ELEPHANT

MANAGEMENT

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ELEPHANT MANAGEMENT

A Scientific Assessment for South Africa

Edited by R J Scholes and K G Mennell

WITS UNIVERSITY PRESS

Wits University Press
1 Jan Smuts Avenue
Johannesburg
2001
South Africa
http://witspress.wits.ac.za

ISBN 978 1 86814 479 2

Cover photograph by Donald Cook at stock.xchng
Cover design, layout and design by Acumen Publishing Solutions, Johannesburg
Printed and bound by Creda Communications, Cape Town

FOREWORD

SOUTH AFRICA and its people are blessed with diverse and thriving wildlife. We are also a developing economy with a growing population. From these facts emerges the particular situation of having most of our protected areas surrounded by land that has been transformed, to a greater or lesser extent, by human development. Large mammals, such as elephants, no longer roam the entire landscape, and their populations are no longer completely governed by the laws of nature. Protecting elephants and the ecological systems in which they exist in a practical and sustainable way that balances the needs of humans, elephants and the environment is a challenge to which I am committed.

This Assessment was undertaken to reduce the degree of scientific uncertainty associated with decisions that must be made very soon and in the medium-to-long term. It helps to evaluate the costs and benefits associated with each choice, both in economic and ecological terms, and clarifies the legal framework within which they must be made. Collectively the chapters in this report reveal the many successes our country's experts, in collaboration with their peers in neighbouring countries and abroad, have achieved in understanding elephants and their needs, in fields as diverse as veterinary science, ecology, animal behaviour, population and resource modelling. Importantly, the Assessment exposes important gaps in our understanding and thus outlines necessary future avenues of research. This Assessment represents a key milestone in an ongoing Elephant Research Programme.

Science does not provide all the information required to resolve the difficult issues raised by the management of elephant in a changing and human-dominated world. Many of the required decisions have a strong element of human values implicit in them. How do South Africans wish to treat the other species with which they share our land? Extensive consultation and careful consideration of the values expressed by a wide range of stakeholders is also an essential part of the process of managing elephant in a democratic country. I am grateful to the many experts and interested persons who invested their time, experience and intellect to deliver this Assessment. I look forward to their continued engagement on the issue of elephant management, which is of great interest to many.

Marthinus van Schalkwyk
Minister of Environmental Affairs and Tourism, 2008

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Acknowledgement and thanks to the following people who contributed to this Assessment through the peer and stakeholder review processes and the review of the Summary for Policymakers:

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ACRONYMS AND ABBREVIATIONS

AENP	Addo Elephant National Park
AFESG	African Elephant Specialist Group
AM	Adaptive Management
APNR	Associated Private Nature Reserves
ASF	African swine fever
ASIS	Assateague Island National Seashore
BCFR	Budongo Central Forest Reserve
BNR	Balule Nature Reserve
BP	Years before present. As a convention, 1950 is the year from which BP dates are calculated
BTB	Bovine tuberculosis
BWMA	Botswana Wildlife Management Association
CBNRM	Community-based natural resource management
CITES	The Convention on International Trade in Endangered Species of Wild Fauna and Flora
CONNEPP	Consultative National Environmental Policy Process
CoP	Conference of Parties
CWI	Care for the Wild International
DEAT	Department of Environmental Affairs and Tourism
EE2	Ethinyl oestradiol
EIA	Environmental impact assessment
EKZNW	Ezemvelo KwaZulu Natal Wildlife
EL	Environmental loading
ENSO	El Niño-Southern-Oscillation
ESSA	Ethics Society of South Africa
EZP	elephant zona pellucida
FMA	Freund's Modified Adjuvant
FMD	Foot-and-mouth disease
FSH	Follicle stimulating hormone
GLTP	Great Limpopo Transfrontier Park
GMPGR	Greater Makalali Private Game Reserve
GNI	Gross national income
GnRH	Gonadotropin Releasing Hormone
HEC	Human–elephant conflict
ICI	Intercalving interval
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature and Natural Resources, or World Conservation Union
KLH	keyhole limpet haemocyanin
KNP	Kruger National Park
KY	Thousands of years ago

