

# Ecological research and conservation management in the Cape Floristic Region between 1945 and 2015: History, current understanding and future challenges

SPECIAL PUBLICATION  
OF THE  
ROYAL SOCIETY OF SOUTH AFRICA

REPORT OF THE COMMITTEE  
ON THE  
PRESERVATION OF THE VEGETATION OF THE  
SOUTH WESTERN CAPE

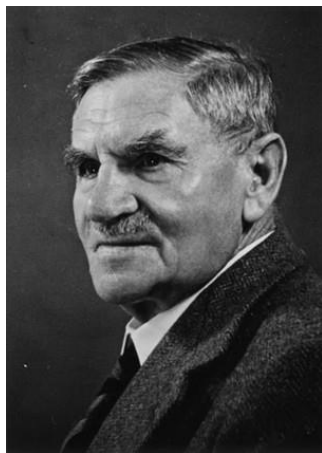
— BY —  
Dr. C. L. WICHT



# The “Wicht report” was actually a committee report



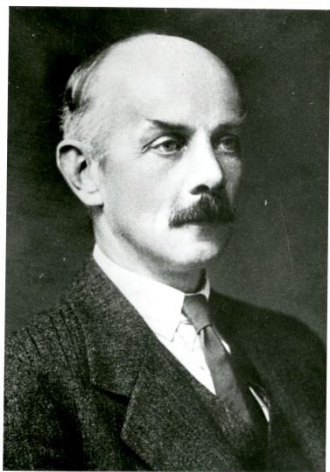
Christiaan L. Wicht  
(1908-1978) – Forester



John S. Henkel  
(1871-1962) –  
Forester



R. Harold Compton  
(1886-1979) – Botanist



Robert S. Adamson  
(1885-1965) – Botanist



Sidney H. (Stacey)  
Skaife  
(1889-1976)  
Entomologist and  
Educator

# Main “threats” addressed by the Wicht Committee

- Burning
- Pasturing
- Erosion
- Spread of “exotic and undesirable species”
- Land conversion
- Gathering of flowers

# Proposals for preservation made by the Wicht Committee

- Fire protection and controlled burning
- Exclusion of pasturing
- Control of erosion
- Destruction of undesirable species
- Establishment of Nature Reserves
- Research – experiments, surveys, “conservation planning”.



# Our monograph and authors

Title: Ecological research and conservation management in the Cape Floristic Region between 1945 and 2015: History, current understanding and future challenges



