

# Proposal

For the establishment of a biodiversity  
archive for the Cape Town Area.  
2007



***CASABIO***  
Collaborative Archive of  
**South African Biodiversity**

# 1. Executive Summary

## **Problem:**

The Cape Town area is extraordinarily rich in biodiversity, particularly plant life, but a large number of local species are severely threatened by extinction, primarily due to habitat destruction as the human population increases and the city expands. Currently, information on the whereabouts of Cape Town's plant and animal species is poor, out of date and fragmented, making informed conservation difficult and resulting in the regular loss of critical populations. This problem is exacerbated by a lack of public interest in our natural heritage and a general apathy towards biodiversity conservation, which is not seen as a priority.

## **Solution:**

The CASABIO project aims to address these problems by creating and running a database to store plant (and later animal) photographs, localities and information collected from a variety of sources. The database will be published on the internet as a centralized storage and access point for biodiversity photos and information for conservationists, as well as a user-friendly resource for the Cape Town public. In addition to educating and enthusing locals and tourists about our wonderful plants and animals, the database will incorporate innovative features that allow them to participate actively in monitoring and conservation of our natural areas.

## **Funding requirements:**

We require R80 000 in order to contract an experienced programmer to create the database required. A further amount, estimated at R 218 000 per annum over two years, is needed for operating costs, the purchase of equipment, the rental of business premises and the employment of a project manager to co-ordinate the running of the project. Upon successful completion of the initial 2 year phase of the project, the continued running and maintenance of the database will be ensured through integration into SIBIS, a collection of biodiversity databases at the South African National Botanical Institute (SANBI).

## **Organization:**

CASABIO (Collaborative Archive of South African Biodiversity) is a recently established section 21 company, formed by a group of young, dynamic and enthusiastic individuals with a passion for conservation and environmental education. The mission of CASABIO is to contribute towards the preservation of South Africa's unique biodiversity by carrying out projects that bridge the gap between biodiversity science and the public and encourage people to take ownership of conservation. The CASABIO board draws together committed individuals from a wide range of backgrounds and areas of expertise and includes biologists, computer programmers, educationists, writers and creative designers. As an organization, CASABIO combines enthusiasm, pragmatism and experience in the right measures to make CASABIO a resounding success.

## 2. Statement of Need

### 2.1 The need for documentation and conservation of Cape Town's species

The city of Cape Town and its surrounds presents a unique challenge to conservationists. As well as being one of the largest and most rapidly expanding urban centres on the African continent, it is home to an extremely rich and diverse flora, many species of which are endemic to the area. There are 158 plant species endemic to the Cape peninsula (Helme & Trinder-Smith 2006), and a further 76 locally endemic species on the Cape Flats (Maze & Rebelo 1999). As a result, Cape Town is recognized as one of three urban biodiversity hotspots worldwide (City of Cape Town 2003).

Encroaching development and other human activities pose a severe threat to Cape Town's plant species. In fact, the city has one of the highest concentrations of endangered species anywhere in the world – 131 red data listed species occur on the Cape Flats alone (Maze & Rebelo 1999). **To add to this, Climate Change is predicted to result in the loss of ??% of fynbos species by 2050 (Midgley et al. 2004)**

In order to conserve Cape Town's species, we need information on their abundances and distributions. However, surprisingly for a city with such diversity, much of our knowledge of the whereabouts of local species is outdated and inaccurate. Species lists for the different reserves and remnants of natural/semi-natural vegetation in the Cape Metropolitan Area are often based on records dating back to the early 1900's, and there are many species that supposedly exist in the CMA that haven't been seen in ages. Furthermore, the information that does exist is very fragmented and inaccessible, making informed conservation planning a difficult exercise

There exists, in Cape Town, a large contingent of amateur nature enthusiasts and enthusiast groups, many of whom have assembled sizeable collections of plant and animal photographs and locality information over the years. All this valuable information is being wasted because it is sitting in private collections where it cannot be accessed. It is thus imperative that the existing information about species and their localities is stored in a safe, centralized location where it is easily accessible to all. There is also a dire need for continued documentation and mapping of our species, before they are lost forever under urban sprawl.