LFI	Landscape Functionality Index
LH	Luteinising hormone
LSTCA	Limpopo–Shashe Transfrontier Conservation Area
LTCA	Lubombo Transfrontier Conservation Area
MA	Millennium Ecosystem Assessment
MFPN	Murchison Falls National Park North
MFPS	Murchison Falls National Park South
MK	Mokomasi Game Reserve
MTP	D, L-lactide
MY	Millions of years ago
N&S	Norms and Standards
NDVI	Normalised Difference Vegetation Index
NEMA	National Environmental Management Act of 1998
NEMBA	National Environmental Management: Biodiversity Act 10 of 2004
NEMPAA	National Environmental Management: Protected Areas Act 57 of 2003
NGO	Non-governmental Organisation
NNI	Net national income
NP	National Park
OH&S	Occupational health and safety
OIE	World Organisation for Animal Health
PES	Payments for ecosystem goods and services
PTSD	Post-traumatic Stress Disorder
pZP	Porcine zona pellucida
SANBI	South African National Biodiversity Institute
SANParks	South African National Parks
SRT	Scientific Round Table
SSC	The IUCN Species Survival Commission
TEV	Total Economic Value
TFCA	Transfrontier Conservation Area
TNP	Tsavo National Park
TP	Testosterone propionate
TPC	Thresholds of Potential Concern
TPNR	Timbavati Private Nature Reserve
VOC	Dutch East India Company
WTP	Willingness to pay

PREFACE

Kathleen G Mennell and Robert J Scholes

AS A CONSEQUENCE of the rising number of elephants in protected areas[1] in South Africa, the ecosystems that contain elephants and the people that live adjacent to elephant populations are perceived to be coming under increasing threat. The control of elephant populations by culling has been under a moratorium since the mid-1990s. Attempts to resolve differences of opinion between the authorities responsible for elephant management in the country, private elephant owners, animal rights and biodiversity conservation organisations in South Africa and abroad, and representatives of local communities, have to date not led to a widely agreed future course of action. In 2006, the Minister for Environment Affairs and Tourism convened a Science Round Table to advise on the issue. The Round Table recommended that a Scientific Assessment of Elephant Management be undertaken.

This book is the result of that Assessment, undertaken during 2007, on the authority of the Minister. The Assessment is the first activity in a proposed elephant research programme, which aims to reduce the uncertainties regarding the consequences of various elephant management strategies. The purpose of this Assessment is to:

- document what is known, unknown, and disputed on the topic of elephant–ecosystem–human interactions in South Africa
- synthesise and communicate the information in such a way that decision making and the reaching of social consensus is facilitated.

Note that the Assessment itself does not constitute policy at any level, although it is hoped that it is relevant to the process of policy making at all levels, from the individual protected area through provincial, local, national, regional and international policy.

The Assessment of South African Elephant Management focuses on the interactions between elephants, humans and the ecosystems in which they occur and, in particular, on the possible way elephants could be managed based on their ecology, biology and social significance.

The Assessment addresses more-or-less wild elephants of the species *Loxodonta africana*, in South Africa. Some of these elephant populations are shared with neighbouring countries. Elephants in captive environments, as defined by the Norms and Standards (DEAT, 2008), are not discussed – that is,

elephants that require intensive human intervention in the form of food, water, artificial housing and veterinary care, and which are kept in an area of less than 2000 ha designed to prevent escape.

The Assessment is largely based on information in the peer-reviewed scientific literature, along with associated datasets and models. The Assessment has drawn on material from outside of South Africa where it is relevant to the task. Where non-peer reviewed studies were deemed important, this Assessment itself constitutes the peer-review process. Cited documents that are not easily accessible (i.e. in the 'grey literature') have been placed in the public domain by submitting a copy to the IUCN Elephant Specialist Group library in Nairobi. The Assessment did not aim to generate new primary knowledge but instead sought to add value to existing information by collating, summarising, interpreting, and communicating it in a form that would be useful to decision makers. An important feature of an assessment like this one is the explicit use of expert judgement to evaluate the state of existing knowledge.