# Perspectives from the younger generation



Adriaan Grobler  
PhD, NMMU



Andrea Beyers  
MSc, NMMU



Bongani Mnisi  
MSc, SU



Jurene Kemp  
PhD, SU



Petra de Abreu  
PhD, UCT



Stuart Hall  
PhD, SU



Joy Mangachena  
MTech, CPUT

POSTER

INCLUSION OF  
PERSPECTIVES IN  
PAPER

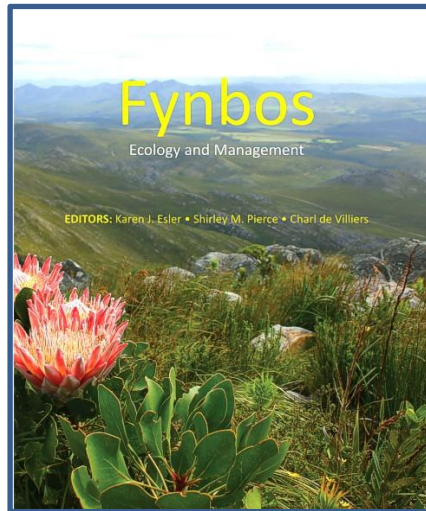
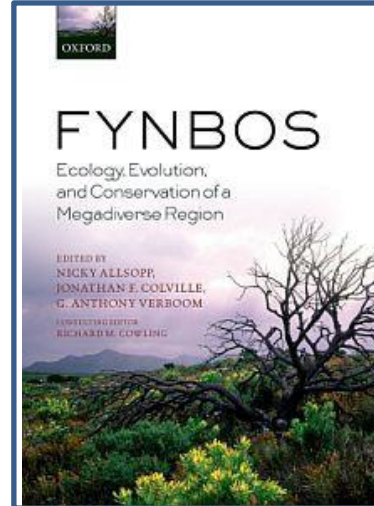
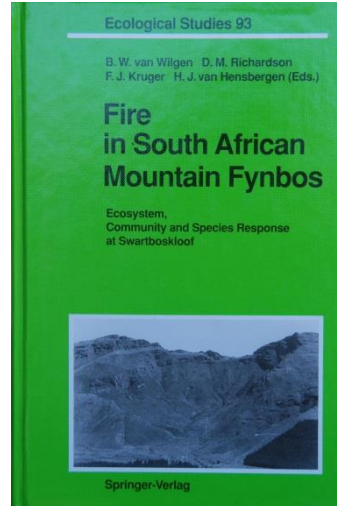
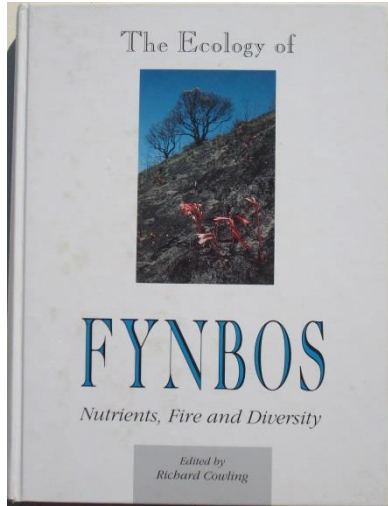
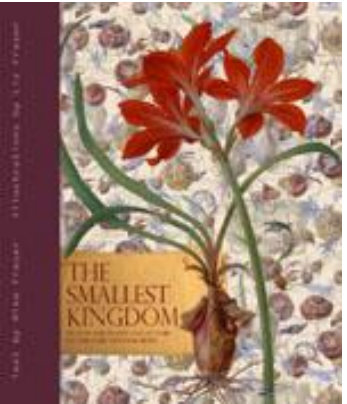


# Books and how our effort differs

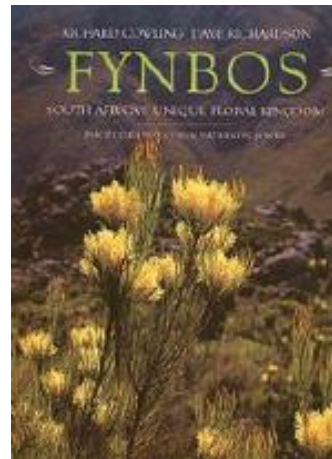
Science



Pre-20<sup>th</sup>  
century history



Management  
for non-  
scientists



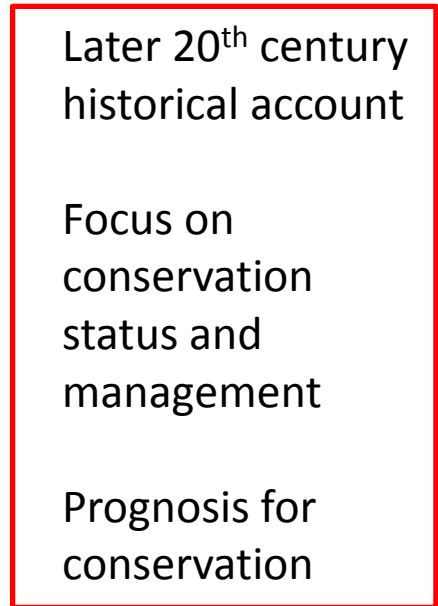
Popular  
text



Later 20<sup>th</sup> century  
historical account

Focus on  
conservation  
status and  
management

Prognosis for  
conservation



# Our monograph

- 82 200 words (text plus references and tables, without boxes or figures)
- +/- 670 references
- 19 text figures
- 9 boxes, with additional figures and photographs
- To be published in the *Transactions of the Royal Society of South Africa*
- Presents the longest history – worldwide - of concerted scientific endeavour aimed at the conservation of an entire biome.



# Wicht Committee's concluding remarks in 1945

- “an objective study of the vegetation of the south-western Cape Province leads inevitably to the conclusion that it is deteriorating rapidly and that measures to preserve it should immediately be applied”
- “the people of South Africa would, however, be disgraced if they did not make a supreme effort to prevent the total loss of the extraordinary rich and beautiful Cape vegetation”
- How have we done?

