



SOUTH AFRICAN

national
biodiversity
institute

S A N B I



University of Pretoria





















**So oft in theologic wars,
The disputants, I ween,
Rail on in utter ignorance
of what each other mean,
And prate about an Elephant
*Not one of them has seen !***

**John Godfrey Saxe (1865),
*The blind men and the elephant***

**IT DOESN'T MATTER
LADDIE, HOW YOU
IDENTIFY A PLANT
AS LONG AS YOU
GET IT RIGHT!**

-Sir William Wright Smith-



H. 1846/54
34

LATIN IS A LANGUAGE

AS DEAD AS CAN BE

IT KILLED THE ANCIENT ROMANS

AND NOW IT'S KILLING ME!

POTENTIAL USES OF FLORISTIC INFORMATION BY NON-TAXONOMISTS

- 1. ECOLOGICAL CONSULTANT**
- 2. ENVIRONMENTAL ENGINEERS**
- 3. ENVIRONMENTAL ASSESSMENT**
- 4. VEGETATION SURVEYORS**
- 5. FOREST MANAGERS**
- 6. SILVICULTURISTS**
- 7. MINING ENGINEERS**
- 8. RARE AND ENDANGERED SPECIES AGENTS**
- 9. FARMERS**
- 10. ENVIRONMENTAL LAWYERS**
- 11. FERTILIZER MANUFACTURERS**
- 12. REAL ESTATE APPRAISERS**

- 13. LAND USE MANAGERS**
- 14. MUNICIPAL AND REGIONAL PLANNERS**
- 15. AGRICULTURAL CONSULTANTS AND EXTENSION AGENTS**
- 16. WEED AND PEST CONTROLLERS**
- 17. RECREATION MANAGERS AND PLANNERS**
- 18. SPORTS FIELD AND GREENS KEEPERS**
- 19. RIGHT-OF-WAY-ENGINEERS**
- 20. FLOOD CONTROL ENGINEERS**
- 21. WATERWAYS MANAGERS**
- 22. LANDSCAPE ARCHITECTS**
- 23. ARCHITECTS**
- 24. FOOD QUALITY CONTROLLERS**

- 25. POSTAL SERVICES**
- 26. CUSTOMS OFFICIALS, BORDER AND OTHER ENFORCEMENT AGENCIES**
- 27. PLANT BREEDERS**
- 28. POISON CONTROL CENTERS**
- 29. PLANT PATHOLOGISTS**
- 30. CIVIL ENGINEERS**
- 31. ANIMAL FEED COMPANIES**
- 32. SEED LABORATORIES**
- 33. SEED COMPANIES**
- 34. NURSERYMEN**
- 35. TOXICOLOGISTS**

- 36. INTERIOR DESIGNERS**
- 37. DERMATOLOGISTS**
- 38. ILLUSTRATORS**
- 39. HEALTH AND INDUSTRY**
- 40. OUTDOOR ENTHUSIASTS**
- 41. USERS OF NATURAL DYES, CRAFTSPEOPLE**
- 42. FORENSIC SCIENTISTS**
- 43. ELEMENTARY TEACHERS**
- 44. SECONDARY TEACHERS**
- 45. UNDERGRADUATE TEACHERS**
- 46. ADULT EDUCATION**

C S P

CORPORATE STRATEGIC PLAN

C S P

**CUSTOMER SATISFACTION
PHILOSOPHY**

C S P

**CERTIFIED SPEAKING
PROFESSIONAL**



Good morning.

We are from The South African Association of Botanists. May we come in and tell you about the latest developments in phylogenetic systematics, electronic interactive keys on the World Wide Web and relational floristic databases?

“ Long-term brand positioning”
“Aiming for the heart”

"... we systematists are fundamentally technologists, scientists, taxonomists, natural historians or philosophers, or, as most of us are, a paradoxical five-partite nothomorph, appearing peripheral to funding agencies, irritatingly unclassifiable to university administrators, even eccentric to an increasing proportion of our colleagues..."

P.M. Smith (1991)

**“In business, you don’t
get what you deserve,
you get what you negotiate.”**



**“Money does not talk, it screams –
and those who provide the money
decide how it will be used.”**

Economic analyst Stephen Mulholland

“There is no such thing as a free lunch.”

Milton Friedman

MAIN OBJECTIVES OF SYSTEMATICS RESEARCH

- **ORIGINAL RESEARCH**
- **COMPILE INVENTORY OF SOUTHERN AFRICAN PLANTS**

STANDARDS FOR CRITERIA USED TO ASSESS RESEARCH PROJECTS:

- **OBJECTIVITY**
- **THEORETICAL SOUNDNESS**
- **LUCIDITY, COMPREHENSIBILITY**
- **JUSTIFICATION**
- **SOUND DOCUMENTATION**

KEY ISSUES :

- **USEFULNESS OF RESEARCH PRODUCTS
(CAN IT BE USED ?)**
- **SOCIAL RELEVANCE (WHO WILL
BENEFIT ?)**
- **ENVIRONMENTAL IMPLICATIONS
(MAINTAIN OR IMPROVE ENVIRON-
MENT ?)**

KNOWLEDGE DISPELS FEAR !

RESEARCH ESSENTIALS

1. COMMON SENSE
2. COURAGE
3. CRITICISM

Publisher to author: “I have good news and bad news.”