### 2.2 The need for public education and participation

Many Capetonians and visitors to our beautiful city are aware that we have, on our doorstep, some of the most diverse and interesting plants and animals on the planet, but not many people take an active interest in biodiversity conservation because they see it as an elitist and inaccessible subject, and because they are unaware of how dire the situation is.

A better knowledge of our flora and fauna can add greatly to people's enjoyment when hiking on our mountains, visiting our nature reserves or even walking along our road verges, and increases the value that people place upon our remaining areas of natural vegetation. This applies to everyone from young learners at schools to elderly retirees. It also applies to visitors to our shores- biological tourism is currently big business worldwide and there is a lot of scope for our biodiversity to be marketed as a unique tourist attraction.

Currently, only one illustrated guide to the plants of the Peninsula exists (Mary Maytham Kidd's *Cape Peninsula* wildflower guide, recently released in updated form by Terry Trinder-Smith). It contains just over 800 species (out of roughly 2500 species on the Peninsula) and only one representative image of each of these species in the form of a small painting. There is also no guide which adequately covers the northerly and easterly sections of the Cape Town metropole, although the *West Coast* (Manning and Goldblatt) and *Hottentots Holland to Hermanus* (Burman and Bean) wildflower guides do contain some of the species from those respective areas. Furthermore, although the existing

guides are excellent books, they cannot be easily used to identify or find information about a plant unless the reader already has some knowledge of botany and thus they do not encourage an awareness and interest in plants by the broader public.

There are a number of government-backed institutions whose mandate it is to educate the public about biodiversity and make biodiversity information freely accessible and to all, the most notable being SANBI. Currently, however, there is much work to be done in bridging this gap, and very few projects are making a visible impact on the public perception of and interest in biodiversity related topics. We believe it is time that the Cape Town public is given a resource that allows everyone, no matter what their background or level of environmental knowledge, to learn about, appreciate and contribute towards the conservation of our unique and endangered plants and animals.

### **3. Project Description**

#### **3.1 Objectives**

##### **PHASE 1 (Feb 2007 – September 2008)**

- To create an electronic database for easy storage and retrieval of biodiversity photographs, localities and information by July 2007
- To populate the database with photographs and information for 50% of Cape Town's vascular plant species and publish the populated database on the internet in September 2008
- To have significant public use of the database by March 2009 as measured by number of hits on the website (30 000 hits = average 500+ hits a month by March) and number of public contributions of photos / data (180 contributions = average 30+ contributions per month by March)

##### **PHASE 2 (September 2008 – August 2009)**

In addition to maintenance and administration of the existing database;

- To modify the database to allow the inclusion of animal and fungi photos and information by January 2009
- To populate the database with photographs and information for Cape Town's terrestrial vertebrate animal and fungi species and publish this new data on the website in September 2009

##### **PHASE 3 (September 2009 -)**

- To expand the focus of CASABIO to include the rest of South Africa
- by soliciting contributions from organizations, individuals and enthusiast groups with existing collections and by collecting new photos / data where necessary.

### **3.2 Timeline and Methods**

**Objective 1:** To create an electronic database for easy storage and retrieval of biodiversity photographs, localities and information by July 2007

<b>Task</b>	<b>Performed by</b>	<b>Time frame</b>	<b>Notes</b>
<b>2007</b>			
Draw up development plan and timeline	dev	February	Done
Finalize fields and create backend	dev	March – Aug	Done
Create basic Informer for direct upload of photos / info	dev	Aug – Sept	Under Construction
Start test and fix bugs / probs	dev	Sept ->	Database ready for data input
Add additional features and test each new version	dev / board	Nov – Dec	Incl. filter / search / thumbtabs / maps etc.
Create basic web browser GUI	dev	Oct – Nov	
Publish online (test) and test – decide on necessary additions	dev /proj. man. / board	Dec ->	
Add additional features and test each new version	dev	Dec ->	
Create CASABIO website	Web designer e.g. bozi	July / August	Done
<b>2008</b>			
Website / Database hosted on net in final form and tested	dev /proj. man. / board	Apr – May	
Design tweaked for attractiveness and user friendliness	Web designer	Jun – July	

