive without the other.

OANSTC is focused within the following adjoining ecoregions that transcend the boundaries of the four abovementioned countries (See Appendix 3 for a map of the ecoregions and a second map roughly illustrating the shape of the corridor):

ECOREGION	Country & location of potential routes
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⁶ Ministry of Environment and Tourism, <http://www.met.gov.na/programmes/biodiversity/strategy.htm>

⁷ Ministry of Environment and Tourism, National Biodiversity Strategy and Action Plan, 2002

⁸ World Bank, <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/BOTSWANAEXTN/0,,menuPK:322819~pagePK:141132~piPK:141121~theSitePK:322804,00.html>

⁹ SANBI, 2004

¹⁰ World Bank, South Africa PRSP pg. 10

1. CENTRAL ZAMBEZIAN MIOMBO WOODLANDS	<u>Zambia</u> : Traditional elephant corridor area between North Luangwa & Bangweulu (Shiwa Ngandu, Waterfall areas, Mutinondo); within the Miombos Ecoregion, this “highland miombos” has high plant diversity with local mist and gallery forests near the falls as identified in the Zambia Biodiversity strategy and action plan.
2. ZAMBEZIAN FLOODED GRASSLANDS	<u>Zambia</u> Kafinda Bangweulu GMA and wetland in open areas linking the Bangweulu to the various NP around it (e.g Kasanka NP); already a UNDP GEF reclassification project; this wetland is a major stop over for ethioian and palearctic migrants; it is also home of endangered species such as the shoebill stork. <u>Botswana</u> : Area linking conservation areas around the Moremi Reserve in the Okavango delta; this wetland is of worldwide importance.
3. WESTERN ZAMBIAN GRASSLANDS	<u>Zambia</u> : Musalangu GMA and open areas in Losi Kingdom around Liuwa National Park, Sioma Ngwezi NP (<i>one route already under development</i>); this area is a top priority in the Zambia biodiversity strategy. It is known as the second great migratory route for the blue wildebeest (the other being Serengeti with the brown wildebeest)
4. KALAHARI ACACIA-BAIKIAEA WOODLAND	<u>Namibia</u> : Caprivi GP and open area between the Caprivi and Ethosha NP (<i>One route already under development</i>); The Caprivi strip itself is not a particular importance for biodiversity, however, it is of utmost importance as a migratory route for large herds of elephants, buffaloes and associated predators from Chobe (where the elephant population is too high) to the Western Zambian grassland (Sioma Ngwezi NP and north) <u>Botswana</u> : Area linking Chobe NP to Moremi to the South and to the Zambezi valley & “four corner” areas to the north. This is part of the priority “4-corner TFCA.”
5. THE KALAHARI XERIC SAVANNA	<u>Botswana</u> : Area along the Kgalagadi NP linking to the savanna woodland of Namibia. Species adapted to the arid land ecosystem have developed strategies to cope with variations in annual conditions but national parks are insufficient ground for their survival as indicated in the Namibia biodiversity strategy. This is the rationale behind “dropped-fence” conservancies and park buffers, which immensely broaden the natural habitat available for these species, but are themselves reliant on tourism for income.
6. NAMIBIAN SAVANNA WOODLAND	<u>Namibia</u> : Area in between the Kgalagadi NP of Botswana to the Ai-Ais NP as well as the Fish River Canyon and to the succulent Karoo of the Richtersveld in SA (<i>One route already under development</i>). Although supportive of less diversity, this area is considered a major zone of evolution for such groups as melons (Cucurbitaceae), some families of succulent plants, fishmoths (Lepismatidae), solifuges or sun-spiders (Solifugae), geckos, lizards, tortoises and many bird families such as francolins, coursers, sandgrouse and larks. About 30% of the breeding non-migrant bird species occurring in Namibia are endemic to southern Africa; and in 90% of these, Namibia supports more than 40% of their respective world populations.
7. THE NAMIB DESERT	Namibia: Area along the coast of the Namib Desert NP south of Walvis Bay (1 route already under development) The Namib Desert coastal region is an area characterized by aridity, the influence of fog and a great variety of landforms. These provide diverse habitats for plant and animal life. As in other coastal regions, the interaction between marine and terrestrial ecosystems provides some unique adaptations amongst plants and animals, exemplified by the high

	level of endemism amongst certain groups of plants and animals in the region.
8. SUCCULENT KAROO	<u>South Africa:</u> Area in Namaqualand around Namaqua NP and Kamieskroon (<i>One route is already established</i>) and area around Richtersveld NP linking to the namib savanna woodland of the Fish River Canyon & Ai-Ais NP (<i>One route already established</i>). The Succulent Karoo is the only arid region recognized as a biodiversity hotspot. The hotspot covers 116,000 square kilometers of desert and is one of the 25 richest and most threatened reservoirs of plant and animal life on Earth.
9. CAPE FLORISTIC REGION	<u>South Africa:</u> Area from Kamieskroon to the south through the Cedarberg to various areas around Cape Town such as Cape NP (<i>Two routes already established</i>); the biodiversity of the Cape floral kingdom is highly unique and highly threatened. The Cape Floristic Region Hotspot is home to the highest density of plant species in the world. The hotspot harbors more than 9,000 plant species, 70 percent of which are found nowhere else. Plant species that demonstrate the diversity of plants found here include South Africa's national flower, the king protea; the marsh rose; and the silver tree. It is well protected in national parks and reserves but not yet in areas controlled by private owners and communities.

2. PROJECT RATIONALE AND OBJECTIVES

As seen in section one, the four countries have identified tourism as a main driver of economic development, especially in rural areas.

The OANSTC entry point into the GEF is through the biodiversity operational programs 2, 3 and 4. In Africa tourism's potential is generally nature-based, a large part of the resources for which are in the hands of communities suffering poverty deprivation. They are in a downward spiral where metaphorically speaking their goats are grazing the last of their grass and their trees are being felled for fuel, which in turn is causing erosion to silt up their rivers. The answers to reversing this spiral are in the program objectives for the biodiversity operational programs. The project also draws direct linkages to the OP 12 IEM. The program objectives of the IEM, A; "conservation and sustainable use of biological diversity, as well as equitable sharing of benefits arising from biodiversity use" and D; "prevention of the pollution of globally important terrestrial and aquatic ecosystems," directly relate to the focus areas of Open Africa and what OANSTC will do for mainstreaming biodiversity into the tourism sector. The success of OANSTC lies in providing a reason for communities to conserve their environments combined with the ability to productively create public/community/private sector partnerships in assisting them to do so. The principle means of accomplishing these objectives is through mainstreaming biodiversity into the tourism sector (BD SP 2) and through the proper and accurate dissemination of best practices through a high tech ICT system (BD SP 4) like the Open Africa information portal.

In mainstreaming biodiversity in production landscapes and sectors, OANSTC will address two factors: 1. Reducing the affect of poverty on environmental degradation and 2. Ameliorating the positive impacts of tourism while mitigating the potential negative impacts. It will do this by giving communities at grass-roots level a direct stake in tourism, in conjunction with providing a variety of means to improve their capacity to conserve their environments. This process, achieved through the development of routes, sets up a collaborative framework within which all players have a sense of ownership and are coordinated around a vision of common purpose. This collectivization and coordination around a common theme changes behaviors and practices.

These objectives are illustrated in the Blue Crane Routes in the Western Cape of South of Africa. Prior to an Open Africa tourism route being established, many of the farmers and their workers in the area were poisoning, trapping and shooting this endangered bird. Open Africa was asked to intervene through the

development of a Blue Crane Route, which highlighted the importance of red data listed endangered species. Now, four years later, farmers are actively protecting these birds through marking nests, protecting eggs and making annual counts. Furthermore, farm workers are ardently engaged in protecting these animals, whilst members of their families are becoming active participants in peripheral tourism activities such as the production of artifacts, the provision of food and beverages and in guide services. Subsequent to this first route being established, four additional adjoining Blue Crane routes have been established and an application for a fifth has been received.

The Blue Crane Routes provide an interesting perspective on the second factor, of ameliorating the impact of tourism as well. Before the Open Africa intervention few of the farmers or their workers knew anything about tourism or the importance of the Blue Crane. Now they know that if they are to do anything relating to tourism they must do so in a way that nourishes the resource base. Similarly, the people living within the proposed corridor have very little or no experience in tourism. The route development process is the first step in providing knowledge about what is tourism, why people are visiting and what constitutes good practices in resource management. Thus, the route development stage is just the first step in the knowledge sharing process. Placing the routes into a network of peer-guided principles allows for participants to share success stories and knowledge on best practice methods of nature conservation activities.

The system includes the concept of creating peer-pressure for nature conservation through an affirmation to abide by certain principles. Route participants are required to sign a pledge to operate according to principles based on environmentally conscious ethics.

OANSTC has the following objectives:

- *Development Objective:* A significant number of people living within the defined corridor's biodiversity hotspots enter the economic mainstream by leveraging their tourism and self-empowerment potential
- *Global Objective:* Communities along the newly established routes factor better biodiversity management into their mode of existence and use of biodiversity resources.

The following indicators will evaluate performance against the project objectives. Indicators baseline and target value will be determined during implementation of the PDF A:

- X% of local community and indigenous groups (of Y number of routes) are demonstratively participating in the design, implementation, management and monitoring of projects to promote biodiversity conservation and sustainable use
- A positive change in route-specific bio-indicators (as identified by specialists through discussion with the communities) is demonstrated in 75% of the established routes
- A positive change in route-specific behavior-change indicators is demonstrated in 75% of the established routes
- A positive change in route-specific indicators of biodiversity friendly land use is demonstrated in 75% of the established routes
- Number of community members with indigenous knowledge that have emerged as conservation entrepreneurs equals X (to be determined during design)
- Incremental growth of people with permanent/temporary jobs
- Number of operational SMME's

The first of these indicators was extracted from the information document on emerging directions for biodiversity under GEF – 3, whilst the remainder emerged from a draft log frame and will be revisited during the preparation of the MSP (see Appendix 1 for the draft log frame). The OANSTC measurement system will use a community-based natural resource management methodology currently in use by the Integrated Rural Development and Nature Conservation (IRDNC) organization, a long standing NGO operative in Namibia under the direction of Dr. Garth Owen-Smith and Dr. Mary Jacobsen. This methodology will establish all threatened biodiversity in each route as determined by the communities, using their indigenous knowledge in consideration for the fact that they are not 'science literate,' and then

match these with scientific assessments of their biodiversity value in each instance. Thus the communities themselves will establish the baseline data, desired outcomes, and periods of measurement at set intervals, which outcomes will be visibly displayed in a graphical tracking system. Open Africa's bottom up approach that deals with communities in a manner they feel comfortable with is one of the key features that make it unique inasmuch as it ensures their proactive participation. Translating the outcomes of this into knowledge that is scientifically valuable is one of the purposes of OANSTC and Open Africa is in consultation with a number of authorities in determining the best way to do this.

A risk to the project is that although the four countries targeted were chosen because of their stability and increasing tourism appeal, tourism as an economic driver is reliant upon the political and natural climate remaining conducive for it to exist and grow. Another risk that must be addressed in the design of this project is that of the biodiversity becoming a victim of tourism success. Both of these considerations will be examined during the design of the MSP.

3. EXPECTED OUTCOMES

The following are the expected outcomes of this program:

- The network of community-owned tourism routes in biodiversity hotspots are stimulating better biodiversity management
- In existing routes within the corridor, of which there are five, mainstreaming of biodiversity conservation will have been initiated.
- The community-owned tourism routes in the corridor will have developed the capacity to link to the demand markets
- The participants within the corridor will have broadened capacity to monitor the economic, social and ecological impacts of the tourism routes and to factor the lessons learned from the hands-on experience gained within them through the dissemination of best practice examples
- The countries involved in the project will have access to more information regarding the impacts and role of tourism in biodiversity conservation and management
- The project is implemented timely and under satisfactory governance

The outcomes will be evaluated against following indicators:

- Number of routes where participants have planned and initiated nature conservation activities
- Number of new routes established
- Number of web site hits on the routes
- Number of articles in tourism, trade & mainstream media about the routes
- Number of tourism professional operators (lodge owner, tour operator, etc.) that have registered a route-related product as part of their own product offering
- New M&E system in place and its functionality
- Number of annual conferences linking routes together into a knowledge network
- Annual external audits are positive
- Annual work programs implemented are at least 80% accomplished every year

In addition to this, routes will be monitored against the following indicators based on social, economic and environmental dimensions.

Issues	Indicators
Social Indicators	
Community attitudes towards tourism	Local satisfaction with level of tourism
	Existence of a community/multi-stakeholder tourism plan;
	Frequency of route forum meetings and attendance rates
Effects of tourism on communities	Comparative evidence of infrastructural developments since the establishment of a route

Local community participation	Percentage of goods and services acquired for tourism operation of the site from: * participants on the route * the broader community
	Employment of local residents in tourism operations (numbers, income levels)
Indicators of authenticity	Analysis of visitor book tick boxes
Social responsibility	% of participants with policies/programs aimed at community development
Social benefits associated with tourism	Number of social services available to the community (% attributed/connected to tourism)
Retaining access to important sites	Access by locals to key sites (% of site freely accessible to public or with local rates)
Professional and Personal Development	Number (%) of employees/participant qualified/certified
	Frequency of training programs and level of participation
Economic Indicators	
Jobs supported	Number of permanent and part-time direct jobs
Tourism traffic flows	Tourist arrivals by month (distribution throughout the year)
Local resourcing	Number of products within the region sourced locally for tourist consumption
Measuring level of marketing effort	Volume of marketing products divided by type: *Brochures *Advertisements *Posters *Websites
	Level of representation/contact (number of fairs, exhibits, journalists trips, familiarization trips for tour operators and open days)
Operation and support of micro, small, and medium sized enterprises, or community based enterprises	Number of participants on the route (subdivided by types ,e.g. accommodation and catering, tour guiding, transportation, tour operation, etc.)
	Number of participants making use of incentives or programmes for SMME's: *Aware of *Making use of *Not making use of (why not)
Economic leakages	Number of participants involved in capacity building on the route (established with emerging)
Environmental Indicators	
Environmental management systems and environmental initiatives	% of establishments on the route with environmental certification
Measuring impact of tourism on the natural environment	% establishments with policies on environmental and sustainability issues
	Existence of designated personnel for environmental and sustainability management issues on the route
	Training of participants on environmental issues (% trained)
	Application of environmentally friendly technologies and techniques (% of participants) *Water/energy saving techniques or devices *Recycling (Glass, paper, plastic) *Green purchasing

	Number of requests to environmentally or culturally sensitive products (restaurants, tours, ecotourism and cultural tourism sites), phone and mail inquiries, hits in websites
Source of financing for biodiversity conservation and maintenance of protected areas	Number of impact assessment monitoring systems in place
	% of conservation projects where tourism financial contribution is a component
	Main source of funding for biodiversity conservation
	Value of contribution from operators (concession fees, donations, services provided)
	Value of donations received from tourists
	% of businesses on the route contributing to conservation
	% of tourism products (tours etc) with specific contributions built into the price or surcharges
	Number and involvement in environmental support clubs (e.g, "friends of the park ")

4. PLANNED OUTPUTS TO ACHIEVE OUTCOMES

For Open Africa's system to become a rapidly replicable model of community-based tourism development symbiotic with conservation, applicable in any area in Africa or elsewhere in the world, with the broad impact of positively changing grassroots level behavior. The initial design of this project envisions encompassing four separate components. These are the components of the MSP and are listed below with the estimated budget for each.