This volume has four main sections and an overarching Summary for policymakers:

- What background information is necessary to understand the situation, and what are the current trends in elephant-containing ecosystems? (Chapters 1–4)
- What tools have been developed to manage the growth of elephant populations? (Chapters 5-8)
- What are the ethical, economic and legal issues regarding elephants and elephant-containing ecosystems? (Chapters 9-11)
- What management systems can assist in the responsible management of elephant-containing ecosystems? (Chapter 12)

The Assessment is driven by the issues underlying the management of elephants and not by representation of all elephant-containing areas in South Africa. Given the long history of the Kruger National Park, case histories, decisions and actions from the park are often employed as examples to illustrate various principles. These examples are well documented and have similar parallels in other parks.

A 14-member Technical Board comprising the lead authors, the Assessment leader and the Assessment coordinator were responsible for driving and directing the process (figure 1).

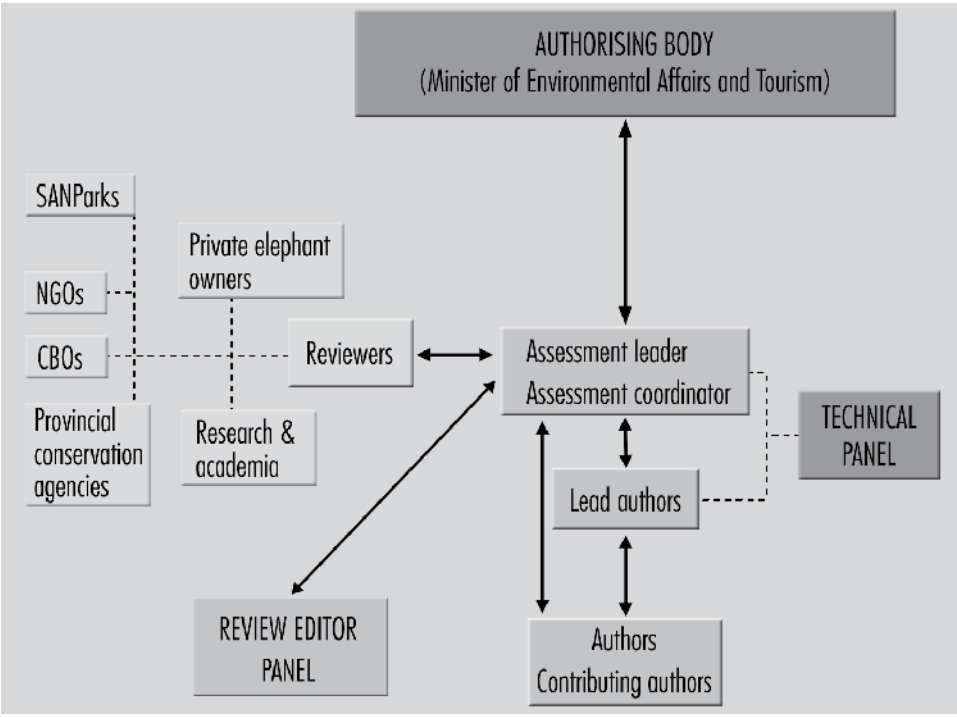

Figure 1: Overview of Assessment role players

Approximately 62 experts were involved as authors and members of the Review Editor Panel. The Assessment underwent two rounds of open review, first by experts who commented on the technical accuracy of the content and secondly by stakeholders who ensured that all issues were addressed adequately and in a balanced fashion (figure 2).

Review comments were received from 73 individuals, of which 21 were submitted by authors of other chapters. Reviewers represented the national and provincial conservation authorities, provincial parks, private managers and owners, conservancies, NGOs, animal welfare groups, academics and individuals involved in the private sector.

By identifying gaps in data and information that prevent policy-relevant questions from being answered, the Assessment can help to guide future elephant research and monitoring that may allow the questions that remain inadequately addressed to be answered in future assessments.

