Systematic protected area planning for the forest biome:Implications for PFM

Derek Berliner
Grant Benn (GISCO)
Tom Voster (DWAF)
Izak Van der Merwer (DWAF)
Paddy Abott (DFID)

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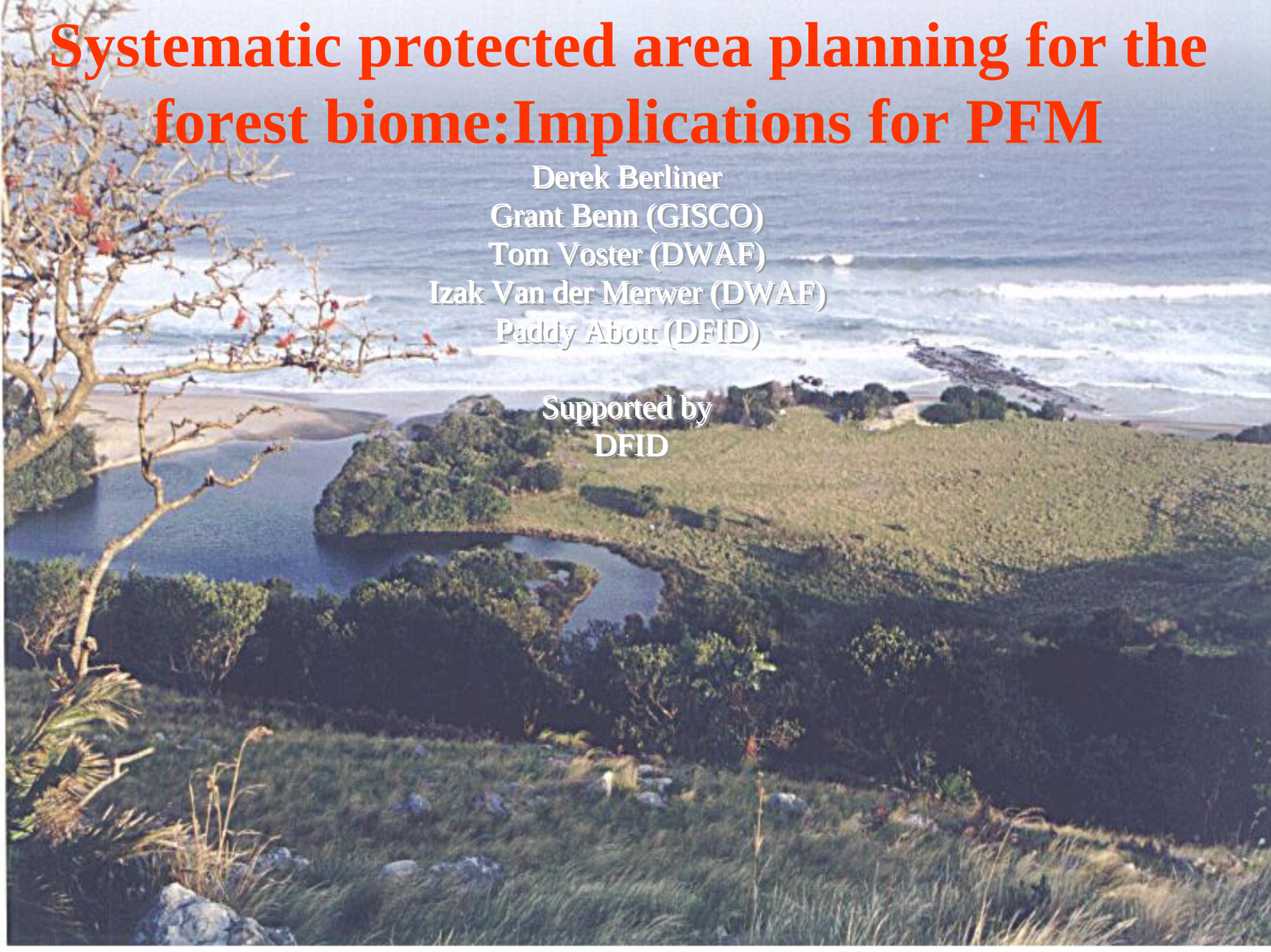


Outline

- **Introduction (Objectives & biological /socio-econ context)**
- **What is systematic conservation planning?**
- **Project approach and methodology/Tools**
- **Project outputs**
- **Implications for PFM**
- **Computer demonstrations**
- **Questions, discussion and way forward**

Project purpose

Primary

Using a systemic conservation planning approach, select and design a protected area network that is representative of forest biome biodiversity, and that will enable its long-term persistence.