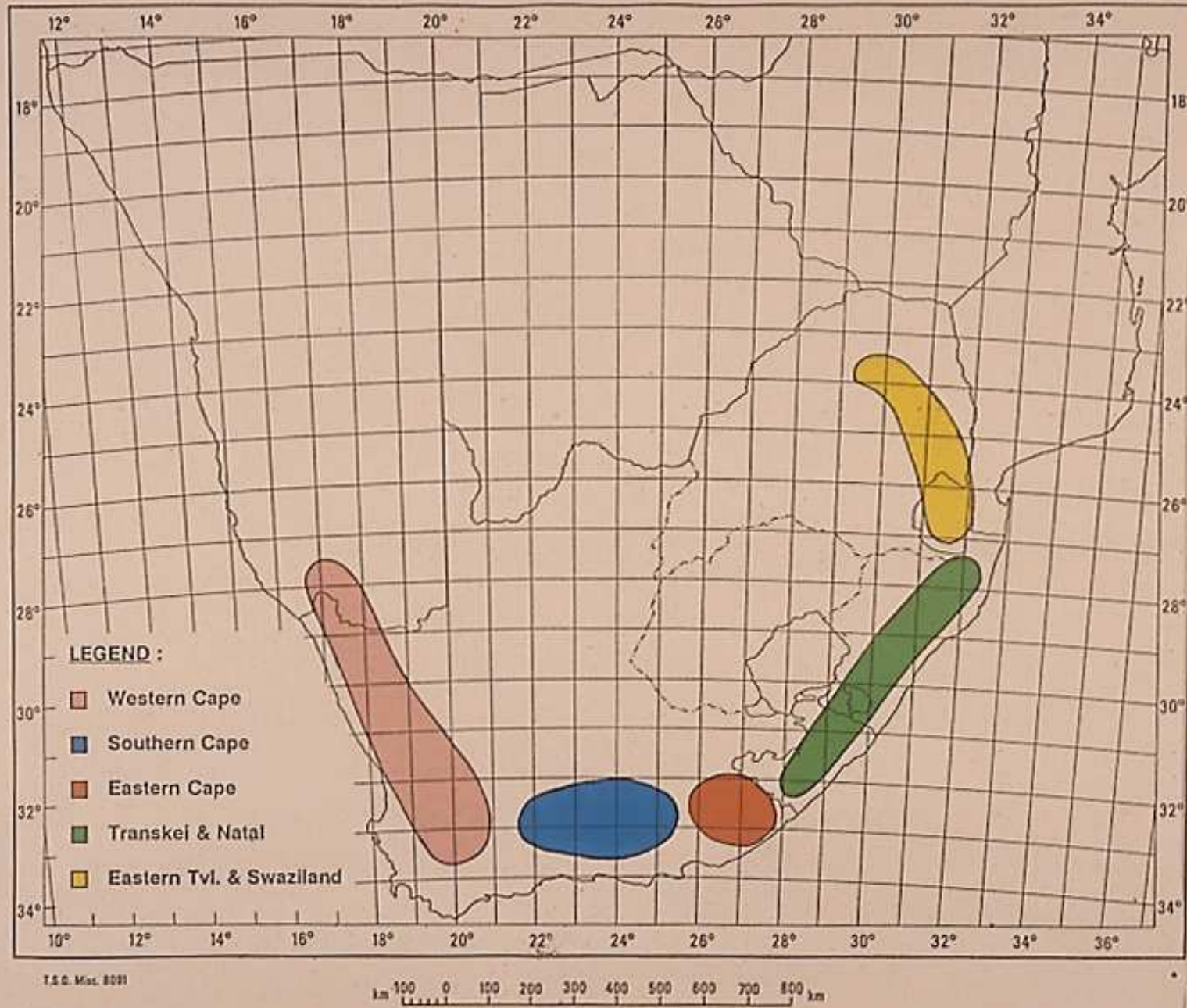
Author: “ Give me the good news first, please.”

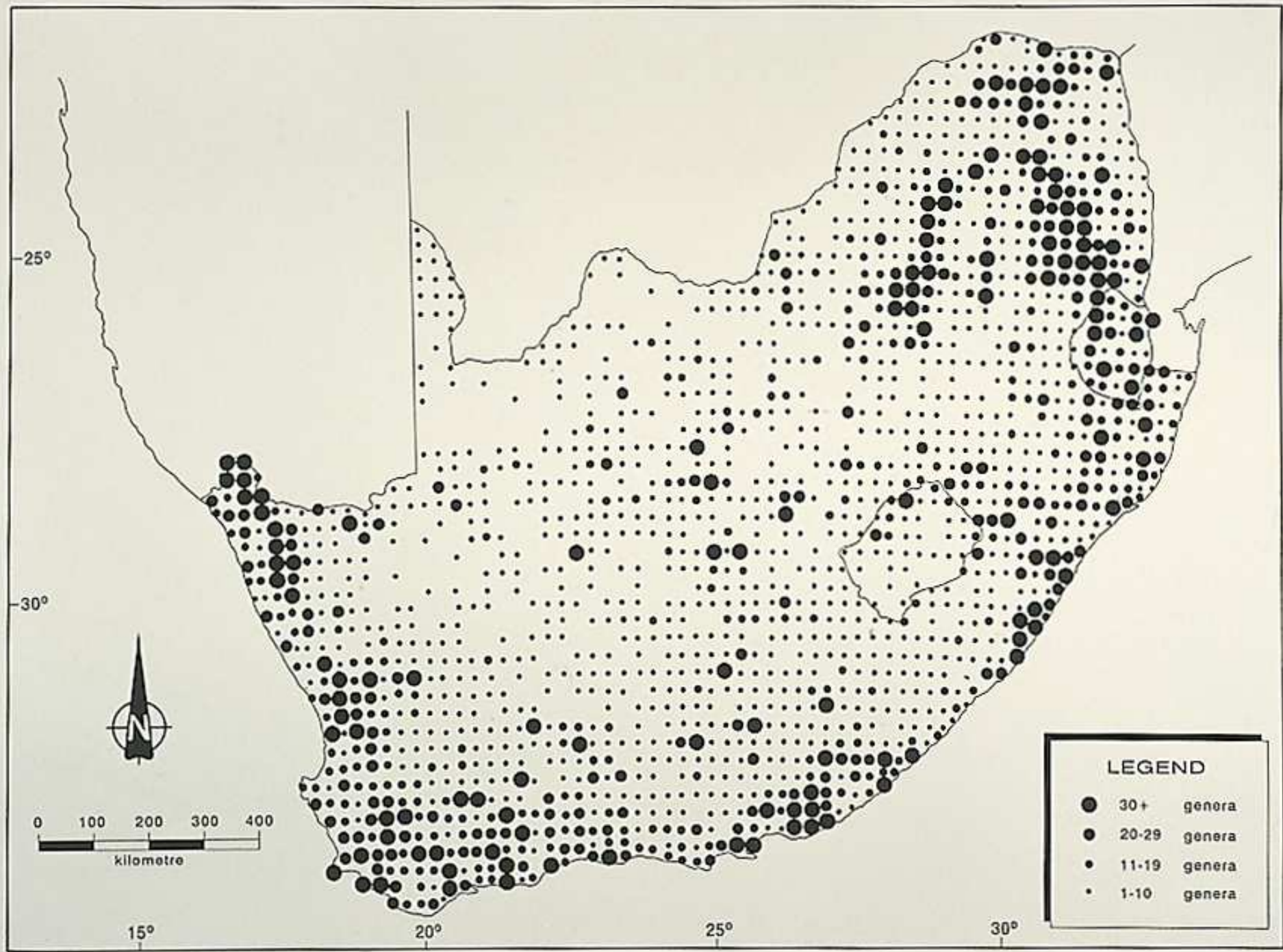
Publisher: “Paramount loved your book.”