**Objective 2:** To populate the database with photographs and information for 80% of Cape Town's vascular plant species and publish the populated database on the internet in March 2008

<b>Task</b>	<b>Performed by</b>	<b>Time frame</b>	<b>Notes</b>
Source individuals / groups with photos / info and negotiate sharing agreements	Board / proj. man.	Feb – Dec 2007	
Negotiate copyright with authors / publishers of Cape Town plant books	Board / proj. man.	Feb – Dec 2007	
Digitize books, convert to text using text recognition software and check	proj man. / volunteers ?	Dec 2007	
Digitize slides / prints	proj man. / volunteers ?	Sept 2007 onwards	Digitising will continue as new contributions arrive
Identify unidentified photos using herbarium	proj manager / CEO	Sept 2007 onwards	As new unidentified records arrive
Enter data into database	proj man. / volunteers	Sept 2007 onwards	
Organize fortnightly photography trips and notify potential interested parties	proj man./ CEO	Sept 2007 onwards	
Demonstrations of database to potential contributors / partners	proj man. / CEO	June 2007 onwards	high profile folk e.g. Manning, P-Jones
(Digitize herbarium specimens esp. for unphotographed species ?)	proj man. / volunteers ?	Dec 2007 / January 2008	

**Objective 3:** To have significant public use of the database by March 2009 as measured by number of hits on the website (30 000 hits = average 500+ hits a month by March) and number of public contributions of photos / data (180 contributions = average 30+ contributions per month by March)

Task	Performed by	Time frame	Notes
Email monthly newsletters to contributors and other potential user groups informing of progress		April 2007 onwards	
Arrange launch itinerary and choose speakers		January 2008	
Book venue and caterers for launch		Jan 2008	
Send out invitations for launch		1 Feb 2008	
Host launch presentation, field trip, party		10 March 2008	
Replies to contributors (or automated?)		March onwards	
Radio appearances		March onwards	
Newspaper / magazine articles		March onwards	
Adverts in botanical / nature publications		March onwards	
Posters at UCT, UWC, Kirstenbosch, Nature reserves		March onwards	
Presentations to schools / Friends groups / Interest groups		March onwards	
Arrange outings / hacks		March onwards	
Seek donations of prizes and arrange competitions (best photo, best contributor etc.)		March onwards	
Annual Stakeholder meeting		November	Presentation to Participants, stakeholders

### ***The database***

The database will contain:

- digital photographs of species linked to detailed locality information (GPS co-ordinates where possible) and relevant species and image information.
- a collation of records and related information for Cape Town including locality information from private and public databases and herbaria, as well as selected literature.

The database will allow us to provide:

- a comprehensive online electronic guide to the plants of Cape Town, illustrated with ample high quality colour photographs showing the salient features
- precise localities for species, which can be used to inform the City of Cape Town and Sanparks conservation strategies.
- scientifically valuable photographic documentation of variation within species
- distribution details for invasive species, facilitating effective management.
- A hardcopy photographic guide/s for the biological species of the area (at a later stage of the project).

## ***Public participation***

The flexibility of the internet as a way to share information, in tandem with its predicted rapid future growth as a medium in South Africa, makes the web an ideal place for the publication of a plant database.

Members of the public will be able to participate in the project by:

- Contributing their photos and information to the database
- providing / suggesting names (taxonomic classifications) for unnamed or incorrectly named photographs – the ability to name pictures will depend on a user's knowledge level and track record.
- rating photos according to their usefulness and aesthetic value

CASABIO will also undertake several public outreach programs including:

- regular field outings to photograph plants and animals, attended by interested members of the public
- field outings and activities for school groups, as well as inter-schools competitions.