Secondary

Develop an objective method to classify forest areas into suitable protected area categories that will provide equitable sharing and sustainable use of forest products , while ensuring persistence of biodiversity

Project outputs

Provide forest management authorities with decision support regarding:

- **relative conservation values**
- **relative threats to forest patches**
- **priority areas (hotspot analysis)**
- **relative socio - economic value of forest patches (subsistence value, cultural/historical value)**
- **socio-economic context of forest patches**
- **appropriate (IUCN) protected area categories for forest patches**

Context: Biological

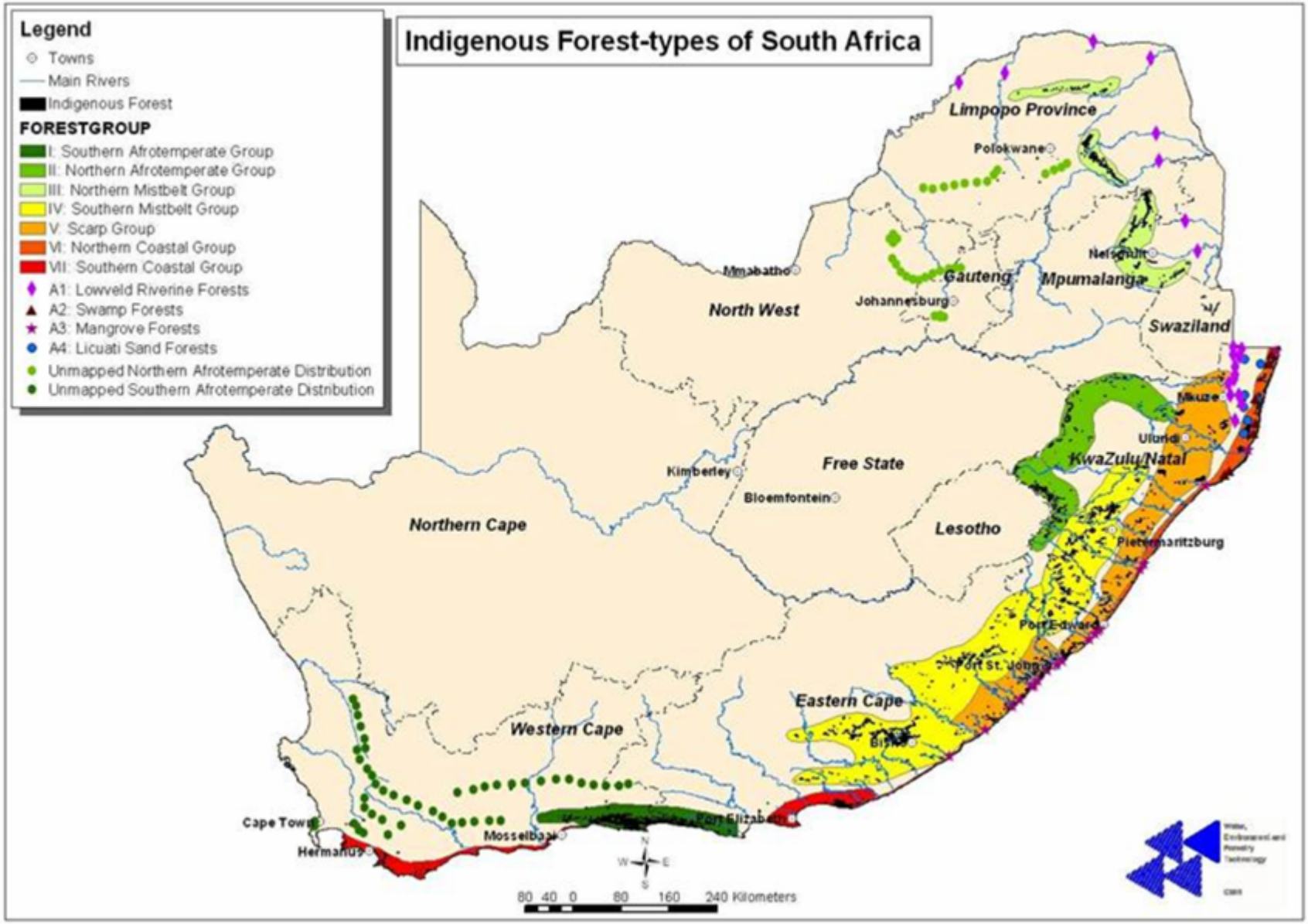
- **Forests form the smallest; most widely distributed and most fragmented biome in southern Africa, covering only about 0.3% of the land surface**