Component 1: Develop Routes Specific to the Corridor

- Undertake a reconnaissance mission and rapid assessment of each region—move into route specific activities
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- Conduct initial community (route) stakeholder meetings
- Identify the route-specific nature conservation indicators using Indigenous Knowledge
- Vet the route-specific indicators through an appropriate third party, i.e, graduate level university student/professor
- Conduct second stakeholder meetings
- Community elects a forum and chairperson to manage the newly developed route in each instance
- Community establishes a name (brand) for the new route
- Capture pertinent route information: stories, photos, contact information, GIS coordinates and commentary
- Collate the data and load into www.africandream.org
- Issue Open Africa Affirmation of Afrikatourism Ethics Charter which participants sign
- Hold route festivals where each route is officially launched
- Begin aftercare activities including monitoring and evaluation, route networking and knowledge sharing

Estimated Budget: \$1 000 000

Component 2: Mainstream Nature Conservation into Existing Routes

- Revisit existing routes in the corridor area (i.e, the five pre-OANSTC routes already developed plus the three presently being developed) and identify route-specific nature conservation indicators using Indigenous Knowledge
- Vet the route-specific indicators through an appropriate third party, i.e, graduate level university student/professor
- Hold community stakeholder meeting to impress the importance of the protection and improvement of the route-specific indicators

Estimated Budget: \$400 000

Component 3: Build Capacity for Tourism Marketing, Monitoring & Evaluation and Knowledge Management

- Nurture the development of marketing skills
 - Produce a network identity manual
 - Devise strategies to assist routes in web-based target marketing e.g, connecting routes with birds to birding clubs and develop an "open" manual on target marketing
 - Devise a strategy for communal representation of routes at tourism exhibitions under the Open Africa banner
 - Develop a database of tour operators for the purpose of informing them regularly about what is available on routes for possible inclusion in their packages
 - Develop a route forum fundraising toolkit
 - Develop a route forum public relations toolkit
 - Develop a best practice method for route participants to gather tourists information in order to stay in contact with them and promote word-of-mouth marketing
- Upgrade the Open Africa website data carrying and analysis capacity
- Enhance the M&E system and move it to a web environment for remote access
- Enhance linkages with demand markets
- Hold annual conferences for the exchange of success stories among route chairpersons
- Publish and disseminate best practice handbooks among the routes

Estimated Budget: \$400 000

Component 4: Project Administration

- Create a project handbook
- Install a project management system
- Produce appropriate reports and documentation in a timely and routine manner

Estimated Budget: \$200 000

5. STAKEHOLDERS INVOLVED IN PROJECT

Initially, during the route development process, Open Africa works with community members, grassroots organizations and local tourism authorities (if any). Then, once routes have been launched, typically a host of other players get involved according to the circumstances of individual routes, including:

- Tourism Development Consultancies
- Training Consultancies/Institutions (eg, Tourism Training Institute)
- Universities (eg, University of Cape Town)
- Financing Institutions (eg, NORAD, DBSA)
- Tour Operators/Private Sector (eg, Cape Capers, Namibia Nature Investments)
- Conservation NGOs (eg, C.A.P.E., Namibia Nature Foundation, Zambia Wildlife Society)
- Community Development NGOs (eg, IRDNC, Barotse Development Trust, Namibia Community Based Tourism Association)
- Media Allies (eg, Africa Geographic, Country Life)

In the conceptualization of this project Open Africa has met or contacted various government ministries and departments for input into this project. In Zambia, Open Africa has contacted the Ministry of Tourism, Environment and Natural Resources and ZAWA. In Botswana, Open Africa has met with representatives from Environment, Wildlife, Forestry and Tourism. In Namibia, Open Africa has met with the Ministry of Environment and Tourism. In South Africa, Open Africa has contacted the Department of Environmental Affairs and Tourism and is working with the Department of Trade and Industry and SANBI. During the MSP design phase the first step of the OANSTC will be to hold a series of multi-stakeholder workshops in each of the four countries consisting of members of the various government ministries and departments, relevant civil society members, and the private sector.

PART II: INFORMATION ON BLOCK A ACTIVITIES

6. EXPECTED OUTCOMES/COSTS AND COMPLETION DATES OF THE PDF A

Project preparation will be concomitant to the development of pilot routes. The PDF A will finance three consultations as well as associated travel and subsistence expenditures:

- (1) A consultant specialized in tourism planning, along with Open Africa's core team, will travel to all four countries and pre-selected sites to refine the selection of the routes, initiate (or continue) discussions with local partners and carry out a more detailed assessment of the local threats (including those to the biodiversity resources) and possible mitigation measures as well as the tourism potential and potential anchor operation. This team will organize a stakeholder workshop at each proposed site. Through these consultations options for better management and use of biodiversity resources will be developed to enhance the biodiversity dimension within the tourism sector. In coordination with the Open Africa team, this consultant will draft the MSP formal request to GEF.,
- (2) A consultant, specialized in project development, will prepare the implementation and administrative manual to ensure conformity in the use of GEF funds with World Bank procedures.,
- (3) A consultant or team of consultants, ecologists and conservationist, will prepare a manual designed to adapt the "classic" Open Africa methodology to a "new" methodology that mainstreams biodiversity conservation in the development and management of new routes. This manual will give particular attention to conservation elements (such as fire management, wildlife protection, reservation of riverine land, adoption of improved fishing or grazing practices, etc.) which will be designed to produce significant conservation impacts on the ground. An important output of this work is a method to identify simple, but relevant, bioindicators that can be proposed to communities to track the real on-the-ground impacts.
- (4) In parallel, the Open Africa team will continue the establishment of pilot routes in southern Zambia, Namibia and South Africa; this team will attempt to pilot the "new" methodology for the development of new routes.

The expected completion dates are contingent upon receiving PDF-A financing in February 2005

- Stakeholder workshops completed and community sites identified: *July 2006*
- MSP Document completed and submitted to the GEF Council: *Sept 2006*
- Project Implementation Manual completed and endorsed by WB Finance and Procurement Staff: *June 2006*
- Produce a handbook of the Open Africa indigenous nature conservation methodology: *June 2006*
- One of the OANSTC Pilot routes launched: *April 2006*

Activity	Co-Financing	Block A grant
MSP Preparation	\$15,000	\$20,000
Pilot site Projects	\$60,000	-
Nature Conservation Methodology	-	\$22,000
Implementation & Administrative Manual Preparation	-	\$8,000
Database & Web Enhancement	\$25,000	-
Totals	\$100,000	\$50,000

7. OTHER POSSIBLE CONTRIBUTORS/DONORS AND AMOUNTS

Funds received in support of the PDF-A:

- Standard Chartered Bank \$50,000
- Engen Petroleum (Namibia) \$20,000
- Engen Petroleum (South Africa) \$30,000

Open Africa has long-standing supporters from the private sector consisting of companies like Engen Petroleum, Hertz Rent a Car, GISCOE, Sanlam, De Beers, First National Bank and Anglo American. In addition support from first, second and third tier government agencies (Ministries, Provinces and Municipalities) are derived when they specifically commission the establishment of routes.

This project's safeguard category is C. Indeed it is not expected to generate any negative impact on the environmental or the social make up of communities. Its aim is to reinforce positive behavior from the communities within their own production landscape. As a consequence no Environmental and Social Impact Assessment is planned.

PART III: INFORMATION ON THE APPLICANT INSTITUTION

<p>8: Name: Open Africa www.africandream.org</p>	<p>9. Type: Tax-Exempt Public Benefit Institution</p>
<p>10. Date of Establishment, Membership, and Leadership: Registered in 1995 with the following subscribers to its Memorandum of Association - Prof E Heath; Dr G Hughes; Dr I Player; Mr. Errol Martin; Ms L Shackleton; Ms Nthobi Angel; Prof R Siegfried; Dr G Robinson and Noel N de Villiers, which has reporting to it a board of directors consisting of Nthobi Angel, Andrew Muir and Noel N de Villiers, who is the founder and chief executive.</p>	<p>11. Sources of Revenue: Funding from corporate social investment budgets, 1st, 2nd and 3rd tier government, development agencies, aid agencies and philanthropic trusts.</p>

12. Mandate/Terms of Reference:

To develop tourism in Africa in the interests of job creation that is in sympathy with the conservation of its resource base. A much more detailed development on Open Africa's mandate, terms of reference, experience, capacity, methodology, results and marketing strategy is detailed in Appendix 2.

13. Recent Activities/Programs, in particular those relevant to GEF.

The SKEP and C.A.P.E connection is mentioned in Appendix 2 (Open Africa details) and Appendix 3 (Biodiversity interest in targeted ecoregions). Many routes have been established in combination with protected areas such as national parks, UNESCO World Heritage Sites and wetlands.

PART IV: INFORMATION TO BE COMPLETED BY THE IMPLEMENTING AGENCY

14. Project Linkage to Implementing Agency program(s)

OANSTC will act in concert with all other current GEF projects in the selected countries and can add value to them. OANSTC has identified the following GEF projects that it will complement:

- In Zambia the GEF/IDA Support for Economic Expansion and Development & the GEF UNDP Effective Management of the National Protected Areas System;
- In Botswana the GEF UNDP Building Local Capacity for Conservation and Sustainable Use of Biodiversity in the Okavango Delta and the proposed WB GEF Wildlife Conflict Management and Biodiversity Conservation for Improved Rural Livelihoods;
- In Namibia the WB GEF Strengthening Protected Area Management and the aforementioned ICEMA.

- In South Africa, Open Africa already has a working relationship with the C.A.P.E. and SKEP.

Appendix 1 – Draft Log Frame

Open Africa North-South Tourism Corridor Project

Project Development Objective	Indicator¹¹	Report	Hypothesis From PDO to Open Africa objective
A significant number of people living within the defined corridor's biodiversity hotspots entered the economic mainstream by leveraging their tourism and self-empowerment potential.	Number of people with permanent/temporary job Number of SMMEs operational 12	Yearly report	No major political/security/health events closes the flow of tourist to the routes Few natural/climatic events along routes affect access to routes or food security
Global Objective	Indicator⁹	Report	Hypothesis From GO to Open Africa objective
Communities along the newly established routes have factored better biodiversity management into their mode of existence and use of land resources.	A positive change in route-specific bio-indicators is demonstrated in 75% of the established routes A positive change in route-specific behavior-change indicators is demonstrated in 75% of the established routes A positive change in route-specific indicators of biodiversity friendly land use is demonstrated in 75% of the established routes Number of community members with indigenous knowledge that have emerged as conservation entrepreneurs equals X (to be determined during design)	Yearly report	The identified timeframe is adequate to see the behavioral changes.
Outputs	Indicators⁹	Report	Hypothesis (from output to outcome)
1. New community-owned tourism routes in biodiversity hotspots are established and stimulating better biodiversity management	Number of new route established = 20 (to 30 to be verified during design)	Quarterly Report	No major political/security/health events closes the flow of tourist to the routes Few natural/climatic events along routes affect access to routes or food security Sufficient members of the route community do show the entrepreneurial skills and spirit that sustain the system
2. Open Africa has initiated mainstreaming of nature conservation in its existing South African routes	Number of routes where participants have planned and initiated nature conservation activities equals X (5 to 10 to be determined during design)	Annual Report	To be identified during design

¹¹ All indicators will be verified during design

3. Open Africa has broadened its capacity to link the community-owned tourism routes to the demand markets, to monitor the economic, social and ecological impacts of the tourism routes and to factor the lessons learned in Open Africa operations	<p>Number of web site hits on the new routes</p> <p>Number of articles in tourism, trade & mainstream media about new routes</p> <p>Number of tourism professional operator (lodge owner, tour operator, etc.) that have registered a route-related product in their own product</p> <p>New M&E system in place</p> <p>Number of annual conferences linking routes together into a knowledge network</p>	<p>Web site counter</p> <p>Article review</p>	The demand for these new routes product is comparable with routes previously established by Open Africa and reacts to Open Africa marketing
4. The project is implemented timely and under satisfactory governance	<p>Annual external audits are positive</p> <p>Annual work program objectives are implemented to a level of at least 80% every year</p>	Bank Supervision	None identified at this stage
Component	Input (\$)	Report	Hypothesis (from Component to Output)
1. Establishment of new routes - Preliminary reconnaissance - Stakeholder meetings - Community workshops - Data capturing - Route launch (virtually &	USD 1.00 m (to be verified at design)	<p>Quarterly & annual report</p> <p>Bank supervision</p> <p>External audits</p>	Outside interference regarding the control of the tourism or biological asset.
2. Mainstreaming nature conservation in existing routes -Revisit key bio-routes -Install bio-identification mechanism -Monitor the activities	USD 0.20 m (to be verified at design)	<p>Quarterly & annual report</p> <p>Bank supervision</p>	None identified at this stage
3. Capacity building for tourism marketing, M&E and knowledge management -Revamp website -Reformulate Database -Build formal online M&E system	USD 0.40 m (to be verified at design)	<p>Quarterly & annual report</p> <p>Bank supervision</p>	None identified at this stage
4. Project administration -Create project handbook -Source a project manager firm	USD 0.40 m (to be verified at design)	<p>Quarterly & annual report</p> <p>Bank supervision</p>	None identified at this stage

Appendix 2 – Details on OPEN AFRICA history, experience, capacity, route development methodology and marketing

Open Africa North-South Tourism Corridor Project

Open Africa is a registered tax exempt Public Benefit Institution obliged to adhere to the Companies Act of South Africa. Its vision is to link the splendours of Africa through a network of tourism routes, with the mission of doing this in a manner that conserves and nourishes their resource base, for which purpose it devised and is implementing a unique system that functions at community level and utilizes integrated Geographic Information Systems (GIS) and Internet technologies. It launched its first route in 1999 and now has 59 in the network, which stretches across five countries and includes 1 457 SMME's that together support 12 163 direct full time and 4 831 part time jobs.

What Open Africa has done is to systematize a method of tourism development and marketing that works at community level from the bottom up, holistically taking account of many factors that normally militate against new entrants gaining a foothold in tourism, and yet is elegantly simple, fast, and extremely cost effective.

The system entails development through the creation of tourism 'routes' – see www.africandream.org A route is all of a collective, a cluster, a brand and a focal point, the latter both for the participants and for prospective visitors wishing to determine where to find what interests their individual tastes.

These routes form an inherently incrementalistic concept, in that once basic connectivity is established, an infinite set of graduated development possibilities are set up that achieve the balance between quick results and long term planning so sorely needed in Africa. This route-based approach picks up on most of the important happenings in a region, as well as most of what could happen, and hence is inherently strategic from a regional development perspective. A route is also intrinsically redistributive, in that it distributes connectivity and exposure along its length, allowing the most marginal communities to plug in to the system.

Once established, each route is connected as a product to the global market through use of the internet. Participation in this network is provided at no charge to route participants and used by Community-based Organization's to nurture support for grassroots development projects that seek to expand the tourism and other potential in their area. This, the first ever systemized method of developing tourism, allows people from all socio-economic backgrounds to help themselves and their communities by collectively utilizing the potential of their area to promote local economic development.

Community Route Development

The development of a tourist route begins when a specific community agrees to a partnership with Open Africa. Typically, the community is comprised of existing and aspirant small and micro enterprises that have identified the potential for tourism development in their area. These communities can be rural or urban. Open Africa's process facilitates the community's drive to bring tourism into the area and helps to focus on the strengths of the area with the ultimate objective of 'branding' the community and its tourism features as a unique and interesting location for people to visit. Open Africa collects information on the community's tourist attractions (which in Africa are primarily nature based), products (accommodations, tours, artisans, etc.), and on the geographic area, using GIS technology, digital photography, and first-hand story collection. This information is collated, edited and then placed on the system's easily navigable website.

During the route development process, a route forum is created to drive the subsequent development and promotion of the route. Although they are given guidance, all decision-making is left to the forum members in order to avoid impositions from the outside. The community elects a forum leader tasked in leading the development of the route and handling communications with Open Africa. The forum is usually also

comprised of representatives from local tourism authorities, SMME's, larger tourism businesses, and other stakeholders. Ideally, the route development process can be completed in as little as 90 days. At the end of the development process, the route is launched on the Open Africa website (www.africandream.org) at an open community celebration that often includes local and national representatives and press. The launch sets in motion a publicity drive and helps to generate community pride, ownership, and momentum to begin a participative development process.

Route participants do not pay for the Open Africa intervention with cash. Instead their contribution is in "sweat equity," through making a commitment to living by the principles set forth by Open Africa and the tenets of what it calls *Afrikatourism*¹³. Consequently, all route participants, both in individual routes and throughout the network, are considered equal. Large and small businesses can be found working together for the betterment of an entire route. Sponsors, who cover route development costs, are drawn from the private and public sectors, development agencies, and charitable trusts. Often, sponsors play a significant role in the initial launch and subsequent development of the route. Community tourism routes are excellent opportunities to work with the private sector for additional program sponsorships.

Once an individual route is complete, it is brought into the larger network comprised of other routes throughout southern Africa, and eventually the entirety of Africa. Through this network, individual routes are able to gain lessons learned and best practices from other routes and are able to develop the collaboration and cooperation needed to become successful.

One of the fundamentals of human social development is active participation by the intended beneficiaries in development activities. For development planners, ensuring participation is one of the most difficult parts of the development mix. This is for the reason that it requires the motivation and co-operation of diverse people. Open Africa's activities mobilize people around social issues that affect them personally, thus ensuring their active participation.