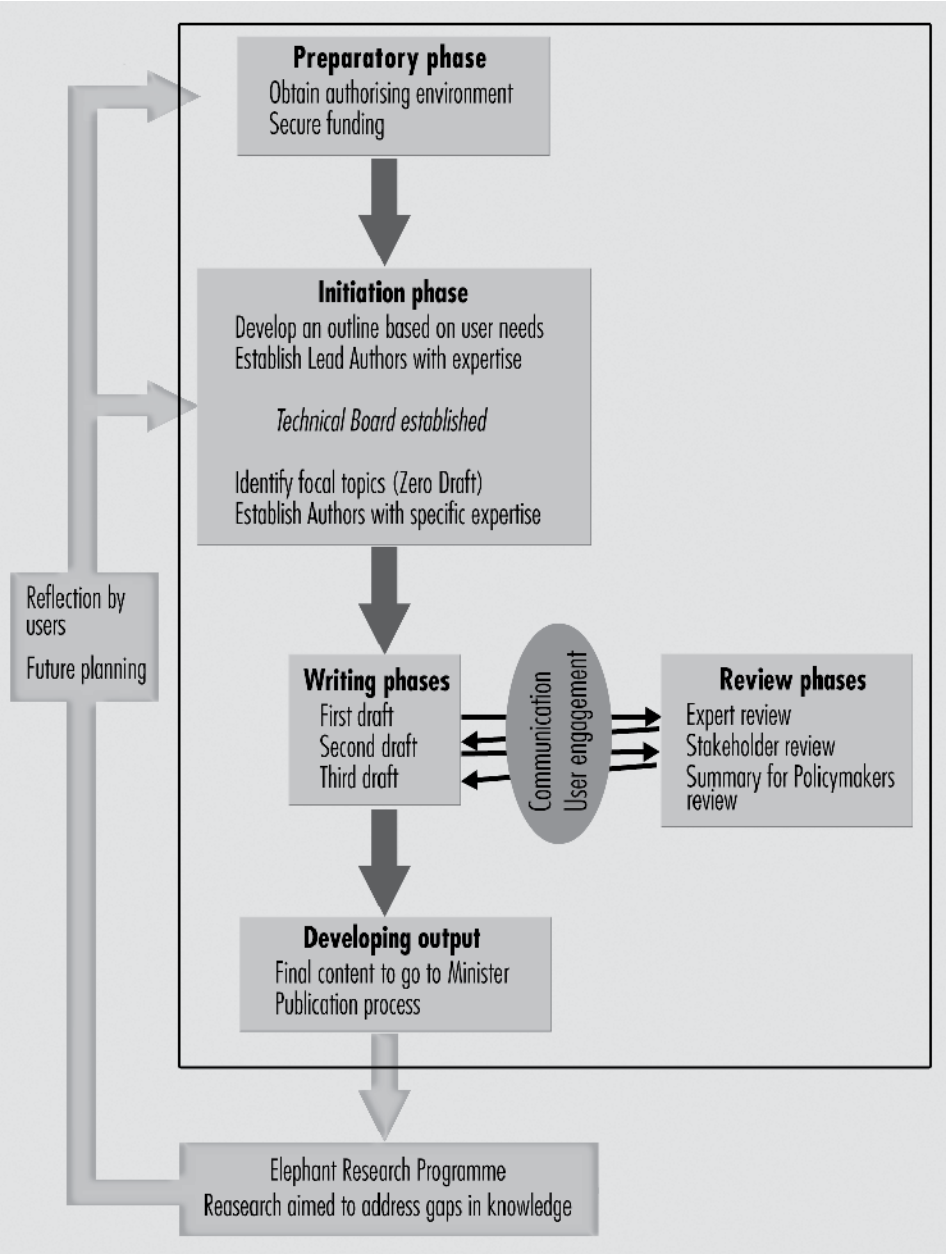

Figure 2: Schematic of the Assessment process and post-Assessment activities. This Assessment is not an isolated process; future research, feedback and suggestions will determine future assessment structure and goals. The iterative review process contributes to the credibility, clarity and balance of the Assessment findings and to the communication with users. The final Assessment findings are communicated to intended users and a wider audience

ENDNOTE

1 The phrase 'protected area' will be used throughout this Assessment as shorthand for areas whose main purpose is the conservation of biodiversity of the legal status or ownership of the land. This includes National Parks, Provincial and Local Government Nature and Game Reserves, and a variety of formal and informal arrangements on private or communally owned land.