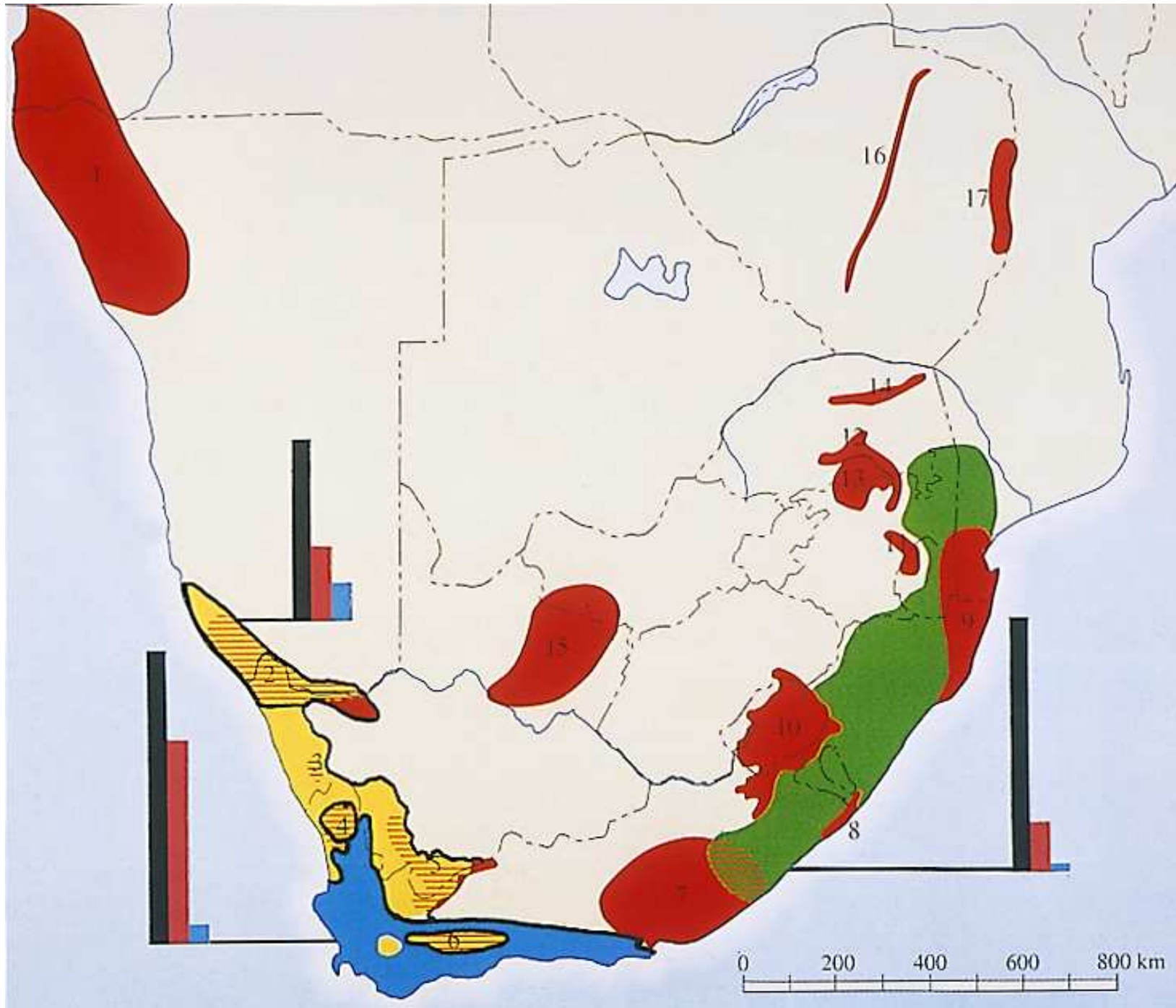
Author: “Great! What’s the bad news?”

Publisher: “Paramount is my dog.”