By developing and mapping tourist routes, Open Africa creates social capital in communities. It increases their interpersonal skills, both within and across cultural and socio-economic borders. It increases their capacity to cope by illustrating their ability to individually and collectively proactively influence their reality. This gives them an enhanced sense of personal empowerment that collectively improves the community's capacity to cope. Participants in Open Africa's activities can thus be viewed as both beneficiaries and agents of development.

The process of mapping routes also creates its own impetus. Participating communities set an example to other communities, who see the impact and leverage that the route communities are obtaining. When neighbouring communities see the benefits participants are deriving from being part of the system, their inclination is to want to do the same.

Community benefits

Results vary from route to route according to local circumstances, the dynamism of the Route Forum chairperson, how often the forum meets, and other reasons. There is a pattern to this that has recognizable features that suggest certain replicable strategies in dealing with them. However, the most significant feature is that once a route is established it constitutes an entity that can be managed and wherever it may appear on a scale of, say, one to one hundred, there are actions that can be taken to move it forward. Thus Open Africa regards the launch of a route as only the end of the beginning of a process that has an unlimited lifespan, and whilst some routes have made progress to the point where they can fend for themselves, others need more help. Open Africa does not necessarily provide this help itself but points training institutions, infrastructure providers, other NGO's, and financial sources to where they are needed and vice versa, which capacity to make connections is one of the real benefits of operating a network.

Overall the benefits to communities can best be illustrated through what Open Africa calls the 'Five Capitals,' as follows:

¹³ *Afrikatourism* is a branded term by Open Africa that denotes tourism that is uniquely African; appreciating that tourism in Africa is inherently related to environmental and cultural context.

CURRENT REAL WORLD EXAMPLES OF OUTCOMES IN THE ROUTE NETWORK AND HOW THE PROCESS HAS INCREASED COMMUNITY RESOURCES THROUGH THE “FIVE CAPITALS”

<i>The Five Capitals</i>	<i>Definitions</i>	<i>Examples</i>
Human capital	Skills, knowledge, information, & mindsets	<ul style="list-style-type: none"> ◆ During the route development process, participants are exposed to and learn about Information and Communications Technology as well as trends in the global tourism industry. ◆ Sonke Cape Route participants have been offered business development courses free of charge by Cape Technikon’s Hotel School and ICT training by the University of the Western Cape ◆ Kwa Mandlenkosi participants in Beaufort West have been given craft training. ◆ People on all the routes have gained a new insight into the value of their natural and cultural resources and how these can be turned into wealth creators.
Natural capital	Land, water, wildlife, biodiversity, environment, culture and heritage	<ul style="list-style-type: none"> ◆ The first Blue Crane Route was established to raise awareness of the Blue Crane, South Africa’s national bird and a threatened species. Subsequently another three Blue Crane routes have been developed and a full-time conservation officer employed to monitor progress toward the original objective. ◆ With respect to biodiversity, there are already three desert routes and the Cape Nature Route. ◆ Thunga Thunga (Eastern Cape) has used the forum to identify other business opportunities for the collective. One such opportunity is the bottling and distribution of spring water found in the area.
Financial capital	Profits; savings, credit	<ul style="list-style-type: none"> ◆ The Blue Crane Route has shown significant tourism development despite the main objective being conservation. ◆ Thunga Thunga formed a private company with 50 of the route participants as co-owners. ◆ The Maloti Route uses the route to introduce emerging businesses to the market.
Physical capital	Transport, shelter, water, energy, comms	<ul style="list-style-type: none"> ◆ Sonke Cape Route was assisted by Cape Metropolitan Tourism funding to establish a tourism information and business service centre in one of the Cape Town townships. ◆ Kwa Mandlekhosi attracted funding from the provincial government to establish a craft centre on land adjacent to the national road between Johannesburg and Cape Town.
Social capital	Networks, groups, trust, access to institutions; ‘the glue that holds society together’	<ul style="list-style-type: none"> ◆ Though participation in the route development process and subsequent launch, route participants network with each other and other stakeholders in the tourism industry. ◆ Many routes are represented at the major trade shows like the Durban Indaba, the London World Travel Market, and Berlin ITB. ◆ Linkages with sponsors have resulted in regular and specific publications that provide further exposure to participants – eg, an Open Africa route is highlighted in each of the ‘Discovering SA’ tabloids which are made available to the public at Engen Filling Stations; Hertz Rent a Car compiles an annual guide to all Open Africa routes, which it distributes to select clients. ◆ Diverse communities within the same area have been brought together through the establishment of routes eg, uMngeni Footprint; Dwars River Escape Route; Sonke Cape Route; Cape Care Route. ◆ Others have brought together businesses across borders eg, Maloti Route between South Africa and Lesotho.

Organizational Capacity

The subscribers to the Open Africa memorandum consist of eminent scientists, sociologists, and business people under the patronage of Nelson Mandela. The management is made up of a Chief Executive Officer whose biography is reproduced at the end of this section; an Administration Manager with a Masters Degree in Marine Science; one Route Developer with a Bachelors Degree in Sociology who is presently studying for a masters in Sustainable Development; another Route Developer presently completing his Masters Degree in Geography and Environmental Management; and a Route Networker with a Diploma in Business Administration. Public relations, computer science and other specialist requirements are outsourced.

The organization is tightly run administratively, produces a full set of financial statements monthly that are subject to an annual independent audit, and submits regular written reports to its funders.

With the mission to establish a continuous network of tourism routes aimed primarily at creating jobs in symbiosis with conserving the splendours of Africa, Open Africa has steadily increased its capacity concomitant with growing financial support that in the year ended October 2005 amounted to US\$387,000. The source of these funds is corporate supporters, who provide core funding and sponsor routes at a cost of US\$27,000 each. The organization employs five permanent staff and outsources specialized requirements such as in the spheres of software development and public relations. The organization's offices are located in Cape Town, where administratively it is geared to and produces a full set of monthly financial statements and operates its monitoring system.

Mentioned earlier is that the network presently supports 12,163 direct full-time and 4, 831 part-time jobs. It should be noted here that the route participants and not Open Africa created these jobs that in some measure the networks now supports. These are also only the number of direct jobs and take now account of the number of jobs that these tourism enterprises will be supporting indirectly. Open Africa does not purport to create jobs itself and sees its role as creating a framework within which jobs can be created, in respect of which it then has the capacity to measure what progression (or otherwise) takes place within that framework, thus providing a mechanism through which better management can take place. Other than tracking hits on its website, and measuring the progress within routes, Open Africa has no way of measuring how much business its interventions specifically account for. Its strength is in the extent to which it can sophisticate its monitoring system and through the information thus produced, to assist participants in the network to improve their management and potential.

Biography of Noël De Villiers - CEO

Started his career as an entrepreneur by founding Avis Rent a Car in Southern Africa. Later he entered the corporate world as Managing Director of the Security, Travel, Transport, and Tourism interests of the Rennies Group and thereafter served as Chairman and Managing Director of a similar division in the Freight Services Group. Noel Founded Prime Leasing in partnership with Nedfin, founded SAVRALA (The Southern Africa Vehicle Rental and Leasing Association); and served as deputy chairman of SATOUR for four years. Noel is currently a member of the Board of University of Cape Town Centre for Marine Studies, a member of the IUCN's World Commission on Protected Areas (WCPA), and a founding member of the Peace Parks Foundation. In 1993, based on a lifetime of experience in the industry, Noel initiated the founding of Open Africa, a Public Benefit Organization that has systemized the development of tourism in the interests of conservation and job creation in Africa.

Open Africa's capabilities

Since the launch of its first route in 1999 Open Africa has developed an average of 10 routes annually with its present staffing level. This period has been regarded as the accomplishment of Phase I, in which the objective was to test the system, establish credibility, and develop a critical mass of routes. The Phase II focus is to establish more routes, faster, and in more countries, and to manage the vast hands-on knowledge being built up within the network more effectively by installing a more sophisticated monitoring and evaluation system.

Until now changes to the data or the route that are effected on the Open Africa website when they occur have constituted the extent of the present measuring system. The intention now is to go much further than this in monitoring, measuring, and analyzing what the social, biodiversity and economic benefits of routes are for the purpose of proving their justification and intelligently monitoring where, when and what necessary interventions need to take place.

Open Africa's structure is stable and expanding further and faster requires only that more people are employed within the slots already created. Enabling this is a function of money i.e., the capacity to obtain funding more effectively, which is also heavily reliant upon being able to monitor and measure results accurately.

While some of the routes have focused and resulted in nature conservation, such as the blue crane route, conservation has not been the primary focus of OPEN AFRICA. Through the project, OPEN AFRICA seek to develop internal capacity to address biodiversity threat, first on the routes targeted by the project. The long term goal is to "green" its entire network of routes.

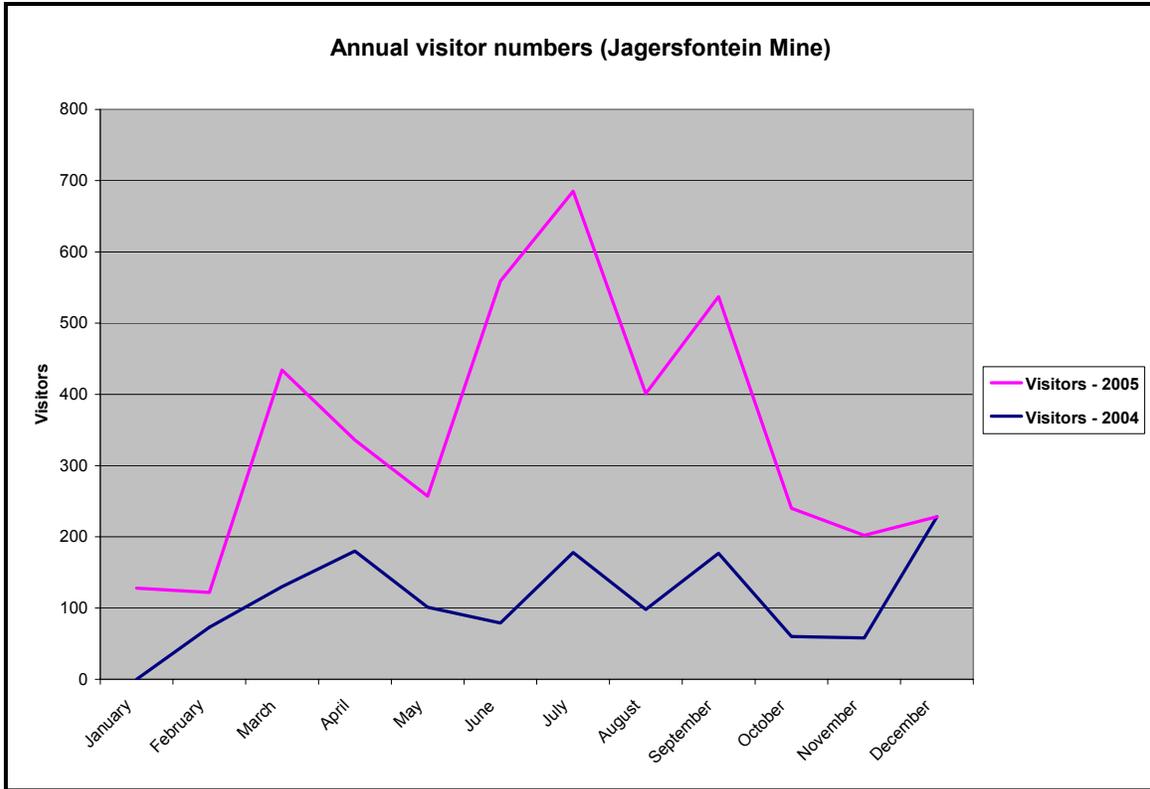
Marketing

The extent of the direct marketing Open Africa undertakes on behalf of routes is in the exposure it affords them and their participants on the africandream.org website, which is not insignificant for if it were to be charged for at commercial rates it would command revenue in excess of US\$1m annually. It is not sufficient in itself however as a stand-alone marketing device and whilst Route Forums must necessarily develop their own skills over time to expand their markets, the OANSTC project envisages providing the assistance mentioned in component three (page 11) of this proposal.

The network concept enables other overarching initiatives such as two presently being undertaken by Hertz, which produces a Route Guide that is given to arriving overseas renters listing all the Open Africa routes, and a 'self drive' website (www.autoetravel.co.za) they have developed with special packages also featuring the Open Africa routes. It is expected that with the increasing popularity of the Open Africa concept more such opportunities for marketing partnerships will come to the fore.

Anything to do with routes is generally publicity rich and Open Africa employs a public relations consultancy to exploit the opportunities of this, as the result of which routes benefit through widespread newspaper, magazine, television and radio exposure. The cash value of this often exceeds the entire cost of developing a route by several multiples.

Insofar as increasing traffic flows is concerned, Open Africa cannot say specifically how much business is directly attributable to the exposure routes get through the africandream.org website. However there are ways of measuring the overall impact, as in the case for example of the Horizon Route in South Africa. This route comprises a clutch of small towns situated abeam of, but some distance away of the N1 national highway between Johannesburg and Cape Town. The primary justification for the establishment of the route was to divert traffic from the highway in an effort to improve the revenue potential of these towns, where one of them has only one attraction in the form of a now disused but historically significant diamond mine. Anyone traversing this route will definitely visit this mine and whereas traffic to the mine has been accurately measured through a gate fee and name gathering system over the past 24 months, work on developing the route commenced in June 2004 and the route was launched in October of that year. The following graph tracks the visitor flow, revealing an increase in 2005 over 2004 of 103% that is directly attributable to the establishment of the route (the drop in October/November is caused by these being traditionally slow month for tourism traffic in South Africa).



Government Relations

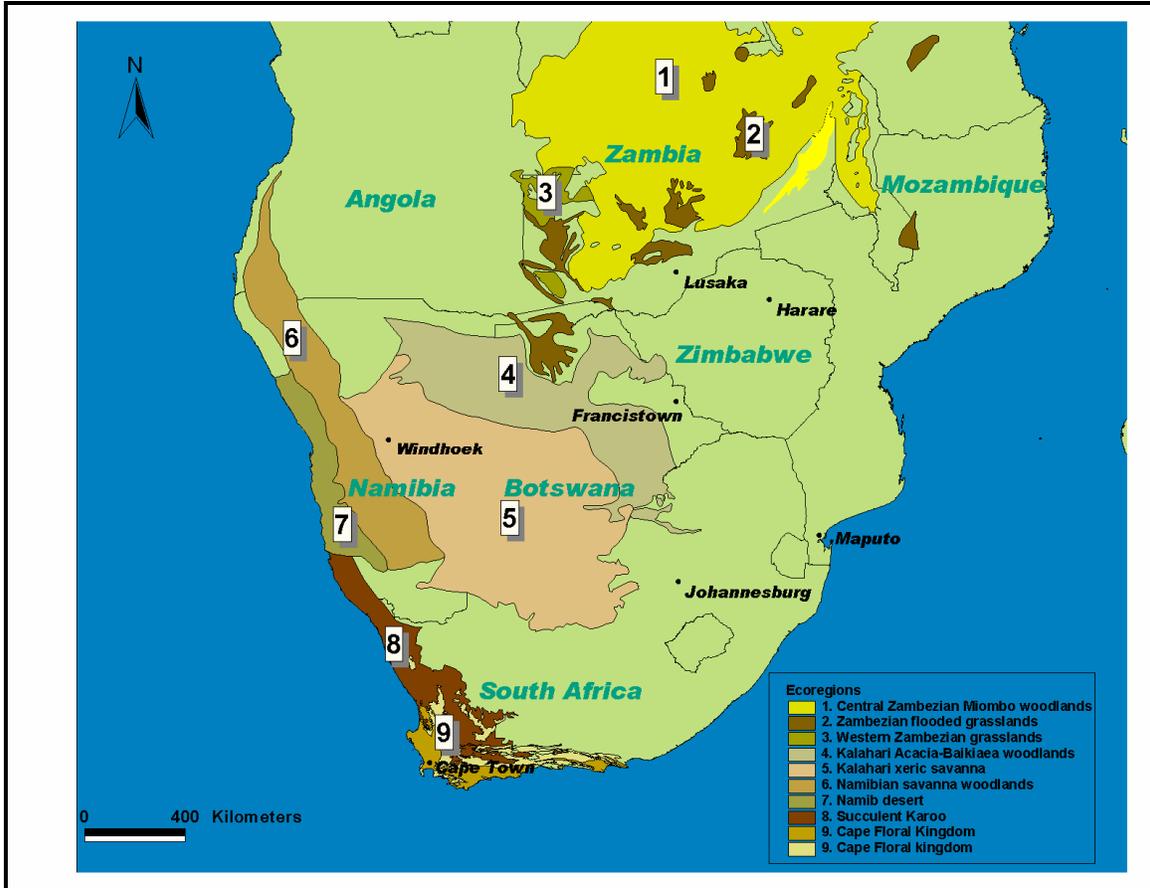
As a pan-continental project Open Africa is careful in respecting the sovereignty of governments and generally enjoys a good working relationship with local, provincial and national authorities inasmuch as it operates in an area in which they are extremely anxious for progress. In South Africa for example many routes have been commissioned and sponsored by local authorities and the Department of Trade and Industry has commissioned professional researchers to make an assessment of Open Africa routes to determine what interventions it can make in promoting the cause of community-based tourism. Whilst the potential outcomes of this are awaited with keen interest, the research itself will be extremely useful.