The online version of the CASABIO database will make plant photos and information available to the public in a user friendly way. Features will include:

- the ability to submit photos and have them identified by the online CASABIO community
- the ability to rapidly identify or shortlist species by use of a filter system based on simple characters (e.g. flower colour, month of flowering), making plant identification less intimidating to the general public
- the ability to browse photos arranged in taxonomic order and compare and contrast photos of similar species (or species that appear similar to the uninitiated).
- a Cape Town botanical forum where members of the public can discuss botanical topics and submit questions
- the ability to print out species lists for reserves or defined areas/ routes

## ***Social Outreach Programs***

Due to the rapid loss of species in the CMA, there is an urgent need for more dedicated field botanists to find, photograph and map species. In the job market, there is a demand for botanists able to competently assess the botanical value of an area for the purposes of conservation and environmental impact assessment (EIA). There are also many opportunities for tourist guides with a keen knowledge of local biodiversity. CASABIO aims to:

- train and support two youngsters from previously disadvantaged backgrounds who have been identified during an interviewing process as showing a keen interest in natural science and having the drive and ability to pursue a career in conservation or botany. The trainees will learn about and play a role in, amongst other things, field identification and photography, herbarium work, basic taxonomy, data capture, database administration and public presentations and outings.
- encourage tour guide trainees or those with the desire to become tour guides to join us on field trips, where they will learn valuable skills.

#### **4. Budget (2007 / 2008)**

<b>Item</b>	<b>2007</b>	<b>2008</b>
<b>Salaries</b>		
Project Manager	R96 000	R96 000
Project Co-ordinator	R96 000	R96 000
<i>Stipend for trainees x2</i>	<i>R96 000</i>	<i>R96 000</i>
<b>Software development</b>		
6 month contract (year 1) 2 month contract for improvements (year 2)	R80 000	R 10 000
<b>Equipment</b>		
2x Desktop computers with printer	R12 000	-
Slide scanner with feeder tray	R15 000	-
Phone / Fax / photocopier	R1 000	-
Furniture	R10 000	-
<b>Operational Costs</b>		
Server space and hosting	R12 000	R12 000
ADSL Internet Connection + telephone	R16 000	R16 000
Office rental + rates	R60 000	R60 000
Travel costs	R10 000	R10 000
Advertising / Marketing	-	R15 000
Annual Audit	R1000	R1000
<b>Events</b>		
Site Launch (incl. catering, venue hire)	-	R10 000
Annual Stakeholder meeting	-	R10 000
<b>TOTAL</b>	<b>R399 000 (R495 000 incl. trainees)</b>	<b>R336 000 (R432 000 incl. trainees)</b>

#### **Budget 2008**

Envision having 2 trainees, 4 paid collectors, these are ex-botany/zoology graduates. These guys go out, collect plant material, and identify it using the Guthrie herbarium.

Volunteers. The use of volunteers is imperative in a programme like this. The volunteers may assist to:

- a) Scan in literature
- b) Deal with herbarium / museum collections:
  - mount specimens
  - curate the specimens
  - identify the specimens
- c) Seek funding for the organization
- d) Create and Facilitate marketing schemes
- e) General assistance with the running of the organization
- f) Collect field information.
- g) Generate future potential through the use of marketing schemes.

## **5. Organizational Information**

### **5.1 Contact details**

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<i>Name of project</i>	CASABIO Life Archive
<i>Name of organization</i>	CASABIO (Collaborative <b>A</b> rchive of <b>S</b> outh <b>A</b> frican <b>B</b> iodiversity)
<i>Name of contact person</i>	David Gwynne-Evans - Project Manager
<i>Postal Address</i>	CASABIO 31 Grotto rd. Rondebosch 8000
<i>Physical Address</i>	As above
<i>Telephone Number</i>	D. Gwynne Evans – CEO Cell: 072 368 9244
<i>Fax</i>	





" [capebio@gmail.com](mailto:capebio@gmail.com)





## **5.2 Establishment and Registration Status**

CASABIO was established in January 2006 and was registered as a Section 21. Company (Non-Profit Organization) on 2 February 2007.

NPO Registration number:

VAT Registration number:

## **5.3 Banking details**

<i>Bank:</i>	Standard Bank
<i>Branch:</i>	Rondebosch
<i>Name of the account:</i>	David Gwynne-Evans
<i>Account number:</i>	2749200964
<i>Branch code:</i>	02-50-09

## **5.4 Auditors**

*Name: Cooper & Company*

*License number: R41134*

*Tel: (021) 762 3535*

*Fax (021) 762 3558*

## **5.5 Organizational**

**Vision:** To bridge the gap between biodiversity science and the public

**Mission:** To foster public interest in Cape Town's unique plants and animals and to allow the community at large to participate in their conservation and study.