SOUTH AFRICAN REGIONS OF SUCCULENT DIVERSITY







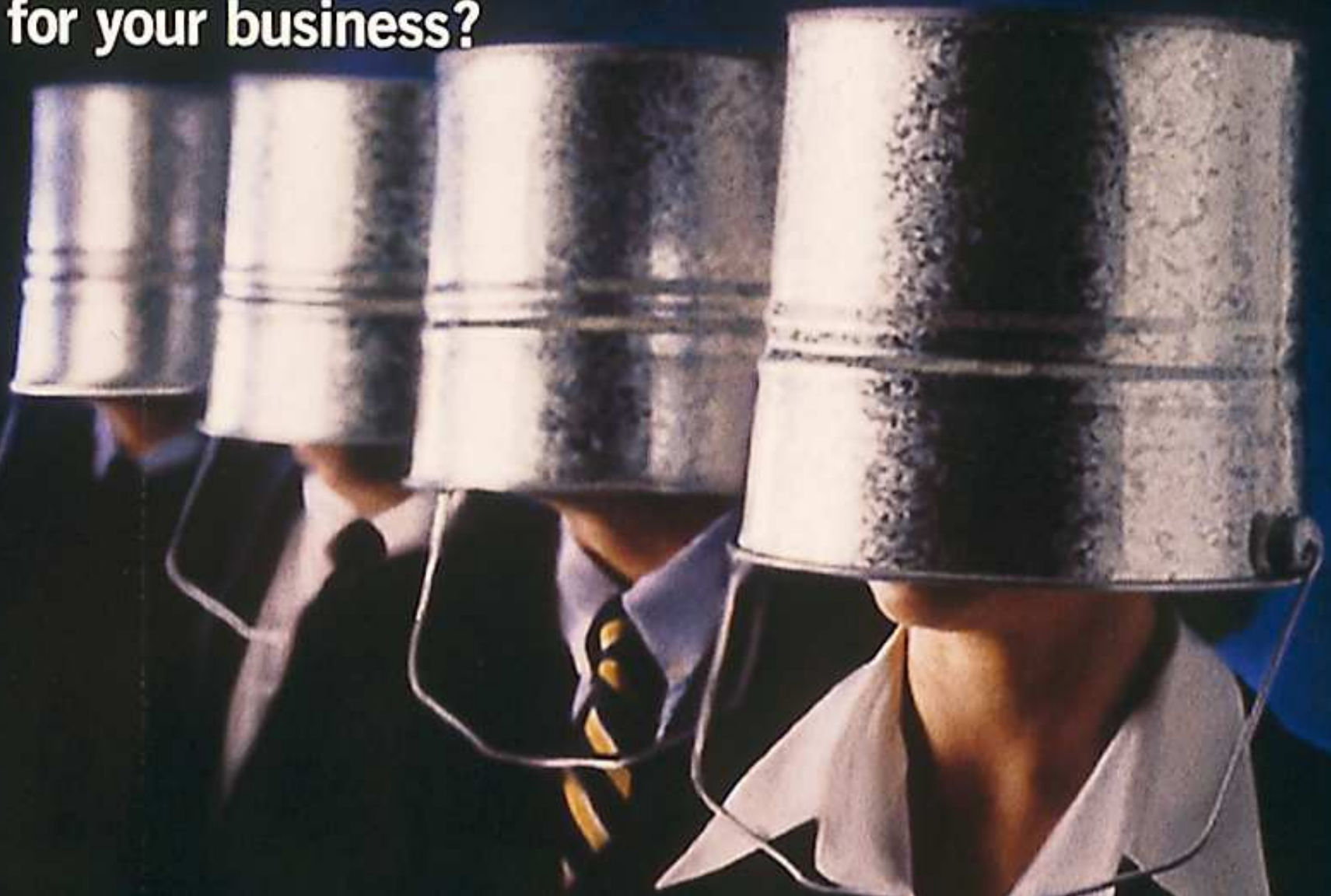
SUCCULENTS OF SOUTH AFRICA

A guide to the regional diversity

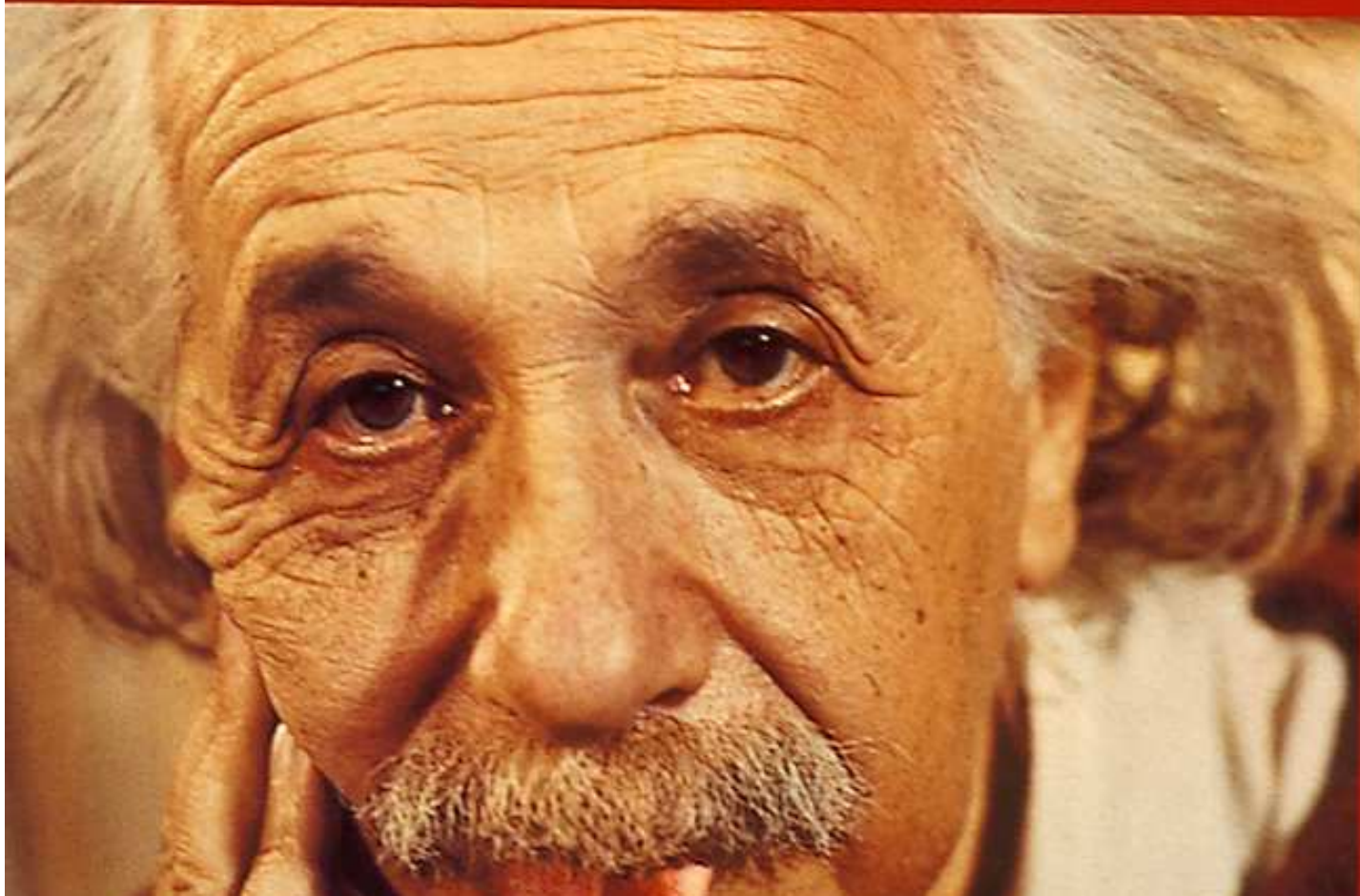
MAP OF REGIONS



**Can you tell which
customer is best
for your business?**



**TAXONOMY ? PUBLICATIONS ?
REGIONS ?
BIOSYSTEMATICS ?**



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Criteria for plant systematics research projects in the National Botanical Institute of South Africa

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Recent changes in the political dispensation of South Africa have had far-reaching effects on all facets of society, including the scientific community. In the spirit of national transformation, it has become necessary to establish guidelines for evaluating plant systematics research projects in the National Botanical Institute of South Africa, in order to obtain and maintain relevance among the many customers and stakeholders of the organization. We propose a set of criteria, phrased as questions, as a guideline for developing research proposals.

Since the early 1990s, major socio-political and economic transitions have been taking place in South Africa. These changes affect the day-to-day existence of every South African and will undoubtedly also influence the work of plant scientists in the country.^{1,2} Plant taxonomists, like others in the scientific workforce,³ are being challenged to reassess their contribution to national needs. During this critical self-evaluation, some questions arise regarding the organization and management of botanical research in South Africa. Which projects should be developed, which should be scaled down or terminated? How much money should be allocated to specific programmes or projects? Who will pay for the research, and why should they?

NBI. We suggest that all research on systematics, present and future, should be evaluated according to these guidelines. These criteria will help the NBI to ensure that its systematics research programmes and projects are more meaningful in today's changing times, and that they contribute to the improvement of both our social and natural environments.

Systematics research in the National Botanical Institute

The NBI comprises four directorates — Research, Gardens, Education and Information, and Administration. The Research Directorate consists of two subdirectorates, one for Plant Systematics and the other for Plant Ecology. Within the Systematics Subdirectorate, research is conducted at the programme level. Numerous individual projects fall under the three current programmes — Systematics Research, Herbarium Management, and Data Management.^{4,5}

The work of systematics researchers in the NBI has two main objectives: first, to compile an inventory of southern African plants, and second, to contribute to botanical knowledge through original research. An inventory will consolidate existing information on the rich flora of southern Africa. Such a catalogue will help to identify plant groups that qualify for more detailed research, and revisions and monographs of these high priority