Appendix 3 – Targeted Ecoregion: Biodiversity value, threat and possible mitigations

Open Africa North-South Tourism Corridor Project

The project would develop sites within the nine ecoregions marked on the map A3.1. below.

MAP A3.1– Ecoregions targeted by the project



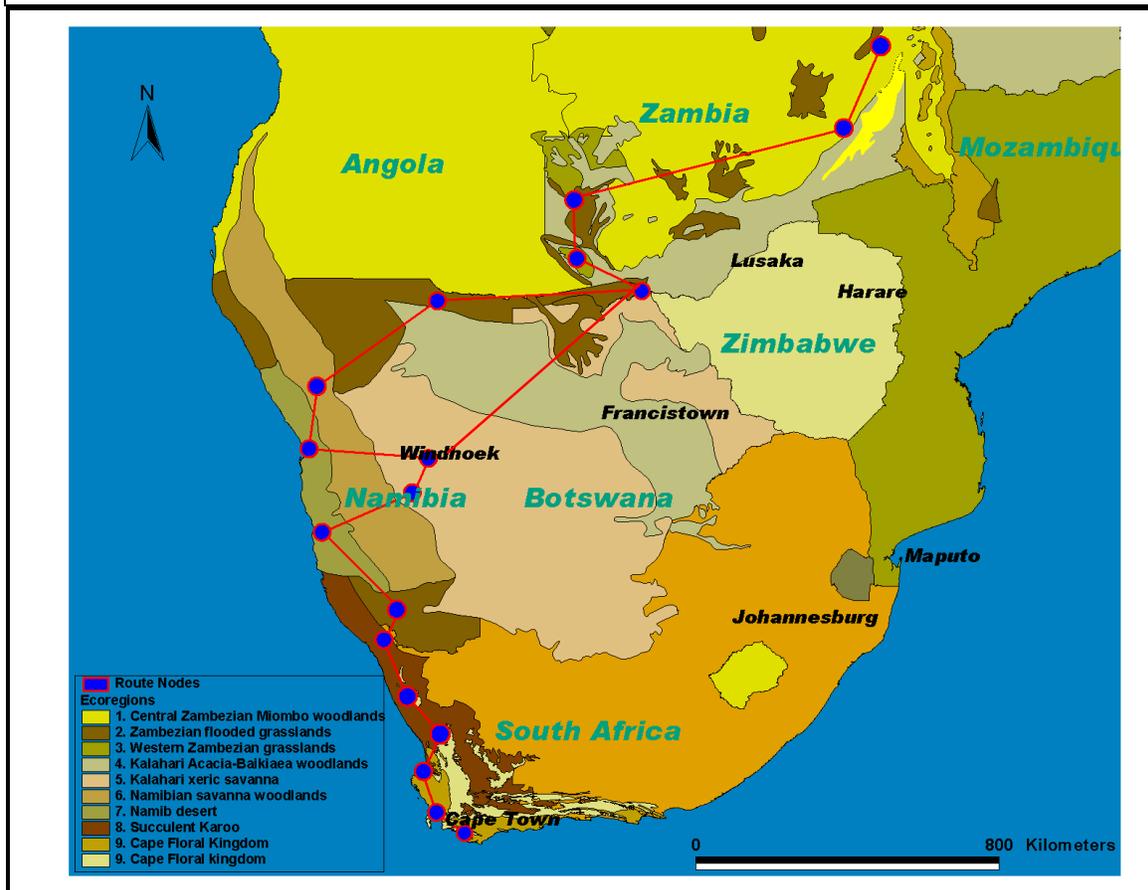
The joined dots on Map A3.2. roughly illustrate how the individual routes will link up to form the proposed corridor. Within this area five existing routes have already been developed, another three are under development and twenty more will be developed under the OANSTC. At the end of this project there will be at least 28 community routes linked together in a continuous network representing the proposed corridor.

Starting in the Cape Floral Region, a World Heritage Site where visitors are able to see the world’s smallest yet greatest floral kingdom, with the highest concentration of plant species per unit area of any place in the world, the corridor will pass through the Richtersveld and Succulent Karoo, one of only two globally recognized biodiversity arid hotspots, containing more than 6,350 vascular plant species, nearly 2,440 of which are endemic to the area. The corridor then moves through four desert types in one area – the Nama Karoo, the Namib, which is the oldest in the world, the Southern Kalahari, and the Succulent Karoo. Here visitors will experience the culture of communities (the San) that still live in the Stone Age, see the world’s only desert elephants together with its oldest living plants (Welwitschia); the Cheetah (and other large

carnivore) rehabilitation centre housing over 70 cheetahs, cave paintings that date back 30 000 years; past the Okavango Delta, one of the largest inland deltas in the world; and the only river (Kavango) that flows inland; from there via the Victoria Falls World Heritage Site, which has the largest curtain of water in the world, and on to the Luangwa River, which is the only river that from source to end is undammed and undeveloped, all the way to Northern Zambia, embracing several national parks and many proclaimed Protected Areas along the entire distance.

Besides the biodiversity hotspots and high levels of endemism in these areas, the reason for choosing them includes road and air accessibility to tourists. Whilst Lusaka, Windhoek and Cape Town are all international aviation gateways, an excellent tar road covers the entire distance between them, with reasonable trunk roads to either side along the way. Presently Cape Town is also their biggest potential market, where Open Africa is based and therefore best placed to wield influence.

Table A3.2 – General areas where routes will connect to form a corridor



A description of biodiversity in each Ecoregion is provided below. For each Ecoregion, a general review of the threat to biodiversity and possible mitigation is proposed.

1. CENTRAL ZAMBEZIAN MIOMBO WOODLANDS

The Central Zambezi Miombo Woodland is one of the largest ecoregions in Africa, ranging from Angola up to the shores of Lake Victoria in Tanzania. All the typical miombo flora are represented here, but this region has a higher degree of floral richness, with far more evergreen trees than elsewhere in the miombo biome.

The region covers about 70 percent of central and northern Zambia. Consisting mainly of broadleaf, deciduous savannas and woodlands, it is characteristically interspersed with edaphic grassland and semi-aquatic vegetation, as well as areas of evergreen groundwater forest.

Rates of faunal endemism vary greatly between taxonomic groups. Mammal endemism is restricted to four species of rodents, namely Monard's dormouse (*Graphiurus monardi*), Rosevear's striped grass mouse (*Lemniscomys roseveari*), and two white-toothed shrews, *Crociodura ansellorum* (CR) and *C. zimmeri* (VU), with the last two being strict endemics. D'Anchieta's fruit bat (*Plerotes anchietae*, DD), a range-restricted species of conservation concern is also found in the area.

As with the other miombo regions, Central Miombo does not support large animals in high densities, although due to the vast size of the region its overall importance for such species is very high. The low large-mammal density is attributed mostly to the harsh dry season, long droughts and the poor soils, which generally support only vegetation of low nutritional value. These conditions tend to favor low numbers of large-bodied animals, such as the endangered elephant (*Loxodonta africana*) and critically endangered black rhino (*Diceros bicornis*), as well as African buffalo (*Syncerus caffer*), which are able to survive on poor-quality forage by consuming large quantities of plant material. Specialized grazers are also common. They selectively feed on grazing high-quality grass shoots, often making use of a range of non-miombo habitats throughout the year. Such specialists include sable antelope (*Hippotragus niger*), roan antelope (*H. equinus*), Lichtenstein's hartebeest (*Alcelaphus buselaphus lichtensteini*), and southern reedbuck (*Redunca arundinum*), all species largely restricted to the miombo belt, as well as eland (*Taurotragus oryx*), and greater kudu (*T. strepsiceros*). Many species make use of the wooded margins or open areas of the numerous grassy floodplains and swamps scattered through the region. Lechwe (*Kobus leche*), puku (*K. vardonii*), tsessebe (*Damaliscus lunatus*), oribi (*Ourebia ourebi*), blue wildebeest (*Connochaetes gnou*) and sitatunga (*Tragelaphus spekii*), are antelope that prefer open grasslands, seasonally flooded or marshy habitat. Waterbuck (*K. ellipsiprymnus*), bushbuck (*Tragelaphus scriptus*), and blue duiker (*Cephalophus monticola*) are mostly found in more wooded areas close to permanent water. Other large ungulates include zebra (*Equus burchelli*) and giraffe (*Giraffa camelopardalis*). Hippopotamus (*Hippopotamus amphibius*) are relatively common to the region.

Large carnivores characteristic to the region include lion (*Panthera leo*), leopard (*P. pardus*), cheetah (*Acinonyx jubatus*), spotted hyena (*Crocuta crocuta*), striped hyena (*Hyaena hyaena*), the endangered African wild dog (*Lycaon pictus*) and side-striped jackal (*Canis adustus*). Smaller predators include caracal (*Caracal caracal*), miombo genet (*Genetta angolensis*), as well as African golden cat (*Profelis aurata*), which periodically wanders into the region from its preferred moist forest habitat in the DRC.

The bird life in the region is particularly rich in species. However, rates of endemism are low with the only strict endemics being Ruwet's masked weaver (*Ploceus ruweti*, DD) and black-faced waxbill (*Estrilda nigriloris*, DD). Although Lilian's lovebird (*Agapornis lilianae*) tends to avoid miombo, several isolated populations are enclosed within moister miombo woodland. The slender-tailed cisticola (*Cisticola melanurus*) is confined to grassy places in well-developed miombo. Several globally threatened water-associated birds have also been recorded in the region. These include: wattled crane (*Grus carunculatus*, VU), slaty egret (*Egretta vinaceigula*, VU) and corncrake (*Crex crex*, VU)⁸. Reptile and amphibian endemism is fairly high. Nineteen reptiles and thirteen amphibians are considered strictly endemic to the region. However, these high levels of local endemism may be a result of insufficient sampling rather than a true representation of an elevated biodiversity importance of this area. Distribution ranges for some of these apparently narrowly endemic animals may therefore be much greater than presently assumed. The Nile crocodile (*Crocodylus niloticus*) and the African sharp-nosed crocodile (*C. cataphractus*) are also found in the region.

THREATS

In Zambia, "citimene," a traditional form of ash-fertilizing agriculture is practiced. Trees more than 200 mm in diameter are pollarded and the branches dragged into an area about 100m across. Once dry, this fuel is burned and crops are planted on the ash bed. This form of agriculture is unsustainable, as woody biomass is used at a greater rate than it can re-grow. In addition, these ash gardens are abandoned after a few years,

which mean that in combination with population growth, this form of agriculture is resulting in escalated forest clearance.

The high incidence of fires in the area poses further threats to the region. Although fire is an integral part of miombo ecology, human setting of fires is believed to have increased the frequency of fire far above the natural level. Most of the deliberate burning and the uncontrolled fires occur at the end of the dry season, just before the onset of the summer rains. The fires burn with greater intensity as quantities of dry fuel accumulate. These hotter fires are destructive even to fire tolerant species and removes species that are less fire-tolerant from the miombo, thereby reducing species diversity.

Although large-scale cultivation is relatively uncommon, subsistence agriculture is practiced by as much as 75 percent of the population. Growing staple and cash crops such as maize, cassava, sorghum, millet, and tobacco, pose significant threats to the region. These losses increase each year as new land is cleared to avoid the risk of root-knot nematodes. The curing of tobacco is presently carried out using charcoal, compounding environmental problems. Livestock pressures are also high, with overgrazing being a common feature in the more heavily populated areas.

Of the industrial activities occurring in the region, mining in Zambia poses one of the greater threats. Land degradation and water pollution are just two of the problems caused by mineral prospecting, extraction, and processing. After the mining is complete, large tracts of land covered with mine dumps and slag lie barren. This toxicity has serious consequences for conservation of the area, as high levels of copper are lethal to animals.

Poaching and illegal hunting for bushmeat have a significant impact on the wildlife throughout the region. Elephant and rhino poaching have been extremely severe throughout the region. Most of the areas outside parks and reserves have relatively little wildlife left.

POSSIBLE PROJECT INTERVENTIONS

(Note: Where interventions are universal in that they apply to most areas, they are marked with an asterisk and not repeated in each instance)

- The community benefits from the establishment of a route will be that they become focused around a vision of common purpose, which results in the formation of a structure (Route Forum) that is provided with a framework within which to brand their product, strategize their approach, coordinate their activities, measure and manage their progress, and leverage their strengths as a collective. Furthermore it places their product in the global marketplace via the Worldwide Web and links them to a network that enables them to share in the vast hands-on solutions that other communities facing similar challenges to their own have worked out.*
- Tourism could encourage people to diversify their activities and to not solely rely on agriculture as a means of income, while simultaneously focusing the attention of the local populace on the role that the forests play in attracting tourism and therefore providing an incentive to protect them. The intention here would be to retard the reliance on "citimene" as the sole source of income e.g., through both attracting tourists and selling artifacts to them that are locally made.*
- Whereas presently the mining industry has little regard for how its activities may be impacting on discouraging tourism, by encouraging them to join in the vision for a local route, the intention would be to inspire better practices in mitigating negative consequences for which they are responsible e.g., The Palabora Mining Company in South Africa, has become involved in local tourism initiatives by conducting tours to old metalworking sites on their property and in doing so rehabilitated a section of a previous mining area.*
- Throughout this application poaching emerges as a major threat and it occurs primarily for two reasons:
 - i. As a method of attaining food; or
 - ii. For the purposes of trading illegally in animal products. Revenue derived from tourism will reduce the need to hunt as a food source – it will focus the attention of communities on wildlife as a tourism attraction and therefore encourage conservation, while communities themselves will take ownership of the need to police against poaching.*

2. ZAMBEZIAN FLOODED GRASSLANDS

Embedded predominantly within miombo and mopane woodlands, the Zambebian Flooded Grasslands form a discontinuous region distributed between northern Botswana in the south, to northern Tanzania. The part of this ecoregion that OANSTC is concerned with at this stage is the Okavango Delta in Botswana; the Barotse Floodplain, the Kafue Flats, Busanga and Lukanga Swamps, Lake Mweru, Mweru Marsh and Bangweulu/Luapala/Chambezi system in Zambia.

BIODIVERSITY

In general, there are rather few endemic species in this region, but there are high levels of species richness. For example, there are no endemic mammals in the region. However, it supports high mammal species richness, including huge herds of large mammals that still undertake some seasonal migrations. The Kafue Flats support large numbers of grazing mammals, including zebra (*Equus burchelli*), sitatunga (*Tragelaphus spekei*) and buffalo (*Bubalus sp.*), as well as predators such as cheetah (*Acinonyx jubatus*) and wild dog (*Lycaon pictus*). The Kafue lechwe (*Kobus leche kafuensis*) is the region's most famous animal and is endemic to the Flats; it is one of three different races of lechwe, or marsh antelope, adapted specifically to living in wetlands.