# Fire and the burning of vegetation

We now understand fynbos fire ecology – fynbos is fire-prone, fire-adapted and fire-dependent

But we can't manage fires, and modern fire regimes driven by wildfires

Prescribed fires are hardly ever carried out

Mainly, that does not matter, but:

- Fires are becoming more frequent
- The presence of fire-adapted alien plants complicates fire management



# Invasive alien plants

Situation has deteriorated substantially since the Wicht Committee report

Concerns about management – we are not making good progress

Public works programmes provide almost all funding for alien management, but they require additional goals to be met





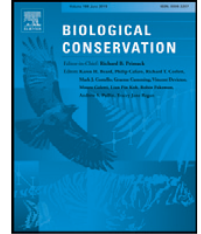
# Can we control invasive alien plants in the fynbos?



Contents lists available at ScienceDirect

Biological Conservation

journal homepage: [www.elsevier.com/locate/bioc](http://www.elsevier.com/locate/bioc)

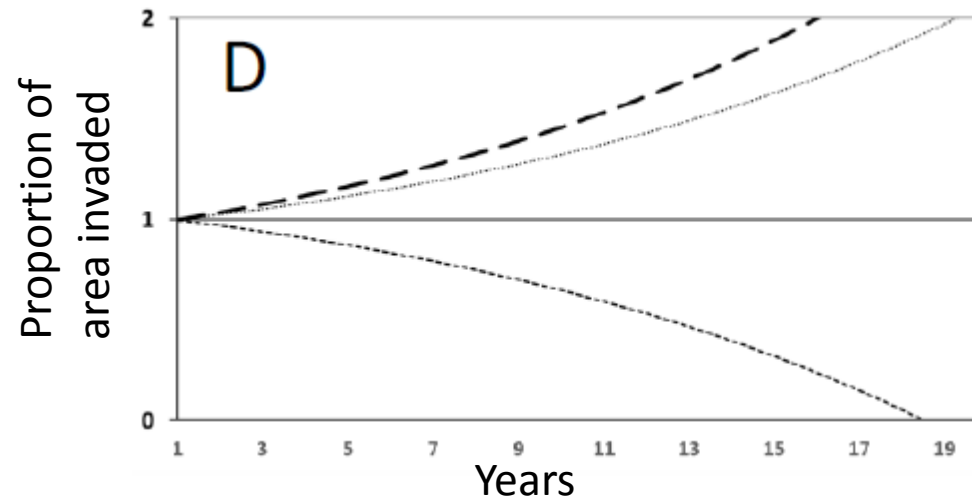


Historical costs and projected future scenarios for the management of invasive alien plants in protected areas in the Cape Floristic Region



Brian W. van Wilgen<sup>a,\*</sup>, Jennifer M. Fill<sup>a</sup>, Johan Baard<sup>b</sup>, Chad Cheney<sup>c</sup>, Aurelia T. Forsyth<sup>d</sup>, Tineke Kraaij<sup>e</sup>

Maybe, but we will need to make some substantial changes ....



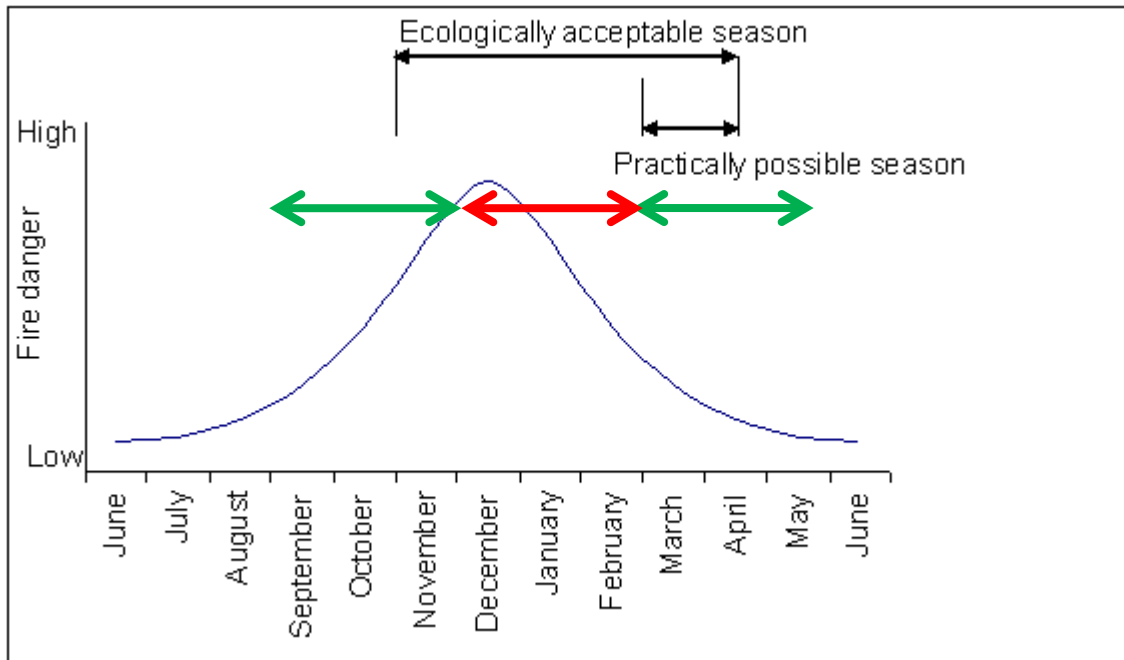
# Solutions?