The Mesembryanthemaceae, South Africa's largest succulent plant family, constitutes a major part of the southern African succulent flora. With approximately 1 800 species in 117 genera, it is also South Africa's second largest plant family. It is almost entirely endemic to southern Africa, although a few species occur naturally outside this region. We view the group as a distinct family and recommend using the legitimate family name Mesembryanthemaceae Fenzl. The re-inclusion of this group in the Aizoaceae is not advocated here.

More than three-quarters of Mesembryanthemaceae species have never been revised. This neglect by systematists is rooted primarily in the magnitude of the group and the morphological problems associated with succulence. This article aims to summarize the current taxonomic status of mesemb genera, highlight the problematic areas in mesemb classification, and prioritize taxonomic research in the Mesembryanthemaceae. We detail the hierarchic level at which taxonomic treatments are available, indicate the hierarchic level which is seen as most problematic, and provide subjective priority ratings for each genus as a guideline for future research.

The Mesembryanthemaceae is South Africa's largest succulent plant family, comprising c. 63% of the southern African succulent flora.¹ With an estimated 1 800 species in 117 genera, it is also South Africa's second largest plant family. The group is almost entirely endemic to southern Africa.

To most South Africans, plants of the Mesembryanthemaceae are known as *vygies*. This Afrikaans vernacular name is often qualified by a descriptive prefix, as in *skaapvygie* or *tierbekvygie*.² The name 'midday flower' reflects the original name, *Mesembrianthemum*, which refers to the opening of flowers around noon, proposed in 1689 by Breyne. Other common names include fig-marigold, ice plant and mesemb. For convenience, we use *mesemb* to refer to any member of the Mesembryanthemaceae throughout this article.

Despite its significance in terms of numbers of genera and species, endemism, arid land agriculture and horticultural appeal, the Mesembryanthemaceae remains one of the problem groups of South African botany. Only 21% of species have been revised since 1940 – a significant date in mesemb taxonomy, as most genera were described in the 1920s and 1930s. This unsatisfactory state of affairs has important implications – from a lack of understanding of phylogenetic relationships, to the uncertain and often confusing use of names in horticulture, conservation biology and ecology.

The purpose of this article is primarily to stimulate intensified taxonomic research in the Mesembryanthemaceae. We have summarized the current taxonomic status of mesemb genera, pro-

genera and higher taxa, and the most recent taxonomic revisions for all currently accepted genera are listed in the Appendix.