Lechwe (*Kobus leche*) populations are known to exceed 20,000 in Moremi Game Reserve, while more than 35,000 individuals of the endemic subspecies, the Kafue lechwe (*Kobus leche kafuensis*) have been recorded in Lochinvar National Park. Many of the ungulates that inhabit this region move seasonally through the floodplain in response to the fluctuating water levels. Tsessebe (*Damaliscus lunatus*), which are mostly restricted to seasonally flooded grasslands, are known to follow the receding waters in the dry season and to retreat to higher ground when the waters rise. Wildebeest (*Connochaetes taurinus*) and oribi (*Ourebia ourebi*) also frequent extensive floodplains and grasslands, although the latter favor less waterlogged areas such as termitaries, where herbs and woody growth provide food and cover. Waterbuck (*Kobus ellipsiprymnus*), puku (*Kobus vardoni*), southern reedbuck (*Redunca arundinum*), and sitatunga (*Tragelaphus spekei*) are also common inhabitants of the floodplains, although these species tend to prefer the reed beds or more wooded vegetation on the margins of the floodplains.¹⁴ Greater kudu (*T. strepsiceros*), hartbeest (*Alcelaphus buselaphus*), steenbok (*Aepyceros melampus*), sable (*Hippotragus niger*) and roan antelope (*H. equinus*) are found in fewer numbers, generally preferring the woodland margins of inundated grasslands. Other herbivores attracted to these verdant pastures include elephant (*Loxodonta africana*), Burchell's zebra (*Equus burchelli*) and eland (*Taurotragus oryx*). Hippo (*Hippotragus amphibius*) is found in almost all of the ecoregion's prominent floodplains.

Although many mammals are common to the entire region, the disjunct nature of the Zambebian flooded grasslands has resulted in fairly distinct species compositions. For example, black lechwe (*Kobus leche smithermani*), tsessebe, and sitatunga dominate the Bangweulu basin, while the Kafue lechwe and Burchell's zebra are amongst the most prominent herbivores in Kafue Flats.¹⁵ Similar patterns are evident with the top predators, where different species tend to predominate in different areas. These large carnivores include lion (*Panthera leo*), leopard (*P. pardus*), cheetah (*Acinonyx jubatus*), spotted hyaena (*Crocuta crocuta*) and wild dog (*Lycaon pictus*). Smaller predators characteristic of this inundated ecoregion include the water mongoose (*Atilax paludinosus*), the Cape clawless otter (*Aonyx capensis*) and the spotted-necked otter (*Lutra maculicollis*).

This region supports a high avifaunal diversity, and provides important habitat to a range of wetland birds. More than 450 bird species occur regularly in Kafue Flats, some throughout the year and others passing through on migration. Kafue is one of the most important sites in Africa for wattled crane (*Grus carunculatus*), ranked as Vulnerable by IUCN –The World Conservation Union.

¹⁴ Kindgon, J. 1997. The Kingdon Field Guide to African Mammals. Academic Press, San Diego.

¹⁵ Chabwela, H.N. 1992. The ecology and resource use of the Bangweulu Basin and the Kafue Flats. Pages 11-25 in R. C. V. Jeffrey, H.N. Chabwela, G. Howard, and P.J. Dugan, editors. Managing the wetlands of Kafue Flats and Bangweulu Basin. Kafue National Park, Zambia. IUCN, Gland, Switzerland.

The region also provides habitat for endemic and near endemic bird species, as well as five others that are considered globally rare. Chaplin's barbet (*Lybius chaplini*) is endemic to south central Zambia, concentrated in the Kafue basin between Kafue National Park and Lusaka.¹⁶ Reliant on miombo woodland or open country bearing fruiting trees, this species is mostly found on the woody margins of flooded grassland areas. The Tanzania masked weaver (*Ploceus reichardi*) occurs only in a few swamps in western Tanzania, northern Zambia, and adjacent areas of the Democratic Republic of Congo (DRC).¹⁷ Two further restricted range birds, the Katanga masked weaver (*Ploceus katangae*) and the grey-crested helmet-shrike (*Prionops poliophus*) occur in this region. In addition, this region falls within the center of distribution of the globally threatened slaty egret (*Egretta vinaceigula*, VU).¹⁸ Largely restricted to this region, this species is an uncommon resident of the marshes and floodplains of the Okavango, Chobe, and the Caprivi Strip as well as from the Zambezi Valley northwards to the Bangweulu swamps. Other globally threatened species recorded in this region include wattled crane (*Bugeranus carunculatus*, VU), which has its main breeding populations in the wetlands of Zambia, including the Kafue Flats and the Bangweulu and Busanga swamps¹⁹, corncrake (*Crex crex*, VU), lesser kestrel (*Falco naumanni*, VU), great snipe (*Gallinago media*) and shoebill stork (*Balaeniceps rex*).¹⁷ Other rare birds found in these wetlands include the long-toed flufftail (*Sarothrura lugens*) and the white-headed plover (*Vanellus albiceps*).

Information on plant and invertebrate diversity of these wetlands is relatively sparse. However, it is known that 16 species of butterfly are found only in the Zambezi River Basin²⁰.

THREATS

The combination of historically low human population densities, largely due to water-borne diseases, and the presence of tsetse flies¹⁴ – in and around the wetlands of this region, and the more recent establishment of parks and reserves centered on several of these floodplains, has ensured that many natural habitats remain. Even in areas that have been home to significant numbers of people, the disturbances and impacts of human activity needs to be seen in the context that wetlands and their surrounding landscapes are inherently unstable and are constantly evolving and changing.²¹ Wetland organisms and communities have evolved and adapted to thrive in an environment that is in constant flux.

However, with rapidly expanding populations and increasing use and manipulation of natural resources, this region is facing increasing threats from a variety of sources. These include: increased land clearance and deforestation of swamp forests and surrounding woodlands, poaching, pollution and eutrophication, and the modification of natural flow regimes.

While several of the wetlands such as the Barotse Floodplain and the Kafue flats have been occupied for centuries, large changes are becoming evident in many of the areas as human activities and land-use intensifies. These changes are largely a result of increased human populations, increased levels of technology available, increased government and donor inputs and better control of tsetse fly. Many of the seasonally flooded grasslands have historically been used for grazing during the dry season. However, several areas that only used to be seasonally grazed are now permanently occupied and cultivated.

¹⁶ Fry, C.H., S. Keith, and E.K. Urban. 1988. The Birds of Africa. Vol III. Harcourt Brace Jovanovich Publishers. London.

¹⁷ Clements, J.F. 1991. Birds of the World. A Check List. Ibis Publishing Company, Vista, California.

¹⁸ Hilton-Taylor, C. 2000. The 2000 IUCN red list of threatened species. IUCN, Gland, Switzerland and Cambridge, UK.

¹⁹ Stuart, S.N. and R.J. Adams. 1990. Biodiversity in Sub-Saharan Africa and its islands: conservation, management and sustainable use. Occasional Papers of the IUCN Species Survival Commission No. 6. IUCN, Gland, Switzerland.

²⁰ Pennington, K.M. 1978. Pennington's Butterflies of Southern Africa. Ad donker, Johannesburg, South Africa. 670 pp

²¹ Timberlake, J. 1998. Biodiversity of the Zambezi Basin Wetlands. Phase 1: Review and Preliminary Assessment of Available Information. Volume 1: Main Report. Consultancy report for IUCN- Regional Office for Southern Africa, Harare, Zimbabwe.

Fire has always played a role in the ecology of grasslands and woodlands. However it has most probably never been as frequent as it is now, due to the increase of fire setting by humans. The increased incidence of repetitive fires may eliminate fire-sensitive species, thereby reducing species diversity, and can also result in over-utilization of recovering areas, such as on the Barotse Floodplain.²⁰

While most of the region consists of open grasslands, deforestation of swamp forest patches and surrounding woodlands still has a considerable impact on the healthy function of this region. Opening up the tree canopy increases the risk of fires. In addition, it reduces the habitat for many mammals such as greater kudu, hartebeest, sable and roan antelope, as well as birds that rely on the woodland-grassland interface for food or shelter.

Poaching and illegal hunting for bushmeat are continuing and increasing in several areas of the region.²⁰ Hunting of large animals and their gradual replacement by domestic cattle, goats and sheep threaten many mammal populations in the wetlands. This is a problem in all of the wetland areas, but especially in those with higher population densities where there is little effective protection. In the Kafue Flats in Zambia, for example, large mammals are now confined almost exclusively to two national parks (Blue Lagoon and Lochinvar National Parks, a combined area of only 860km²). In other areas, the local human populations have removed these species for food or to reduce crop-raiding problems. Furthermore, although many of these floodplains are officially protected, ineffective management and lack of funds has resulted in uncontrolled poaching of animals such as hippo,²⁰ elephant and rhino.²² In addition, overfishing is also becoming an issue of increasing concern. For example, over 50 percent of the fish production for Zambia comes from the Bangweulu basin and Kafue Flats.¹⁴

The biodiversity and integrity of many of the wetlands of the region are further threatened by pollution, especially close to urban centers, where industrial, domestic wastes and agricultural runoff flow unchecked into the water catchments. In some of these wetlands and floodplains, eutrophication of waters has led to serious infestations of aquatic weeds such as *Salvinia molesta*, *Eichornia crassipes* and *Pistia stratioides*, which has resulted in decreased fish production, displacement in natural fauna and flora, and overall loss of biodiversity.²⁰ Pollution from pesticides such as DDT (dichloro-diphenyl-trichloroethane) and chemical sprays used in tsetse fly control may also be severely affecting the biota of the region. Floodplains occurring in the vicinity of mines face serious problems relating to water pollution both in terms of chemical wastes and accumulation of heavy metals. Reports from the Copperbelt have shown that the copper content in rivers found in affected areas was up to 80 times higher than the acceptable level.²³ The Kafue River is known to be contaminated with heavy metals and agricultural run-off. There is therefore considerable concern regarding the effects that bioaccumulation of these contaminants may have on animals that depend on the Kafue Flats for their sustenance.²⁴

Changes in the frequency, magnitude and variability of rainfall due to climate change as well as the anthropogenically induced modification of natural flow regimes through water abstraction and dam construction are of considerable threat to the region. Water diversion for irrigation and hydroelectric dams has already affected some floodplain systems. For example, the Itzehitezhi Dam on the Kafue River has changed the flood regime such that unseasonal flooding occurs on the flats, threatening the breeding sites of the wattled (*Grus carunculatus*) and grey crowned (*Balearica regulorum*) cranes. The area of land available for wildlife and for human uses such as fishing and recession farming has been further reduced by dam operations. Prior to the dam, about 6,000km² of land flooded in wet years. Now the flooding generally

²² Stuart, S.N. and R.J. Adams. 1990. Biodiversity in Sub-Saharan Africa and its islands: conservation, management and sustainable use. Occasional Papers of the IUCN Species Survival Commission No. 6. IUCN, Gland, Switzerland.

²³ Moyo, S., P. O'Keefe and M. Sill. 1993. The Southern African Environment. The ETC Foundation Earthscan Publication Limited. London.

²⁴ Frazier, S., editor. 1999. A Directory of Wetlands of International Importance. Wetlands International and Ramsar Convention Bureau. Compact Disc. Metatec, Netherlands.

covers 2,000km² in normal years and 5,000km² in wet years. Weeds have invaded grazing areas and cattle herders must travel much further to water their flocks because of the altered flood regime.

A similar fate could await the Okavango Delta. Botswana, Namibia, Angola and Zambia would like to extract large quantities of water from the Okavango and Kwando rivers and their tributaries for irrigation and urban water use. Namibia is currently negotiating drawing an estimated 20 million cubic meters of water annually from the Okavango River system via the Eastern National Water Carrier project. Excess abstraction from the Okavango River could have deleterious effects on functioning of the delta ecosystem, as well as other effects such as the transfer of fishes from the Okavango to more southerly drainage systems.

More recent damming of rivers, and conversion to agricultural systems is resulting in loss of habitat in parts of the ecoregion. In the Okavango Delta, concern was raised that the erection of a fence to control the movement of buffaloes, which carry disease, would fragment the migrations of large mammals in the area.

POSSIBLE PROJECT INTERVENTIONS

- By placing people within the framework of a route, it gives them greater authority and clout in influencing management and planning decisions in and around protected areas as this impacts on the experience of their customers. For example, in the St. Lucia Wetland area in the KwaZulu Natal Province of South Africa, where Open Africa has established the Elephant Coast Route, historically the environment was under severe threat as the result of nearby titanium mining activities, where subsequently growing utilization of the tourism potential of the area has brought about far more effective implementation of regulatory procedures.* This has happened to such an extent, that the mining company concerned is now not only a partner in the process, but recently also won an award environmental responsibility.
- Whilst presently developing a route along the banks of the Zambezi river in Zambia, concern was expressed that the quality of fishing, which is one of the area's main attractors is diminishing due to unmanaged harvesting. This resulted in discussions that deduced the following decisions by the local community to the effect that:
 - (a) They can set up patrols to monitor the off take; and
 - (b) They could set up and monitor their own regulations with regard to the size of catches, both in terms of volume and weight. Basically this means checking that people do not use mosquito nets and that a catch and release system is practiced with juvenile fish
- Tourism increases awareness of the importance of wetlands and with that what the benefits are of protecting them. Again, by way of example, the St. Lucia Wetlands fortnightly issue an electronic "newsflash" to stakeholders and interested parties commenting on both positive and negative happenings within the area. Simply by analyzing and comparing the contents of these newsflashes over a period of time, it is possible to discern trends that could or should be addressed.
- Tourism activities put pressure on the authorities to practice conservation more effectively, e.g., a lodge or campsite is located on a lake that becomes weed infested and the operators of this facility put pressure on the authorities to solve this problem or else face deprivation of tourism revenues. If it was not for tourism they wouldn't worry about the weeds.*
- The leverage that forming themselves into a route entity gives to communities, enables them to exercise influence over what government actions take place in their area, such as in the case of the building of dams. This in itself is not a complete deterrent to inappropriate constructions, but it does increase the weight of the voice of the people.*
- Because of the success of the South African Blue Crane Routes, Open Africa was recently approached by the Endangered Wildlife Trust to assist them in considering the feasibility of establishing a Crane Route in this ecoregion.

3. WESTERN ZAMBIAN GRASSLANDS

This region is located in southwestern Zambia, in two main portions within White's²⁵ Zambesian Center of Endemism. It extends marginally into Angola, where the grasslands are soon replaced by the Angolan Miombo Woodland ecoregion. The northern and main portion of the region consists of edaphic grasslands surrounding the patchy Zambebian *Cryptosepalum* Dry Forest ecoregion. The main factor separating the two ecoregions is the seasonal waterlogging of the soils in the grasslands that prevents tree growth. The Barotse wetlands, which are part of the Zambebian Flooded Grasslands ecoregion, lie between the main north and south portions of the Western Zambebian Grasslands. The southern portion of the region is an area of Kalahari Sands grassland surrounded by Zambebian *Baikiaea* Woodland.

The mammalian fauna of the area is representative of that of the southern savannas, and some 140 species are known to occur in the region. Large numbers of ungulates graze on the extensive plains, and the Liuwa Plain is home to about 30,000 migratory blue wildebeest (*Connochaetes taurinus*), the largest herd in Zambia. The wildebeest herds start their northeastward migration into Angola in June. The migration takes five months and covers more than 200 km. The animals return to the southern part of Liuwa Plain in October. Approximately 3,000 red lechwe (*Kobus leche*), move eastwards from Liuwa Plain to the Zambezi floodplain in the dry season.²⁶

Other ungulate species found in the area include tsessebe (*Damaliscus lunatus*), oribi (*Ourebia ourebi*), reedbuck (*Redunca arundinum*), zebra (*Equus burchelli*), roan antelope (*Hippotragus equinus*), sable antelope (*H. niger*), kudu (*Tragelaphus strepsiceros*), and Lichtenstein's hartebeest (*Signoceros lichtensteinii*). Also present, but more rarely seen ungulates include the following: common duiker (*Sylvicapra grimmia*), sitatunga (*Tragelaphus spekei*), buffalo (*Syncerus caffer*), steenbok (*Raphicerus campestris*), eland (*Taurotragus oryx*), and grysbok (*Raphicerus sharpei*). Large carnivores include lion (*Panthera leo*), leopard (*P. pardis*), African wild dog (*Lycaon pictus*), cheetah (*Acinonyx jubatus*), and spotted hyena (*Crocuta crocuta*), though their numbers and conservation status are poorly known and thought to be low. Lions are reported to be largely extinct in Liuwa Plain. Hippopotamuses (*Hippopotamus amphibius*) are common in the rivers.

The ecoregion supports a variety of bird life including small seed-eating passerines, raptors, and many waterbirds. Bird life is particularly abundant in the flood season. The avifauna of the grasslands is partly associated with wetland bird fauna and partly with the avifauna of surrounding woodlands. Many species, including migrants, breed in the grass when floods are receding, starting about June. Two rare birds of special conservation concern occur in the region: wattled crane (*Bugeranus carunculatus*) and slaty egret (*Egretta vinaceigula*). Both are considered vulnerable because they are limited to floodplain habitats and are threatened by disturbance and habitat destruction.