- Provide funding directly to the conservation authorities
- Relax prescribed burning restrictions
- Focus on pines and hakeas only
- Plan and monitor
- The stakes are too high not to get this right



"It doesn't seem to be covered in our invasive species management plan."

# Use fire more effectively in alien plant control



## Use Working on Fire!

### Advantages:

- More days to complete burning programme
- Cheap and effective killing of alien seedlings

### Disadvantages:

- Less Proteas

### But:

- This will only need to be done until alien density is reduced

- **The alternative is worse!**



# Flower harvesting and resource use

No evidence that rare species have been exterminated

Growing switch from wild harvesting to cultivation

Rapid increase in illegal harvesting to supply a burgeoning market for traditional medicine – this is the new threat

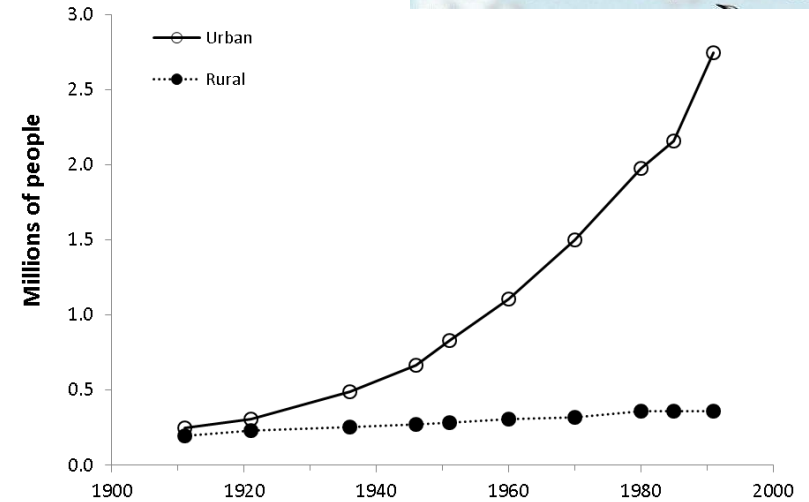
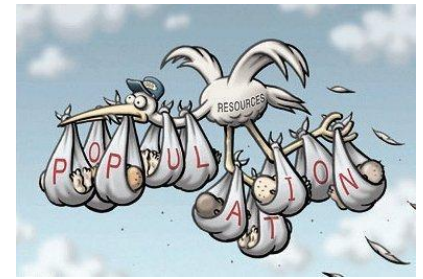