Historical overview

The taxonomy of the Mesembryanthemaceae started in 1753 when Linnaeus listed 35 species under the genus *Mesembryanthemum* in his *Species Plantarum*. The subsequent introduction of large numbers of novel southern African mesembs to European botany during the late 18th century made this single genus increasingly heterogeneous and unwieldy, with most species assigned to it on the basis of the superficial resemblance of their flowers.⁴ Haworth,⁵ in his *Revisiones Plantarum Succulentarum*, described 310 species of *Mesembryanthemum*, which he grouped under 69 different sections. He considered some of these sections to be distinct genera, but – with the exception of the genus *Hymenogyne* – did not publish generic names. In his *Monographiae Generum Aloes et Mesembryanthemi* (1836–1863) – a collection of lithographed and partly hand-coloured plates accompanied by Latin descriptions – Salm-Dyck divided both *Aloe* and *Mesembryanthemum* into numerous sections distinguished by numbers.⁶ Subsequent monographers of *Mesembryanthemum*, such as Berger,⁷ based their compilations mainly on Salm-Dyck's illustrations and descriptions. These, although beautifully figured, are notorious for their lack of structural detail of reproductive organs, and misapplied names.

It was not until 172 years after Linnaeus's original description that N.E. Brown of Kew, following intensive investigation of floral, fruit and seed characters of original plant material, began dismantling *Mesembryanthemum*. He wrote: 'All of us have followed one another blindly by accepting the generic characters, as given in books without investigating their applicability as a whole to the various species.'⁸ Brown, who had never travelled to the countries of origin of the succulents that he studied for more than 60 years, had remarkable powers of minute observation, and recognizable drawings could be made from his plant descriptions.⁹ He made the fundamental distinction between species with axile placentation and those with 'parietal' placentation,⁴ which now forms the basis for the separation of the Mesembryanthemaceae into two subfamilies, the Mesembryanthemoideae and Ruschioideae (Fig. 1). The mesembs subsequently underwent extensive generic fragmentation, and more than 120 genera⁶ are widely recognized.

Brown's discovery⁴ initiated intense interest in the supra-specific taxonomy of the Mesembryanthemaceae. The main players in the ensuing race to establish genera and describe new species were based in England, Germany and South Africa.

Professor G. Schwantes, a German prehistorian and amateur botanist, provided a basic typification of mesemb seed capsules.^{10–12} Loculicidal hygrochastic capsules, which repeatedly open when wet and close when dry, are characteristic of the

**TRAVELLERS TALES IN COPENHAGEN
AIRLINE TICKET OFFICE:**

***"WE TAKE YOUR BAGS AND SEND
THEM IN ALL DIRECTIONS"***



RELEVANT:

BEARING UPON,

CONNECTED WITH,

PERTINENT TO THE MATTER IN HAND

SHORTER OED









the top

Tourism turnaround

Message from
Coleman
Andrews,
SAA's
president
and chief
executive



talk from

Tourism as the catalyst for economic growth is hardly a new concept.

It has been estimated by the World Economic Forum that one permanent job is created for every eight tourists who visit our country. Statistics show that about 300-million tourists travel internationally every year. South Africa attracts less than 0,2 per cent of them (5,7 million in 1998). Yet that figure is up 36 per cent from the number of tourist visits in 1994, the year of the first democratic elections.

South Africa has yet to scratch the surface of this lucrative industry. It is estimated that tourism contributes R20 billion to our economy but so much more can be achieved . . .

What is new in South Africa is the opportunity to use tourism as the engine of the African Renaissance. A reawak-

boost

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associated with
network televi-
cord labels and
publishing
the old and new
collision course
bizarre mating

and stock market growth
have brought massive invest-
ments in infrastructure to
support delivery of richer
media content on the Web.
Meanwhile, the Web has
evolved at an unparalleled
pace, going from zero users
in 1993 to 300 million by
mid-2000, according to a re-
cent estimate by Internation-
al Data Corp. The figure is
expected to double in three to
five years.

The Web provides a new
delivery platform for a wide
range of media (music, tele-

phones.

Says Antoin
aging director
France: "For
really key to h
content that en
fer unique ser
customers." H
very important
offer content se
tomers through
interaction. Ou
bring all sorts o
information s
transaction serv
whether access
bile phone or in

It's not that man should
understand the machine;
it's that the machine
should understand man.

**Protect, manage, add value to,
and share information in a way
that takes your company to new
heights.**

Basic research

is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of phenomena and observable facts, without any particular application or use in view.

Applied research

is also original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific practical aim or objective.