THREATS

The GMA and both national parks in the region experience considerable levels of poaching. This takes the form of subsistence hunting by the local residents and commercial poaching, mostly by outsiders. Birds are hunted and trapped for food as well as for the caged bird trade, and eggs and nestlings are collected. The poaching problem has been worsened by the availability of firearms acquired from freedom fighters in the liberation struggle in Angola and Namibia, while those who cannot afford firearms use wire snares²⁵. Residents of Liuwa Plain, the GMA, and those who live along rivers receive bags of maize and other forms of payment from poachers based in towns, in return for cooperation. Migrating animals outside the parks are not protected at all, and pressure from poachers is intense around both national parks.

²⁵ White, F. 1983. The vegetation of Africa: a descriptive memoir to accompany the UNESCO/AETFAT/UNSO vegetation map of Africa. UNESCO, Paris, France.

²⁶ Muleta, S., P. Simasiku, G. Kalyocha, C. Kasutu, M. Walusiku, and S. Mwiya. 1996. Proposed Terms of Reference for the preparation of the Management Plan for Liuwa Plains National Park. Report prepared for IUCN Upper Zambezi Wetlands and Natural Resources Management Project, Western Province, Zambia.

POSSIBLE PROJECT INTERVENTIONS

- Where in an area like this, the prevention of poaching is the concern of only a small number of people/agencies, the many other interested bodies embraced by the route formation process, significantly increases anti-poaching sentiments and actions.* Open Africa has one example where the effect has been for poachers to be employed as guides in conservancies.
- More often than not, the communities that Open Africa encounters are bereft of pride, hope and confidence, having concluded after many years of struggle that they have neither the assets, talent or resources to improve their lot. Being made aware of their strengths through the Open Africa process, profoundly alters this mindset, which without fail results in the emergence among them of social entrepreneurs who enthusiastically shoulder the responsibility of managing the routes progression.*

4. KALAHARI ACACIA-BAIKIAEA WOODLAND

The Kalahari *Acacia-Baikiaea* Woodland ecoregion is found in the center of southern Africa. The largest area of the region occupies a broad band from northern Namibia running diagonally across Botswana, ending in the southeast near the border with South Africa. Within Botswana, a smaller area extends northwards between the Okavango Delta and the Makgadikgadi Pans towards the border of the Chobe Nature Reserve and then moves east, just crossing the border into Zimbabwe. To the south, a small area of the ecoregion extends into the northern province of South Africa, into an area called the Tuli Block.

BIODIVERSITY

Within White's²⁴ classification, the region falls into two phytochoria: the Zambezian region and the Kalahari-Highveld Transition Zone. The Kalahari *Acacia-Baikiaea* Woodland is at the southern end of the Zambezian phytogeographic region, which is rich in total plant species (6,000 species) in comparison with other regions. On a per unit area basis however, the species richness is low, as species are evenly distributed throughout the estimated 2.6 million km². The southern end of the Zambezian region is particularly impoverished and the region therefore has a relatively low level of species richness with few endemics. The Kalahari-Highveld Transition Zone is a region of transition from the tropical Zambezian to the arid Karoo-Namib regions. Although the largest phytogeographical region in southern Africa, it is relatively poor in species and has few endemics, exemplifying its transitional nature.

The levels of species richness and endemism for the fauna of the region reflect the patterns of the flora. There is a relatively high level of total species richness but a low per unit area richness and low local endemism. The region does support many of the charismatic large mammals associated with African savannas. While these species are not endemic, several are listed as threatened by the IUCN, including the critically endangered black rhinoceros (*Diceros bicornis*), and two species listed as vulnerable, the cheetah (*Acinonyx jubatus*) and the brown hyena (*Hyaena brunnea*).¹⁷ Predators range from smaller species such as African civet (*Civettictis civetta*) and serval (*Felis serval*) to lion (*Panthera leo*), cheetah, leopard (*Panthera pardus*), African wild dog (*Lycaon pictus*) and both brown and spotted hyena (*Crocuta crocuta*).

The ecoregion has a rich and colorful birdlife, with 468 species recorded to date. Bradfield's hornbill (*Tockus bradfieldi*) is one of only two species considered near-endemic to this region, found in the north of the region, the Okavango Delta, and northwest Zimbabwe, where it utilizes *Baikiaea* and mixed Mopane woodlands. The blackfaced babbler (*Turdoides melanops*) is the other near-endemic, found in the area west of the Okavango Delta and extending into Namibia. It inhabits the understory of broad-leafed and mixed *Acacia* woodlands. The lappet-faced vulture (*Torgos tracheliotus*), is considered vulnerable by BirdLife International²⁷ and is found throughout the region. There are 31 amphibian and 92 reptile species found within the region. None of the amphibian species is endemic or near-endemic, but six of the reptile species are near-endemic, and one, the Tsodilo gecko (*Pachydactylus tsodiloensis*), is a strict endemic. It is found only on the Tsodilo hills in the northwest of the ecoregion. Near-endemics include Kalahari purple-glossed

²⁷ BirdLife International. 2000. Threatened birds of the world. Barcelona and Lynx Edicions and BirdLife International, Cambridge, UK.

snake (*Amblyodipsas ventrimaculata*), Kalahari ground gecko (*Colopus wahlbergii*), and Leonard's spade-snouted worm lizard (*Monopeltis leonhardi*).

Many of the large herbivores found in the region undertake seasonal migrations, especially during droughts. Blue wildebeest (*Connochaetes taurinus*), eland (*Taurotragus oryx*), zebra (*Equus burchelli*), buffalo (*Syncerus caffer*), and red hartebeest (*Alcelaphus buselaphus*) all migrate within this region. Increasingly, veterinary foot and mouth control fences are restricting migration routes and endangering wildlife populations.

THREATS

The cattle industry is the biggest threat to conservation within the region. Increased cattle herds cause overgrazing, which changes the composition of natural vegetation, particularly by the replacement of sweet grasses such as *Chloris gayana*, *Cynodon dactylon*, *Eragrostis pilosa*, and *Urochloa trichopus* by less palatable species such as *Aristida congesta*. The influx of people and livestock in previously uninhabited areas is threatening wildlife populations. The decline of wildlife populations is caused by competing with livestock for grazing, hunting of wild animals, and the removal of species considered problem animals, such as predators. The poisoning of predators has disastrous effects for other species, and has caused a large decline in lappet-faced vultures²⁸. The expansion of the cattle industry into previously inaccessible areas has been facilitated by the virtual elimination of tsetse fly and by logistical support from the Botswana government. The government has provided land, finance, boreholes, veterinary services, genetic improvement programs, supplementary feeding subsidies, and transport to market and abattoir facilities.²⁹

Veterinary cordon fences are erected to control the spread of foot and mouth disease to cattle and pose a major threat to wildlife populations.³⁰ Networks of these fences criss-cross much of Botswana. Within the ecoregion, the Kuke Veterinary fence cuts across the central Kalahari, across the middle of the ecoregion. The Makalamakedi veterinary fence runs southeast of the Okavango Delta, meeting the Kuke fence. Other fences occur throughout the area between the Okavango Delta and Makgadigadi Pans. These fences have been strongly criticized by conservationists, because they cause the massive die-off of migratory herbivores. Many wildlife species in this semi-arid region have ranges that vary according to seasons. During drought, large herbivores such as wildebeest, eland, and hartebeest move in search of surface water. Wildebeest spend the wetter months along the boundary between the towns of Ghanzi and Kgalagadi, and move northeast towards the Central Kalahari Game Reserve during the dry season. They encounter the Kuke and Makalamakedi veterinary fences, and are channeled into the Boteti and Lake Xau areas. These areas are highly overgrazed by cattle, particularly near water sources. As a result, the wildebeest will die of starvation if they remain here near water but will die of thirst if they move to better grazing.

Hartebeests show a similar migratory pattern during times of drought, with 83 percent of the population lost in the 1980's drought. Buffalo and zebra are mainly concentrated around the permanent water of the Okavango Delta and Chobe areas in the dry season. During the wet season, these herds have historically moved south. Fences, running from east to west above the Makgadigadi Pans area, now prevent this migration. The herds are now channeled east above the fence and cross the Botswana border into Zimbabwe. There has been a massive decline in buffalo and zebra populations since 1987. The veterinary cordon fences are erected without environmental impact assessments, but with full knowledge that they have a massive impact on populations of wild ungulates during times of drought.

Hunting is considered the mainstay of tourism in the region and gives the best return on investment.³³ Commercial hunting was introduced in the early 1960's when hunting was outlawed in Kenya, and hunting companies looked for new hunting grounds. Large concession areas were allocated to hunting companies at the time. In 1978, the unified hunting regulations were put into place, and licenses were available at low

²⁸ Anderson, M.D. 2000. Raptor conservation in the Northern Cape Province, South Africa. *Ostrich* 71: 25-32.

²⁹ Williamson, D. 1994. Botswana: environmental policies and practices under scrutiny. The Lomba Archives. Lindlife, Cape Town.

³⁰ Penry, H. 1994. Bird Atlas of Botswana. University of Natal Press, Pietermaritzberg, South Africa.

prices for traditional hunting. These licenses were illicitly bought by non-rural citizens, who had no need to hunt, and sold to illegal hunting operations at higher prices. Such abuses of the system have disadvantaged the rural people, who are dependent on hunting for their subsistence and has resulted in negative attitudes towards the Department of Wildlife and National Parks (DWNP). However, the licenses are distributed on a quota system and hence are not a major threat to the wildlife of the area. Illegal hunting and poaching are serious threats to wildlife in the region; particularly to the white and black rhinoceros.²¹ Poaching counter-measures need to be properly implemented and additional resources allocated to this activity.

After independence, the mineral sector burgeoned to become the driving force of the area's economic growth.³⁴ The principle mineral developments include the diamond mines at Orapa and Lethlakane in the center of the region. While these mines pose little threat to the conservation of the region as a whole, they have developed an industry based on a non-renewable resource. Fortunately, the diamond reserves are large, and the mines are expected to last well into the twenty-first century. This will permit time to develop economic strategies that are based on renewable resources, such as tourism.

POSSIBLE PROJECT INTERVENTIONS

- The previously mentioned change in mindsets is evidenced on several of Open Africa's existing routes, where farmers are now enjoying incremental tourism revenue of the same resource base. On some routes Open Africa already has examples of farmers creating "vulture restaurants", where they actually feed these animals in the wild in order to encourage their protection in the interest of tourism.*
- Whilst tourism has no influence in discouraging the erection of veterinary fences, in many instances where farmers are practicing agri-tourism and creating conservancies, many border fences that have no veterinary significance are being taken down.

5. THE KALAHARI XERIC SAVANNA

The Kalahari Xeric Savanna is characterized by a harsh climate, where temperatures may increase by 45°C from night to day, and rainfall is infrequent. Rain only falls on the reddish-brown Kalahari sands during the summer, pelting the savanna with violent, localized storms. Although this area is semi-arid, there is an impressive diversity of migratory birds and large mammals, both herbivorous and carnivorous. A considerable amount (approximately 18 percent) of this region is protected. Where it is not protected, heavy grazing has degraded the habitat. Fences are a serious problem because they obstruct the migratory routes of ungulates, and they pose significant threats to biodiversity in unprotected areas.

The Kalahari Xeric Savanna region stretches across northwestern South Africa, southern Botswana and southeastern Namibia. Most of it lies on the level plains of the Kalahari Basin, interrupted by long parallel sand dunes in the south.

BIODIVERSITY

Plant species richness per unit area in the Xeric Kalahari Savanna is among the lowest of all the southern African eco-regions. Animal endemism is also low; there are no strictly endemic birds and only three near-endemics, only one near-endemic amphibian, one strictly endemic reptile (*Typhlosaurus gariensis*) with nine near-endemic reptiles, and a single near-endemic small mammal, Brants's whistling rat (*Parotomys brantsii*).

However, despite the low rates of endemism, the diversity of large mammals at all levels of the food chain is remarkable for such an oligotrophic and arid system. Some flora and fauna are almost synonymous with the region. These include the camelthorn tree, gemsbok (*Oryx gazella*), sociable weaver (*Philetairus socius*), and Kalahari lion (*Panthera leo*).

Apart from the Kalahari lion, the ecoregion boasts an impressive array of other large predators, mainly in protected areas. These include the cheetah (*Acinonyx jubatus* VU), leopard (*Panthera pardus*), spotted (*Crocuta crocuta* LR) and brown (*Hyaena brunnea* LR) hyena, and wild dog (*Lycaon pictus* EN). The

representation of smaller vertebrate predators is also remarkable. Among the mammals are the aardwolf (*Proteles cristata*), caracal (*Felis caracal*), black-backed jackal (*Canis mesomelas*), honey badger (*Mellivora capensis*), African wild cat (*Felis lybica*), black-footed cat (*Felis nigripes*), striped polecat (*Ictonyx striatus*), common genet (*Genetta genetta*), bat-eared and Cape fox (*Otocyon megalotis*, *Vulpes chama*), as well as meerkat (*Suricata suricatta*) and three species of mongoose, banded (*Mungos mungo*), slender (*Herpestes sanguinea*), and yellow (*Cynictis penicillata*).

Raptors include the secretary bird (*Sagittarius serpentarius*), a number of eagles including the martial eagle (*Polemaetus bellicosus*), a variety of owls, including the giant eagle owl (*Bubo lacteus*) and a collection of falcons, goshawks, kestrels, and kites. Among the reptilian predators are the boomslang (*Dispholidus typus typus*), Cape cobra (*Naja nivea*), puff adder (*Bitis arietans*), and rock monitor (*Varanus exanthematicus albigularis*), as well as geckos, lizards, and skinks. As in many arid areas, the amphibian fauna is not particularly species rich, but does include the giant bull frog (*Pyxicephalus adspersus*) that has a diverse diet, preying on small birds, rodents, reptiles, and insects. A number of scorpion species also inhabit the region, of which the two most important families are the Scorpionidae and Buthidae. Both prey predominantly on insects, and species of the latter often prey on the less venomous members of the former.

THREATS

Fences (farm, veterinary and border) are primarily responsible for the precipitous decline in wild animal numbers in the Kalahari since the 1960's.³¹ Construction of veterinary fences began in 1954, but continues today (Main 1987, Albertson 1998). Animals like the blue wildebeest and hartebeest, not truly adapted to aridity, must migrate to obtain food and water. In the urge to migrate, some animals become caught in the fences, while others suffer slow and painful deaths through thirst and starvation.³² After mining, the cattle industry is Botswana's second largest revenue earner.³⁵ Botswana's agreement with the European Union in terms of Lomé Convention concessions means it is paid up to 60 percent more for beef than its competitors in the open market, and receives 92 percent of imposed import tariffs back as subsidies.³⁵ These incentives have encouraged the increase in Botswana's national herd to more than three million animals, twice the number of people.³⁵ The EU's strict import regulations are behind the construction of veterinary fences, through the requirement that cattle be isolated from game, in spite of the fact that conclusive proof that foot-and-mouth disease originates in buffalo³⁵ or wildebeest³³ is still lacking. Moreover, it is open to question whether the benefit distribution is equitable, because along with cattle smallholders, large-scale farmers and middlemen also profit from the protocol.³⁴ In some ways, however, the fences may be beneficial to wildlife, in that they also serve to exclude cattle from wildlife areas and reduce conflict with humans.³⁵ The Botswana government has also shown itself willing to make some concessions. In 1998, it pledged to realign and roll back some fences in the north of the country.³⁵

As in other areas where migratory patterns have been disrupted in favor of fences and livestock farming, the change in grazing practices has led to habitat degradation through alteration of the natural grazing patterns. Thus, although the habitat of the Kalahari Xeric Savanna is not highly fragmented, much has been degraded by heavy livestock grazing.³⁶ Heavy grazing results in an increase in woody plants and a decrease in grass cover, a phenomenon known as bush encroachment. Not only does this reduce rangeland carrying capacity, but the change in vegetation structure and plant communities also has repercussions for the native fauna.

³¹ Main, M. 1987. Kalahari: Life's variety in dune and delta. Southern Book Publishers, Johannesburg.

³² Keene-Young, R. 1999. A thin line: Botswana's cattle fences. *Africa Environment and Wildlife* 7(2): 71-79.

³³ Lovegrove, B. 1993. The living deserts of southern Africa. Fernwood Press, Cape Town.