## **5. KEY CHALLENGES**

### **1) Making the project attractive to the public**

We want the CASABIO project to gain buy-in from a broader spectrum of the public than is typical for a conservation project. In order to capture the attention and imagination of the public we plan to:

- actively seek out contributors and encourage people/ groups/ schools to take part
- make the user interface very easy to use for those with little knowledge of computers
- make sure the website can be used by people with limited or no knowledge of plants because of its unique features i.e. identification is photo-based rather than text-based and the database can be filtered using simple characters that everyone can understand (e.g. colour, height)
- make the website stylish and impressive
- market the site through electronic and print media
- incorporate a competitive element into the database, where users can improve their ratings and privileges according to how active they are

### **2) Unscrupulous collectors**

Whenever locality information is made freely available, there is a risk that unscrupulous people will use this information in order to find and remove plants from the natural environment for their own personal gain. In order to combat this, we will:

- deny the general public access to locality information for endangered or sensitive species (this information will be available to conservation officials and trusted persons)
- stress that contributors should NEVER dig up or remove plants from the natural environment.

### **3) Forming partnerships**

As a new organization, CASABIO will need to consult widely within the botanical community and work hard to:

- form partnerships with organizations with goals closely allied to ours, such as:
  - SANBI / CREW
  - The City of Cape Town
  - WESSA Friends groups
  - WESSA Schools Project
  - UCT
  - SABIF / SATOL / GBIF
- get buy-in from professional botanists and specialists whose help will be needed in order to accurately identify (as far as possible) photographs in difficult groups

## **6. TARGET BENEFICIARIES**

### 1) Trainees

Through a screening process, CASABIO will identify two enthusiastic and committed disadvantaged youngsters who, by aiding us in the running of the project and accompanying us on field trips, will gain experience in various aspects of field biology and data collection / management. They will be paid a small stipend for the course of the project and will gain valuable, marketable skills towards a future career in conservation /science.

### 2) Conservationists and scientists

CASABIO will benefit:

- *conservationists* by providing new species locality information linked to photos for verification
- *scientists* by documenting variation in species (e.g. morphology, size and colour) and other ecological information such as flowering times and relationships between plants and pollinators / dispersers / herbivores
- *herbarium staff and plant specialists* by providing a facility for the public to identify their own finds or have their photographs identified by the broader botanical community. Being able to direct people with queries to the CASABIO website will save these professionals valuable time.

### 3) Tour guides

Tour guides will be able to learn how to identify plants using the website and by accompanying the CASABIO team on field trips. They will also be able to print out species lists for reserves or defined areas.

### 4) Tourists

Tourists' enjoyment of Cape Town's natural areas will be enhanced by a better knowledge of the flora and fauna gained by browsing the CASABIO website and they will be able to identify their photographs using CASABIO even after they have returned to their home countries.

### **5) School learners and university students**

Using the CASABIO database, students / learners will:

- be able to gain an understanding of the taxonomic hierarchy of biodiversity
- gain an appreciation of the value of our flora and fauna- the enjoyment that can be had from it and the need to protect it
- have fun by learning about nature photography and participating in inter-schools competitions

### **6) Nature enthusiasts**

Through the WIKI-style architecture of CASABIO, nature enthusiasts, both locally and abroad, will be able to learn about our plants and animals, share their photographs with others, discuss environmental topics and contribute towards the conservation of wild areas.

## **7. DELIVERABLES**

1) The CASABIO database – a useful resource for all Capetonians and tourists, and a great advert for Cape Town as a nature lover's destination and a modern, forward-thinking city.

2) At a later stage of the project, a photographic field guide to the plants (and later animals) of the CMA can be published in book form, using the best photos collected in the CASABIO database.

3) Species locality information for reserve managers (City of Cape Town, SANParks) and conservation groups such as the Custodians of Rare and Endangered Wildflowers (CREW) and the Threatened Species Project (TSP).

4) Valuable ecological and physiological data towards scientific study.

5) Newly trained field botanists and tour guides