**"We know a subject ourselves -
or we know where we can find
information on it."**

Samuel Johnson

of

SOUTHERN AFRICAN

Plants

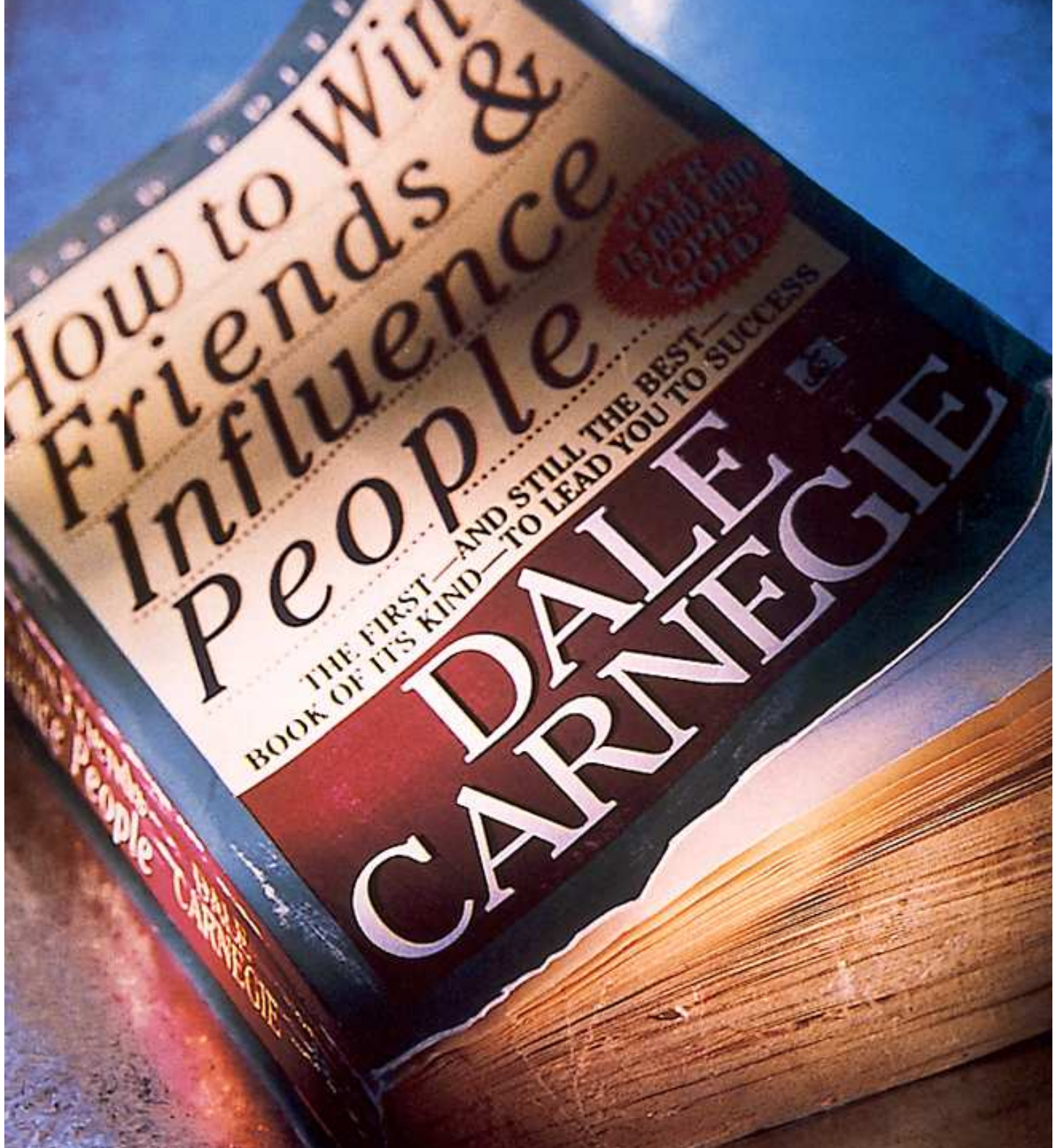


Editors:

N.L. Meyer, M. Mössmer and G.F. Smith

“Through the gathering gloom of a late-October afternoon, along the greasy, cracked paving-stones slick from the sputum of the sky, Stanley Ruddlethorp wearily trudged up the hill from the cemetery where his wife, sister, brother and three children were all buried, and forced open the door of his decaying house, blissfully unaware of the catastrophe that was soon to devastate his life.”

– David Chuter
(Worst opening sentence to an imaginary novel)



How to Win Friends & Influence People

THE FIRST — AND STILL THE BEST —
BOOK OF ITS KIND — TO LEAD YOU TO SUCCESS

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CONVENTION

on

BIOLOGICAL

DIVERSITY

TEXT AND ANNEXES



**South Africa's Constitution, 1996:
Bill of Rights No.24: Environment**

Everyone has the right -

(a) to an environment that is not harmful to their health or well-being; and

South Africa's Constitution, 1996: Bill of Rights No.24: Environment

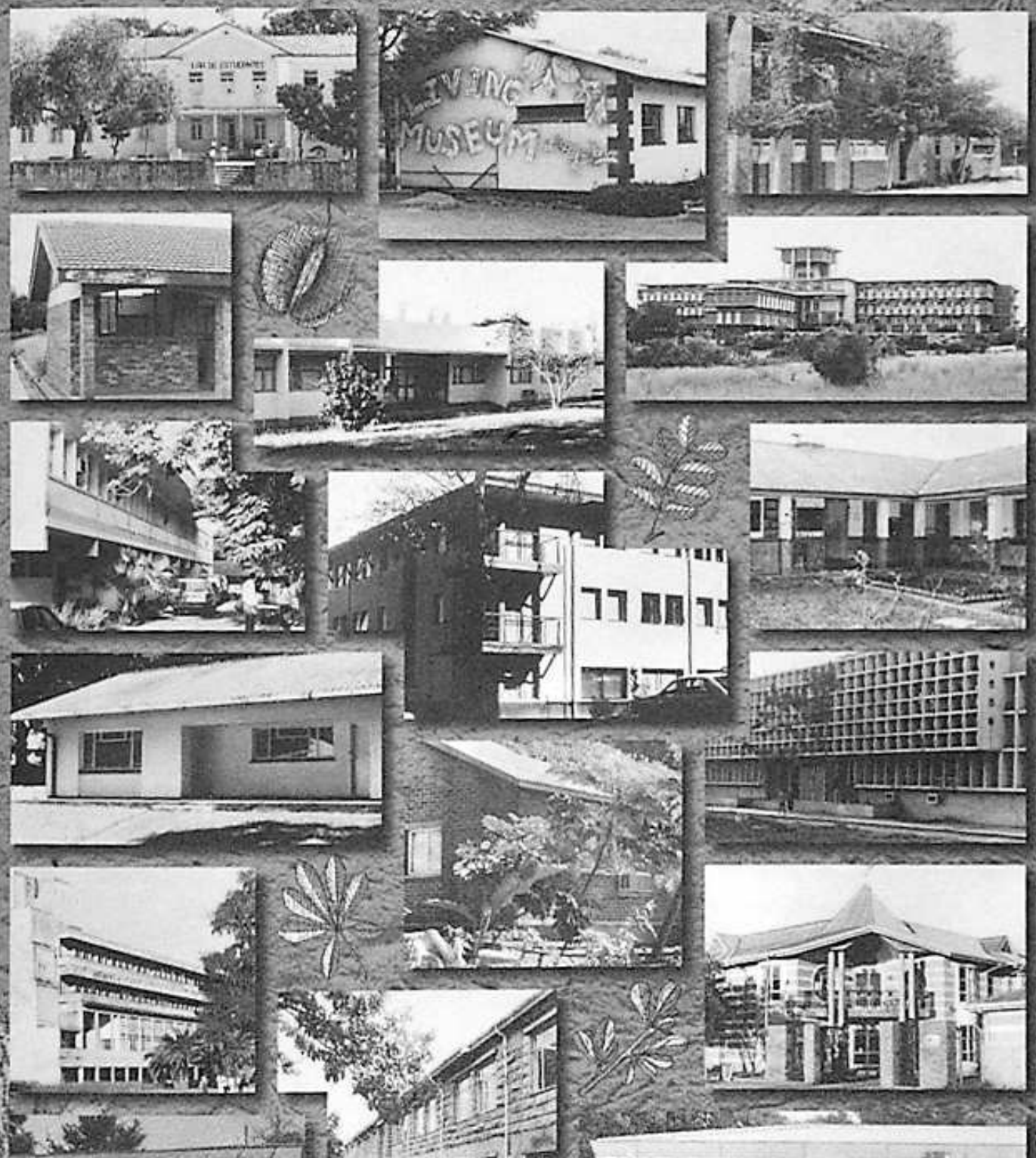
- **Everyone has the right -**
- **(b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that - (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.**