³⁴ Schmidt, D. 1995. Botswana-EU cooperation: Focus on cattle, copper and conservation.

http://www.euforic.org/courier/bot95_gb.htm.

³⁵ RAMSAR. 1998. Botswana rolls back fences for wildlife.

http://www.ramsar.org/w.n.botswana_fences.htm.

³⁶ IUCN 1986. Review of the protected areas system in the Afrotropical Realm. In collaboration with the United Nations Environment Programme. IUCN, Cambridge, U.K.

Livestock farmers often use poisoned carcasses to kill "problem" animals such as black-backed jackals (*Canis mesomelas*) and caracals (*Felis caracal*), resulting in the poisoning of non-target raptors.³² Some species, like the martial and black (*Aquila verreauxii*) eagles, perceived to prey on domestic livestock and poultry, may be intentionally targeted.⁴⁰ Drownings in farm reservoirs are also responsible for a significant number of raptor mortalities in the region.⁴⁰ In South Africa, simple and effective solutions to the problem of reservoir drownings are currently being promoted.⁴⁰ Livestock farmers shoot other predators that wander onto their land, as various cases of lion, wild dog and hyena shootings have illustrated.

The wild dog is probably the species of most concern in the Xeric Kalahari Savanna, listed in the global IUCN¹⁷ and South African Red Data Book as "endangered," due to eradication of their prey and shooting by farmers. Efforts to conserve this species are hindered by their large home ranges and tendency to roam vast areas. Other species of special concern in the Southern African context are the African wild cat, honey badger (*Mellivora capensis*), pangolin (*Manis temminckii*), aardvark (*Orycteropus afer*), kori bustard (*Ardeotis kori*), bateleur (*Terathopius ecaudatus*), martial eagle, whiteheaded (*Trigonoceps occipitalis*), lappetfaced (*Torgos tracheliotus*) and Cape (*Gyps coprotheres*) vultures.

POSSIBLE PROJECT INTERVENTIONS

- Theme based routes such as the Blue Crane and Overberg Fynbos routes that focus the attention of communities on the rarity value of their resources can significantly change attitudes with regard to the protection of those resources. Thus where for example wild dogs have traditionally been seen as vermin and destroyed at every opportunity, this process can be swung around by 180 degrees almost instantly. Kernel to achieving this is the necessity to insure communities decide for themselves that the idea is sound, which the Open Africa procedure takes into account.*
- The knock on effects of this are illustrated by an example in the Western Cape, where members of a thriving beekeeping industry regularly trapped and destroyed honey badgers until an article in a tourist publication drew attention to this practice, which inspired a consumer campaign to boycott the purchase of honey. This in turn resulted in one of South Africa's biggest department stores insisting that it would only acquire stocks of honey from producers who installed "badger friendly" apparatus to overcome the problem and prevent further destruction of these animals. Now it is common practice for the public to only buy honey that bears the "badger friendly" guarantee.*

6. NAMIBIAN SAVANNA WOODLAND

The Namibian savanna woodland (Namaland) region covers the narrow escarpment belt that lies inland of the Namib and Kaokoveld Deserts and broadens gradually towards the south, where it comprises extensive areas on the plateau south of Windhoek. The region extends from near the town of Sumbe in western Angola down through Namibia, with the southern boundary located just north of Groot Karas Berg.

BIODIVERSITY

Namibia has two distinct hotspots, defined as areas of high endemism and high species richness. One is the Sperrgebiet region, located in the southwest of the country in the Succulent Karoo region, and the second is the Kaoko Escarpment in the far northwest²². The northern area of this region encompasses the Kaoko Escarpment and is therefore rich in species and endemics. Most of the endemics are clustered around the Brandberg Mountain and around the Khomas highlands north of Windhoek. The Brandberg Mountain supports 90 of Namibia's endemic plants and eight plants that are only found there³⁷. The high altitude of this isolated relict inselberg and the cool, moist conditions at its summit could explain the high level of endemism found in this region.

The Khomas region contains Namibia's second highest mountain, the Auasberg, at 2,479m, and it is in a transitional arid region, representing ideal conditions for speciation of desert plants. There are 68 endemic plants in this region²². Other endemics and near-endemics found within the region as a whole are *Panicum*

³⁷ Maggs, G. L., H. H. Kolberg, and C. J. H. Hines. 1994. Botanical diversity in Namibia – an overview. Pages 93 – 104 in B. J. Huntley, editor. Botanical Diversity in Southern Africa. Strelitzia 1.

arbusculum, *Stachys burchelliana*, *Schotia afra*, *Berkheya chamaepeuce*, *Barleria lichtensteiniana*, *Euphorbia gariiepina*, *E. gregaria*, *E. avasmontana*, *Zygophyllum dregeanum*, and *Z. microcarpum*. The region has many interesting, well-defined species that are taxonomically isolated, for example, the monotypic genera *Phlyctidocarpa* and *Kaokochloa* (Poaceae).³⁸ Other well-defined species include *Acacia robyniana*, *Balanites welwitschii*, and *Petalidium* spp. Intense recent speciation has occurred within the *Petalidium* genus.

The Namibian Savanna Woodland region is also a center of high faunal endemism and species richness. The region has a significantly larger number of Namibian endemic invertebrates, amphibians, reptiles, mammals and birds than adjacent regions.²² This distribution suggests relict populations isolated, perhaps, by low desert temperatures and mobile sands on the coastal plains, isolating rocky habitats and promoting speciation. Further inland, oscillating patterns of regional rainfall and global temperature may have isolated species on rocky islands and inselbergs.²²

Endemic and near-endemic mammals are comprised of mainly bats, rodents, and small carnivores. The slender mongoose (*Galerella swalius*) and the rock mouse (*Petromyscus shortridgei*) are restricted to the Namaland escarpment. A further six species of small mammal and bat are also near-endemic to the ecoregion, including the Angola wing-gland bat (*Myotis seabrai*, VU) and the bat *Laephotis namibensis*, EN.¹⁷ The only large mammal endemic to this region is the mountain zebra (*Equus zebra hartmannae*, EN), which is near-endemic to the ecoregion, and is the only large mammal endemic to Namibia.

Among the larger mammals the region is well-known for its desert-dwelling populations of elephant (*Loxodonta africana*, EN) and black rhinoceros (*Diceros bicornis*, CR).¹⁷ The black rhino population in this area is one of the few unfenced populations of black rhinos in the world, and it is estimated to number more than 100 individuals.³⁹ Other large mammal species found within the region are kudu (*Tragelaphus strepsiceros* LR), springbok (*Antidorcas marsupialis* LR), gemsbok (*Oryx gazella* LR), Damara dik-diks (*Madoqua kirkii*), and black-faced impala (*Aepyceros melampus petersi* VU). Predators include lion (*Panthera leo*), leopard (*Panthera pardus*), cheetah (*Acinonyx jubatus* VU), bat-eared fox, (*Otocyon megalotis*) and Cape fox (*Vulpes chama*).

Seven reptiles are strictly endemic to the region. Albert's burrowing skink (*Sepsina alberti*) is an interesting pale green skink with a bright blue tail that is restricted to the northern area of the region. In total, four lizards, a gecko, a skink and a tortoise are specialists to this habitat: Husaben sand lizard (*Pedioplanis husabensis*), Namaqua spinytail lizard (*Cordylus namaquensis*), Campbell's spinytail lizard (*Cordylus campbelli*), Herero girdled lizard (*Cordylus pustulatus*), Brandberg thick-toed gecko, Albert's skink, and Nama padloper (*Homopus sp. nov.*). Around 50 reptile species are either endemic or near-endemic reptiles in the ecoregion. Of these, 83 percent occur on and around the Brandberg, suggesting relict populations.²² For example, the Brandberg thick-toed gecko (*Pachydactylus gaisensis*) is restricted to the Brandberg.⁴⁰ Only two amphibians are considered endemic to the ecoregion, the Okahandja toad (*Bufo hoeschi*) and the Mossamedes toad (*B. grandisonae*).

The Kaoko Escarpment that makes up this region has the highest level of avian diversity in Namibia, with 297 bird species recorded to date. Most of the avifauna is restricted to the rocky habitats of the region and is found at elevations of between 600 m and 1,200 m. Five birds are endemic or near-endemic to this region: including the Karoo chat (*Cercomela schlegelii*), tractrac chat (*Cercomela tractrac*), greybacked cisticola (*Cisticola subruficapillus*), and the herero chat (*Namibornis herero*). All the near-endemic species except the Cinderella waxbill (*Estrilda thomensis*) are restricted to rocky habitats. The Cinderella waxbill is found in the wetter area of southern Angola, entering the region down the Kunene River.²²

THREATS

³⁸ Werger, M. J. A. 1978. Biogeography and Ecology of Southern Africa. Junk, The Hague.

³⁹ Berger, J., and C. Cullingham. 1994. Active intervention and conservation: Africa's pachyderm problem. Science 263: 1241-1242.

⁴⁰ Branch, B. 1998. Field guide to the snakes and other reptiles of southern Africa. Struik, Cape Town.

On a regional scale, many species such as springboks, leopards and gemsboks have not suffered significant range reductions, and the distributions of smaller mammals have changed little during recorded history. A few species, like the greater kudu and the Damara dik-dik have even benefited from bush encroachment. The establishment of artificial water sources and reduced predator numbers has increased distributions of these species.²² While bush encroachment has benefited these species, it leads to a reduction in diversity and is therefore not seen as positive for conservation within the region.

Severe overhunting of game mammals on private land was a major threat to wildlife for the first half of the century, but this was significantly reversed in 1967 when legislation shifted the ownership of game from the state to the individual landowner. This allowed landowners to commercialize game rather than incur losses through competition of game with livestock.⁴⁸ The Nature Conservation Amendment Act of 1992 extends similar fundamental rights to people living in communal areas, with the hope that rural dwellers will realize the value of wildlife and manage it sustainably. The conservation status of all Namibian mammals is now under review and, as an interim measure, a list of species with provisional conservation status rankings has been produced.²² Many of the species do not have sufficient data to evaluate them and place them into categories. Thus, the interim status confers a high level of protection until the species can be confidently assessed.

After the deproclamation of Game Reserve No. 2 in 1963, the northern areas of Namaland were administered from afar by the Department of Bantu Affairs in Pretoria. This was a period of corruption and widespread poaching. This poaching problem has continued and is a present-day threat to the wildlife of the region, especially to the unfenced black rhino population.

Plant poaching by collectors of succulent species is impacting the flora of the ecoregion. Illegal trade in spectacular succulent species is believed to be considerable.⁵²

Farming practices in Namibia vary widely in their environmental impact. Poor land management through overstocking has led to soil erosion, loss of grass species diversity, and bush encroachment. Numerous livestock and game farmers in Namibia, however, practice exemplary land management. The Namaland escarpment has recently become a popular destination for off-road enthusiasts. While this may have advantages in bringing tourism into the area, many off-road drivers have proven to show no regard to the sensitive environments in which they are driving.

POSSIBLE PROJECT INTERVENTIONS

- What had happened in the past and is also happening now in Mozambique for example, where a complete lack of tourism planning exists, a class of traveler that cannot realistically be described as “tourists” has plundered such places with no regard for the damage they do to what does not belong to them. It is essential to bring an end to this type of visitor traffic, which does not produce revenue and moreover destroys the environment. Instead it should be replaced with visitor flows that would add value, and the means to do this is through sensitizing local communities to the potential benefits and organizing them in such a way that they benefit from the situation, which is what the route establishment process contributes to doing.

7. THE NAMIB DESERT

The Namib Desert region extends along the coastal plain of western Namibia, from the Uniab River in the north to the town of Luderitz in the south. It extends inland from the Atlantic Coastline to the foot of the Namib Escarpment, a distance of between 80 and 200 km. The region can be divided into two areas: the Central Namib (from the Uniab to the Kuiseb Rivers) and the Southern Namib (from the Kuiseb River to the town of Luderitz). In the north, the Central Namib merges with the Northern Namib or Kaokoveld Desert ecoregion, and in the south it merges with the Succulent Karoo ecoregion, which extends up the west coast of South Africa.

BIODIVERSITY

The Namib Desert is believed to be the world's oldest desert and as in the case with Kaokoveld Desert, the length of the dry period has had a profound influence on the region's biodiversity. The region has remained a relatively stable center for the evolution of desert species. This has resulted in a unique array of biodiversity with high levels of endemism and numerous advanced adaptations to arid conditions.

The monotypic *Welwitschia mirabilis*, one of the most remarkable plants in the world, is endemic to the Namib Desert and to the Kaokoveld Desert ecoregion to the north. The distribution of this relict gymnosperm extends from the Kuiseb River in Namibia to Namibe in southern Angola.⁴¹ These plants are usually found more than 20m apart, in broad flat channels on gravel plains. The channels are so shallow as to be barely discernable, but receive floodsheet waters from higher areas during the infrequent rains. The soil becomes moist to about 1.5m and this subsurface moisture can be retained for years. *Welwitschia* plants are up to 1.5m tall and have two fibrous, straplike leaves, which persist throughout the entire life of the plant and curl into fantastic shapes on the ground. They are the longest-lived leaves of any member of the plant kingdom. It is estimated that the largest *Welwitschia* plants are about 2,500 years old.⁵⁷

In the animals the high species richness and endemism is made up largely of reptiles. They have evolved adaptations to survive in this harsh environment when most birds and large mammals have not. There are almost 70 reptile species in the region, of which more than 25 are considered endemic. Five of these are strictly-endemic to the dry Namib Desert, and at least 20 species are regarded as nearly endemic to the region (WWF database). Several endemic reptiles, including two desert lizards, the wedge-snouted sand lizard (*Meroles cuneirostris*) and the small-scaled sand lizard (*M. micropholidotus*), the barking gecko (*Ptenopus kochi*) and the day gecko (*Rhoptropus bradfieldi*) are unusual in that they all dive beneath the sand to escape danger.⁵⁴

The Namib Desert is home to a large number of small rodent species that occur among the rocky habitats in the western deserts, in the sand dunes and in the vegetation of the gravel plains. The gerbil, *Gerbillurus tytonis* is restricted to the southern portion of the region (WWF database). Grant's golden mole (*Eremitalpa granti* VU) is near-endemic in the Namib Desert, its range extending down into South Africa. This eyeless mole is well-adapted to the desert, able to swim through the loose, dry sands of the Namib dunes. The Namaqua dune mole rat (*Bathyergus janetta* LR) is also near-endemic in the Namib Desert, as are two bat species; the Namib long-eared bat (*Laephotis namibensis* EN) and the Angola wing-gland bat (*Myotis seabrai* VU).²¹

Larger ungulates are scarce in the Namib Desert, with only gemsbok (*Oryx gazella* LR) and springbok (*Antidorcas marsupialis* LR) present.⁴² Hartmann's zebra (*Equus zebra hartmannae* EN) is found in the extreme east of the desert, in the transition belt between the desert and the escarpment. However, they do move further into the desert along vegetated riverbeds.⁴³ Gemsbok are the most widespread ungulates in the desert habitat and can survive for weeks without drinking by ceasing to sweat when deprived of water.

The predators of the Namib Desert are cheetahs (*Acinonyx jubatus*, VU), brown hyenas (*Hyaena brunnea*, LR) and spotted hyenas (*Crocuta crocuta*), Cape foxes (*Vulpes chama*) and bat-eared foxes (*Otocyon megalotis*). Brown hyenas are common around Luderitz, and this area supports the highest density of this species in Namibia.⁴³ Klipspringers (*Oreotragus oreotragus*), steenboks (*Raphicerus campestris*), baboons (*Papio ursinus*) and leopards (*Panthera pardus*) occur along the courses of the Kuiseb and Swakop Rivers.⁵⁰ Many species have become locally extinct in the southern areas of the Namib Desert. Lions (*Panthera leo*), elephants (*Loxodonta africana*), black rhinos (*Diceros bicornis*), white rhinos (*Ceratotherium simum*), giraffes (*Giraffa camelopardalis*) and hippos (*Hippopotamus amphibius*) were all

⁴¹ Trollope, W.S.W., L.A. Trollope, H.C. Biggs, D. Pienaar, A.L.F. Potgieter. 1998. Long-term changes in the woody vegetation of the Kruger National Park, with special reference to the effects of elephants and fire. *Koedoe* 41: 103-112.

⁴² Hofmeyer, J. M., H. Ebedes, R. E. M. Fryer, and J. R. de Bruine. 1975. The capture and translocation of the black rhinoceros *Diceros bicornis* in South West Africa. *Madoqua* 9(2): 35-44.