# Land-use change

1934



2007



Urbanization is the main driver of land-use change

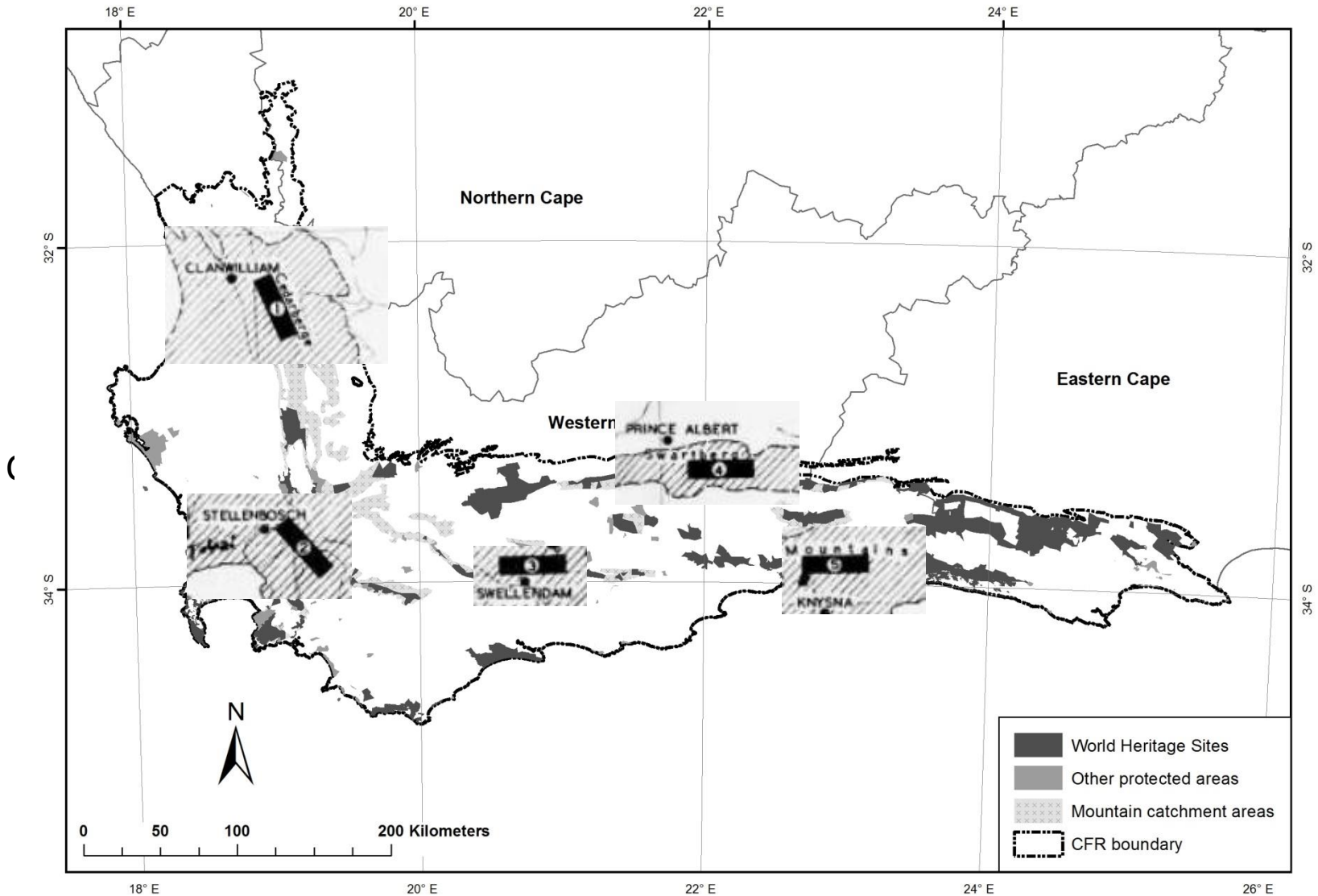
Rural populations have remained stable; some areas abandoned







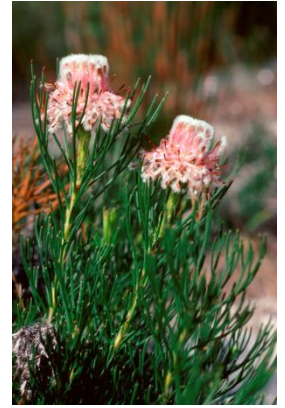
# Wicht Committee proposal



# Some issues

- Protected area has grown, but management capacity has shrunk
- Conservation agencies have to raise much of their own funding
- Protected areas exist in a much-altered socio-political context, with different expectations on how they should be managed and used.