Participating countries

Southern Africa





**NOT OF AN AGE,
BUT FOR ALL TIME.**

-Ben Johnson on William Shakespeare-

**"I keep six honest serving men
(They taught me all I knew);
Their names are WHAT and
WHY and WHEN
and HOW and WHERE and WHO."**

**Rudyard Kipling 1865 - 1936
(Just-so Stories)**



7 8 AUG 1991
C. S. N.
195-1121

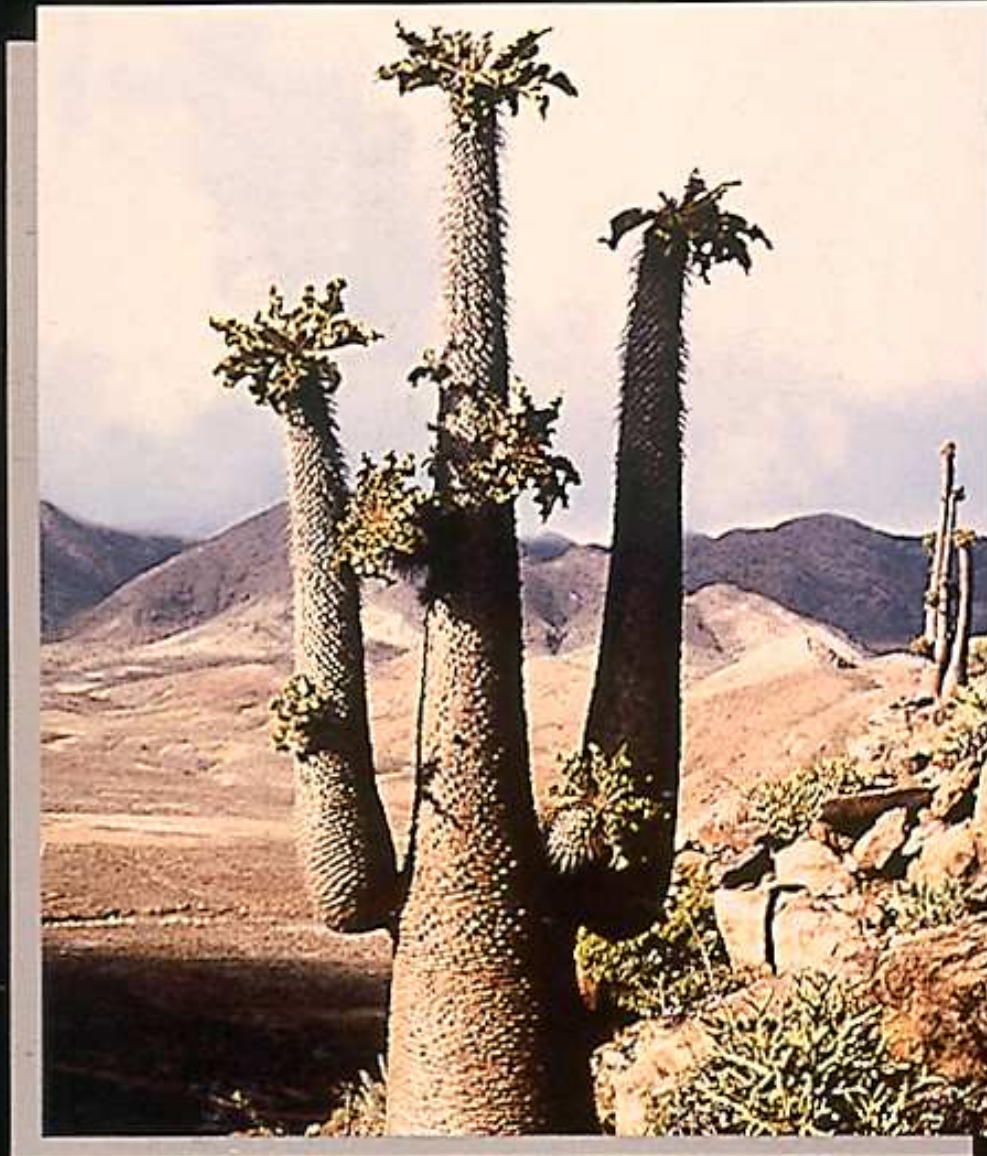
Threatened plants of Southern Africa

AV Hall, M de Winter, B de Winter and S A M van Oosterhout

SOUTH AFRICAN NATIONAL SCIENTIFIC PROGRAMMES REPORT NO

Succulent Plants

Compiled by Sara Oldfield



IUCN/SSC Cactus and Succulent Specialist Group

Do you, JOHN FRANK MAY, promise to take MARGARET RACHEL GREENE to dinner & a "chick flick" at least twice a month?



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JOHN
TIRARO.
11 • 26 • 00

UCCOMICS.COM

**"Nothing is quite as
visionary as a sound grasp
of the real."**

THE END