⁴³ Pallett, J., editor. 1995. The Sperrgebiet: Namibia's least known wilderness. An environmental profile of the Sperrgebiet or Diamond Area 1, in southwestern Namibia. DRFN and NAMDEB, Windhoek, 84 pp.

shot out by colonial settlers who established themselves along the Orange River. The lower Orange River was once famous for its large numbers of hippos, which came onshore to graze on the floodplains at night.⁴⁴

The desert does not have a very high level of avian richness, with only 180 species recorded to date. This is due to the extremely arid terrain and a lack of rivers, with even ephemeral rivers absent in the southern part. The most prominent bird found in the desert is the ostrich (*Struthio camelus*). Most of the bird life is concentrated along the coastline. The isolated Sandvis area (previously known as Sandwich Harbor) situated on the coast at about 23°S is an area of high species richness. To date, the number of species recorded at Sandvis is 113 and represents a wide taxonomic variety. Six birds are considered endemic to the Namib Desert: the dune lark (*Certhilauda erythrochalamys*), Benguela long-billed lark (*C. benguelensis*),⁴⁵ Gray's lark (*Ammomanes grayi*), bank cormorant (*Phalacrocorax neglectus*), tractrac chat (*Cercomela tractrac*), and Rüppell's korhaan (*Eupodotis rueppellii*). The dune lark is strictly endemic to this ecoregion while the gray's lark, Rüppell's korhaan, and *C. benguelensis* are found only in this region and the Kaokoveld Desert.

The Namib Desert is best known for its high species richness of beetles, particularly those belonging to the family Tenebrionidae.⁵⁰ Many of these have evolved methods of condensing fog as a source of water. The head-standing beetle (*Onymacris unguicularis*) for example, creeps to the crest of a dune when fog is present. It then faces into the wind and stretches its back legs so that its body tilts forward, head down. As fog precipitates onto its body and runs down into its mouth the beetle drinks.⁴⁷

THREATS

A major threat to the Namib Desert is the impact of off-road driving. The impact is the greatest on the gravel plains where depressions left by vehicles remain for more than 40 years because the rainfall is too episodic and sparse to erase them. These tracks are unsightly and cause long-lasting damage to the lichen fields. Lichens are particularly sensitive to mechanical damage as they grow extremely slowly and cannot quickly repair damaged thalli. Most of the damage is done by mining company vehicles when on prospecting expeditions.⁵⁰

The major threat to the Namib-Naukluft National Park is the drop in the water table along the Kuiseb River. This is caused primarily by the extraction of ground water by the Department of Water Affairs at two sites near Walvis Bay.³⁷ The extracted water supplies the domestic consumption of Walvis Bay and Swakopmund and the enormous demands made by the Rossing Uranium Mine near Swakopmund. At present, the Department of Water Affairs is trying to meet the requirements for water by prospecting for more underground water sources. If water were to be found, roads, pipelines and powerlines would have to be constructed through the most pristine dune desert in the world.⁵⁰ The Kuiseb River and the vegetation within it act as a windbreak to the southerly winds, retarding the northwards movement of the dune sea onto the gravel plains. The destruction of this natural barrier would have serious ecological consequences in this part of the Namib Desert.⁵⁰ Another threat to the Namib-Naukluft Park is the Topnaar pastoralists who graze large herds of goats and small groups of donkeys over the Kuiseb Riverbed and along the edge of the dunes. The livestock have overgrazed the understory plant growth and fallen *Acacia* seedpods of the riverbed and are competing for food with wild animals, such as gemsboks.

Collectors of succulent plant species are also having an impact on the flora to the south of the region. Illegal trade in species such as the halfmens *Pachypodium namaquanum* is thought to be considerable.⁵²

POSSIBLE PROJECT INTERVENTIONS

⁴⁴ Berry, H.H., and C.U. Berry. 1975. A checklist and notes on the birds of Sandvis, South West Africa. *Madoqua* 9(2): 5-18.

⁴⁵ Ryan, P.G., I. Hood, P. Bloomer, J. Komen and T. Crowe 1999. Barlow's Lark: a new species in the Karoo Lark *Certhilauda albescens* complex. *Ibis* 140: 605-619.

- The voices concerned with the conservation of this area are lonesome in relative terms and the establishment of tourism routes will add strengths to their elbows.
- Open Africa's routes generally spawn a great deal of editorial publicity, that, besides promoting tourism, draws attention to and creates awareness of features of which the public is unaware. This means of spreading knowledge is a valuable tool in furthering the interest of conservation.*

8. SUCCULENT KAROO

The Succulent Karoo's botanical diversity is unparalleled by any other arid region on earth. This ecoregion is home to greater than 5,000 higher plant species, nearly 40 percent of which are endemic, and 18 percent of which are threatened. It has the richest succulent flora in the world, harboring about one-third of the world's approximately 10,000 succulent species. Other unique features include the diversity of miniature succulents (435 spp.) and geophytes (630 spp.). The ecoregion is also a center of diversity and endemism for reptiles and many invertebrate taxa, especially monkey beetles (Rutelinae: Hoplinii). However, less than 3 percent of the ecoregion is conserved in ten statutory reserves. Many plants in the Succulent Karoo, especially succulents, are specialists for a limited range of environmental conditions, producing a phenomenon known as point endemism. Eighty genera are found nowhere else in the world.

BIODIVERSITY

The Succulent Karoo, which consists primarily of winter rainfall desert, is one of only two hotspots that are entirely arid (the other is the newly recognized Horn of Africa). The region is commonly divided into two zones. The first, Namaqualand, extends along the west coast of South Africa and southern Namibia. The mild climate has contributed to the evolution of a rich array of endemic species. The second zone, the Southern Karoo, experiences peaks of rainfall in spring and autumn and has more extreme climate variations than the Namaqualand desert. Dwarf shrubland dominated by leaf succulents is found throughout the hotspot. These drought-adapted plants have thick, fleshy leaves or stems for water storage. In the Succulent Karoo, there are about 1,700 species of leaf succulents, and this dominance is unique among the world's deserts. The recent and explosive diversification of the Mesembryanthemaceae, the largest group, has been described as an event unrivaled among flowering plants. Stem succulents are also found here (around 140 species), as are seasonal bulbs and annuals that display magnificent spring blooms in the open spaces between the shrubs, particularly during the spring in the Namaqualand. Hilly areas in the southern Karoo are dotted with evergreen shrubs and tall aloes.

THREATS

Although more than 90 percent of the Succulent Karoo is in a natural or semi-natural state where the principal form of land use is extensive pastoralism, much of this habitat has been severely degraded by overgrazing. Land-use practices that will further threaten the ecoregion's biodiversity are listed below, in their order of importance.

- The expansion of communally-owned land and associated overgrazing and desertification.
- Overgrazing of commercial (privately-owned) rangelands.
- Agriculture, especially in the valleys of perennial rivers.
- Mining for diamonds, heavy minerals, gypsum, limestone, marble, monzite, kaolin, ilmenite, and titanium. For example, 65 percent of the Namaqualand coastline is or has been mined.
- Illegal and large scale collection of succulents and geophytes.

In addition, climate change is likely to have a major negative influence on the biodiversity of the Succulent Karoo, given the specialized habitat requirements of the numerous local and point plant endemics.

POSSIBLE PROJECT INTERVENTIONS

- Having regard for a concern on their part to play a positive role in conservation, the biggest mining company in this area has already sponsored one Open Africa route in the Kamiesberg region and has become an effective partner in the efforts of the local community to protect its resources in the interest of promoting tourism. Previously the mining operations and local communities pursued their respective interests with little communication between the two,

- whereas now they are striving in partnership for the accomplishment of a common goal through the establishment of the Kamiesberg Route.*
- The town of Kamieskroon, which is at the centre of the Kamiesberg Route, is situated alongside the N7 highway between Cape Town and Windhoek. It is in the area known for magnificent showings of spring flowers, which in the past constituted its only tourism attractor and that for only a very short period of about six weeks annually. Catering for such a short season was never economically viable, resulting in disappointment for both the locals and their visitors, who were obliged to put up with inferior facilities. Now, since the establishment of the route, the myriad of additional attractions that have been identified are not only lengthening the season but also prompting through travelers to utilize Kamieskroon as a stop-over point, with all-round benefits for everyone concerned, resulting also in a marked improvement in the facilities on offer.*
 - The above development has resulted in an informal partnership via the Route Forum between local residents and farmers and the nearby Namaqua National Park, meaning that a fusion of conservation information is taking place as these parties jointly strive to promote their communal interest in improving the route's attractiveness.*

9. CAPE FLORISTIC REGION

Located at the southwest tip of Africa lies the Cape Floral Kingdom, comprised of both the lowland and montane fynbos and renosterveld ecoregions. With about 8,500 different species of plants, 70% of which are found nowhere else on earth, it has been designated as one of the six plant kingdoms of the world. For its small size, it is one of the richest places in the world. Although not much distinguishes lowland and montane fynbos, montane fynbos occurs on the mountains of the Cape Folded Belt.

Acute climatic changes 15 million years ago transformed this expanse from rainforest to flammable shrubland, where periodic fires are an integral part of the ecological process. The region is dominated by fynbos, giving the hotspot the unique distinction of encompassing an entire floral kingdom. The some 7,000 species of fynbos - hardy, leathery-leaved plants - thrive in the sandy and nutrient-poor soil characteristic of coastal South Africa.

The fynbos speckling the region's mountains and valleys include the king protea (*Protea cynaroides*), South Africa's regal national flower, and red disa (*Disa uniflora*), a vibrant orchid and an emblem of the Cape Province. Other fynbos, such as pincushions and geraniums, are exported around the world.

The Cape Floristic Region is also home to and provides a breeding ground for endangered species found nowhere else on Earth, including the geometric tortoise, one of the rarest tortoise species in world; the cape sugar-bird; and several species of small antelopes, including the bontebok.

BIODIVERSITY

Together, the Lowland and Montane Fynbos and Renosterveld ecoregions harbor approximately 7,000 of the CFR's 9,000 species.⁴⁶ Regional richness is among the highest in the world, and certainly the highest outside of some tropical rain forest areas.⁴⁷ When compared to other Mediterranean-climate regions (all of which are recognized as biodiversity hotspots),⁴⁸ for a given area, the Cape Mediterranean-climate ecosystems support 1.7 times the diversity of southwestern Australia, 2.2 times the diversity of California and the Mediterranean Basin, and 3.3 times the diversity of Chile.⁶³ This high regional richness is a consequence of the extremely rapid turnover of moderately rich communities along habitat (beta turnover) and geographical (gamma turnover) gradients.⁶³ Other distinctive features in comparison with other

⁴⁶ Cowling, R.M., P.W. Rundel, B.B. Lamont, M.K. Arroyo, and M. Arianoutsou. 1996. Plant diversity in Mediterranean-climate regions. *Trends in Ecology and Evolution* 11, 362-66.

⁴⁷ Cowling, R.M., P.M. Holmes, and A.G. Rebelo. 1992. Plant diversity and endemism. Pages 62-112 in R.M. Cowling, editor. *The Ecology of Fynbos. Nutrients, Fire and Diversity*. Oxford University Press, Cape Town.

⁴⁸ Myers, N., R.A. Mittermeier, C.G. Mittermeier, and G.A.B. da Fonseca. 2000. Biodiversity hotspots for conservation priorities. *Nature* 403: 853-858.

Mediterranean-climate floras include the large number of geophytes or bulblike plants (1,552 spp.), especially among the petaloid monocots, and the relative paucity of annuals (6.8 percent of the flora) and trees (2.4 percent). Geophyte diversity is particularly high; the lowland and montane ecoregion support about 1,500 species, most belonging to the petaloid monocot families, notably Iridaceae, Orchidaceae, Hyacinthaceae, and Amaryllidaceae.

About 80 percent of the species complement in fynbos and renosterveld is endemic. This is a spectacularly high level of endemism for a continental flora; comparable levels have been recorded only for islands such as Madagascar and New Zealand.⁴⁹ A large, but as yet unknown number of these endemics are point endemics, restricted to areas of 100km² or less.⁵⁰ Most endemic species grow in fynbos vegetation, although locally endemic geophytes are relatively common in renosterveld vegetation in the western, winter-rainfall part of the combined lowland and montane fynbos ecoregions. Over the whole area generic endemism is modest with 160 endemics, or 16 percent of the total.⁵¹ There are four endemic families (Geissolomataceae, Grubbiaceae, Roridulaceae, and Stilbaceae) and three near-endemic families (Bruniaceae, Lanariaceae, and Prionaceae). Goldblatt and Manning⁶⁷ have recognized six centers of endemism for the Cape Floristic Region (both lowland and montane areas), all of which are dominated by fynbos and renosterveld ecosystems.

The lowland and montane fynbos and renosterveld ecoregions include 1,435 South African Red Data Book plant species and 112 South African Red Data Book animal species.⁵² The Cape Peninsula alone, an area of 471km² that includes the sprawling metropolis of Cape Town, supports 141 plant and 19 animal South African Red Data Book species.⁵³ While many of these species are endangered because they occupy extremely small ranges within natural landscapes, others are highly threatened because they occupy small remnants within urban and agricultural areas.⁶⁸ This is especially true of lowland fynbos and renosterveld.

THREATS

The major threats facing both montane and lowland fynbos and renosterveld habitats are: invasive alien trees and shrubs, novel forms of agriculture (e.g. the cultivation of indigenous species for cut flowers, cultivation and collection of plants for beverages and for their medicinal properties, such as rooibos and honeybush tea that will transform otherwise marginal agricultural land; and global climate change, which is likely to have a major negative influence on the biodiversity of fynbos, given the specialized habitat requirements of the numerous local and point plant endemics. Urbanization is also a serious concern, especially in the two metropolitan centers (Cape Town in the west and Port Elizabeth in the east), and along the coastal margin. Habitat loss is compounded by fragmentation effects, which lead to biodiversity loss on small remnants of irreplaceable habitat. Finally, global climate change is likely to have a major negative influence on the biodiversity of fynbos, given the specialized habitat requirements of the numerous local and point plant endemics.

POSSIBLE PROJECT INTERVENTIONS

- The first ever tourism route developed by Open Africa, the Overberg Fynbos Route (1999), is shortly to be featured in an independently written article⁵⁴ in which it is stated that no discussion on sustainable development opportunities in the Cape Floristic Region will be complete without a focus in tourism. The article then goes on to point out what the development of the route has

⁴⁹ Cowling, R.M., and C. Hilton-Taylor. 1994. Plant diversity and endemism in southern Africa an overview. Pages 31-52 in B. J. Huntley, editor. Botanical diversity in southern Africa. National Botanical Institute, Kirstenbosch.

⁵⁰ Cowling, R.M., and D.J. McDonald. 1999. Local endemism and plant conservation in the Cape Floristic Region. Pages 64-86 in P. W. Rundel, G. Montenegro, and F. Jaksic, editors. Landscape degradation in Mediterranean-climate ecosystems. Springer-Verlag, Heidelberg.

⁵¹ Goldblatt, P., and P. Manning. 2000. Plants of the Cape flora. *Strelitzia* 9: 1-744.

⁵² Rebelo, A.G. 1992. Preservation of biotic diversity. Pages 309-344 in R. M. Cowling, editor. *The Ecology of Fynbos. Nutrients, Fire and Diversity*, Oxford University Press, Cape Town.

⁵³ Trinder-Smith, T.H., R.M. Cowling, and H.P. Linder. 1996. Profiling a besieged flora: rare and endemic plants of the Cape Peninsula, South Africa. *Biodiversity and Conservation* 5: 575-589.

⁵⁴ SANBI. 2005. C.A.P.E. Fynbos Fynmense (Article in Press).

meant in the area and culminates with a quotation from the route chairperson, to the effect that it is time to start developing a network of Open Africa routes throughout what in this area is called the Overberg. Whilst this and other similar articles substantiate the benefits of the Open Africa system, more significant is the fact that Open Africa has just been informed that it is to be invited to become a member of the Implementing Committee of the GEF funded C.A.P.E. (Caring for People and the Environment Project) whose other members are the Department of environmental Affairs and Tourism; the Department of Water Affairs and Forestry; the Department of Agriculture and Land Affairs; National Botanical Institute; South African National Parks; Western Cape Nature Conservation Board; the World Wide Fund for Nature; Fauna and Flora international; Conservation International and several other government departments. This illustrates the extent of the reach that the Open Africa system is developing.