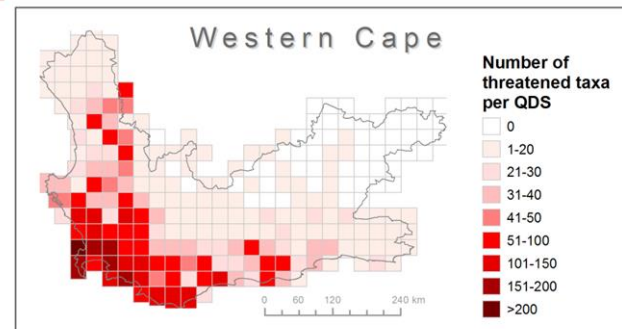
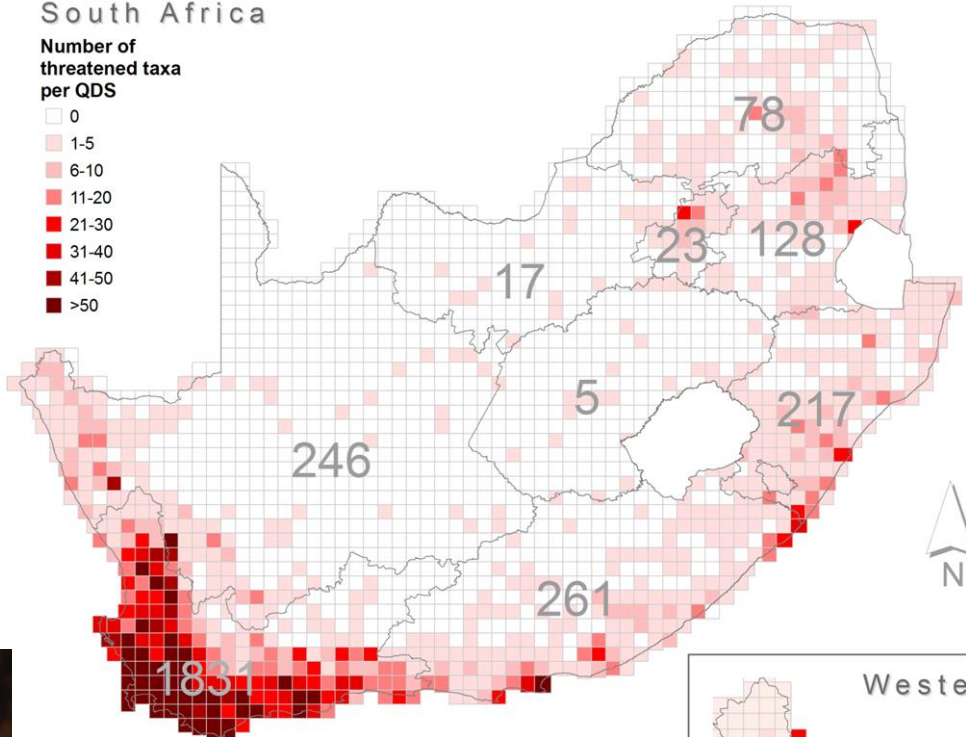
# Rare and threatened plants



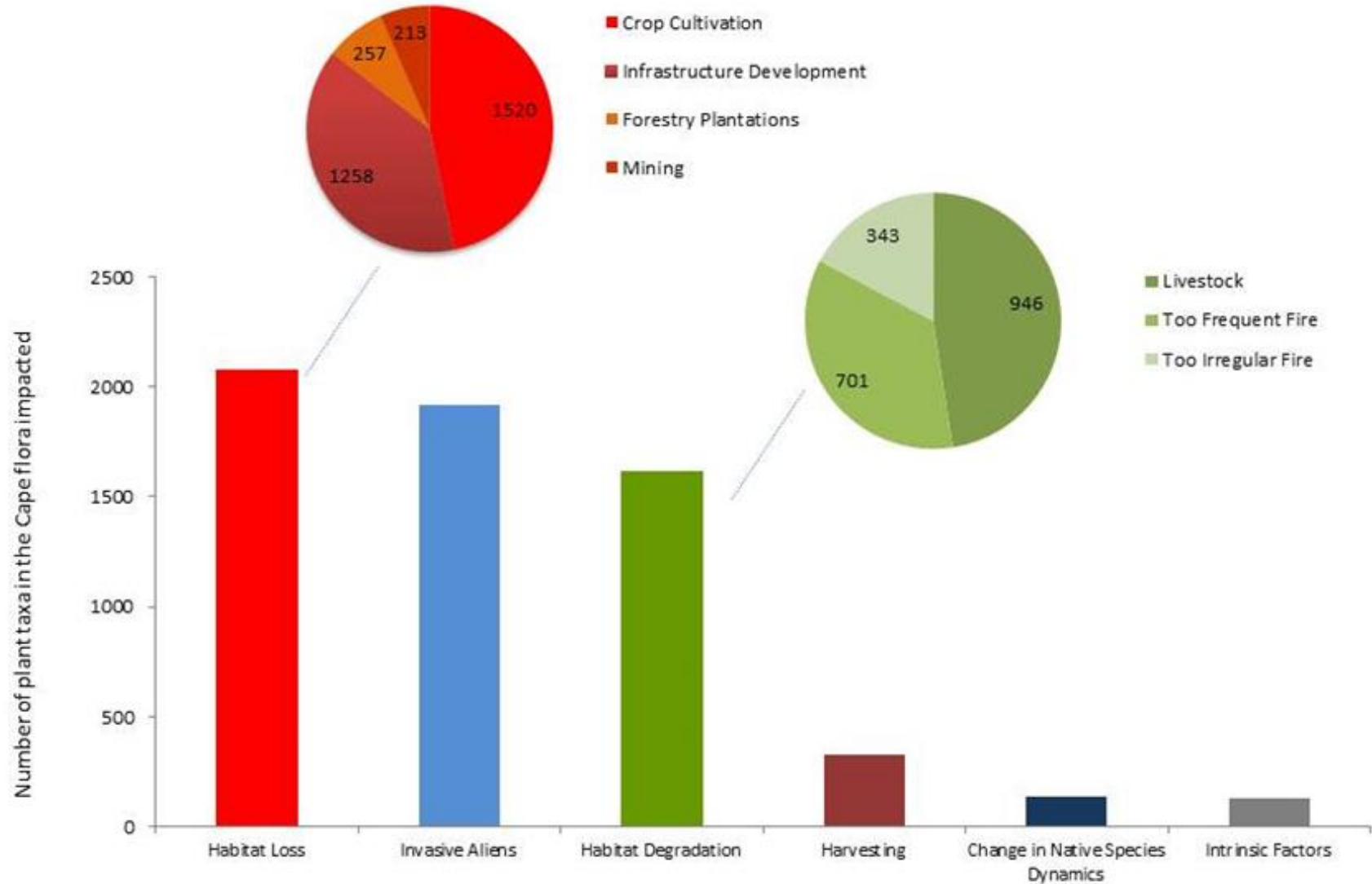
## South Africa

Number of threatened taxa per QDS

- 0
- 1-5
- 6-10
- 11-20
- 21-30
- 31-40
- 41-50
- >50



# Main threats





# Coping with climate change

Not foreseen by Wicht Committee

- 60% of species should persist
- 25% of will loose some of their range
- 5% will become extinct if they are not moved
- 10% will have no-where to go

Projections are changing as models improve

There are still many sceptics out there



Bennett Chattanooga Times Free Press



# The role of research

- Research has resulted in huge increases in understanding.
- Much of this understanding arose from a few long-term research sites.
- Supplemented by widespread opportunistic research.
- Research was bolstered by the National Co-operative Programmes, notably the Fynbos Biome Project; SCOPE programmes on fire and invasive alien species; MEDECOS
- Research has shifted away from long-term research conducted by scientists embedded in management agencies, to short-term studies conducted largely by academic institutions.
- Much benefit was gained from the long-term partnership between research and management that characterised the *modus operandus* of the Department of Forestry, but such models are unlikely to be re-instated.



"Could you hold, please? We're dealing with an oil spill, a meltdown, a global extinction crisis, and the planet is warming."

# Final thoughts

- Three lines of thought:
- *A sense of purpose*: Wicht Committee's report characterised by an overarching sense of purpose, to inform management of mountain catchment areas.
  - Today: climate change, and invasion by alien species - but the research purpose, for a long-term programme, would need greater definition.
  - Second, sense of purpose should recognise the consequences of a newly-urbanised and diverse society, and their needs.
- *An enduring science-policy interface*: A second requirement would be a sound and enduring, arm's-length relationship between the science and the making of policy. Big challenge today, with quick turnover of policy-makers, short funding lines, performance measures based on published papers. Special leadership will be required.
- *Strategic, long-term study sites*: Jonkershoek worked well for 50 years while it enjoyed a single, committed host, but since then its management has been divided, and its future appears insecure.
- We recognize also a need for a common and deep understanding of the history of the science, and of the people and locales that produced it.

# Acknowledgments



UNIVERSITEIT  
STELLENBOSCH  
UNIVERSITY



- Royal Society of South Africa
- Stellenbosch University and the Centre for Invasion Biology
- Peter Spargo, FRSSAfr