- **Second highest species density per unit area of biome (A disproportionate percentage of these species are also rare or endangered).**

Context: Biological

- **Many forest under threat from mining, non sustainable subsistence use of forest products, forest clearing for agriculture etc.**

- **Twenty four different forest types identified in objective classification (basis for determining 'conservation value')**


Indigenous Forest-types of South Africa
Legend
Towns
Main Rivers
Indigenous Forest
FORESTGROUP
I: Southern Afrotemperate Group
II: Northern Afrotemperate Group
III: Northern Mistbelt Group
IV: Southern Mistbelt Group
V: Scarp Group
VI: Northern Coastal Group
VII: Southern Coastal Group
A1: Lowveld Riverine Forests
A2: Swamp Forests
A3: Mangrove Forests
A4: Licuati Sand Forests
Unmapped Northern Afrotemperate Distribution
Unmapped Southern Afrotemperate Distribution
Limpopo Province
Polokwane
Nelspruit
Mmabatho
North West
Gauteng
Johannesburg
Mpumalanga
Swaziland
Mtuze
Ulundi
KwaZulu/Natal
Kimberley
Free State
Bloemfontein
Lesotho
Northern Cape
Pietermaritzburg
Port Edward
Port St. Johns
Eastern Cape
Western Cape
Bisho
Cape Town
Mosselbaai
Port Elizabeth
Hermanus
N
W
E
S
80 40 0 80 160 240 Kilometers

Context: Socio-economic & policy

- High poverty levels (and subsistence resource dependence) of populations living around forest
- Forest often play an important part in the local socio-economy and culture

- NFA (No. 84 of 1998) emphasizes sustainable use and benefit sharing
- Of the c. 1500 SFAs, only 17 have been given a protected area category (16 Nature Reserves, 1 Wilderness Area).

Context: Socio-economic & policy

- The old system of protected state forest areas is now out-dated, and, given the new dispensation of DWAF to work together with forest stake-holders to plan and manage indigenous forests, a new approach is needed that will:
  - Increase effectiveness of a protected area system
  - Contribute toward socio -economic upliftment & benefit sharing

What methods or conceptual tools can be used to assist with achieving these two aims?

- Increase effectiveness of a protected area system for forests
- Make forests contribute toward socio - economic upliftment & benefit sharing

Tools

1. Systematic protected area planning
2. A protected area classification system for forest

What is systematic protected area planning?

"The world over, our protected area systems are biased – they do not conserve a representative sample of biodiversity and they exclude key ecological processes."

Systematic conservation planning is not……..

‘add hock’ planning

Systematic conservation planning…..

Identifies priority areas for biodiversity conservation, taking into account patterns of

biodiversity (the principle of representation) and the ecological and evolutionary processes that sustain them (the principle of persistence).

……

Two key elements

Representivity:

sample of all biodiversity species and habitats

Persistence

the *ecological and evolutionary processes* that allow this biodiversity to persist over time.

Recent trends focus on:

efficiency and optimization of the PA net work

Optimization

Maximum returns on investment:

biodiversity gains *and* socio-economic upliftment

(GEF/World Bank)

"Ultimately optimization of PA network requires the achievement of biodiversity targets while minimizing socio-economic opportunity costs"

2nd tool:
Protected area classification system

Three protected area classification systems:

1) NFA (three types: Nature reserve, wilderness area, 'other'
2) NEMA (six categories, no clear guidelines)
3) IUCN classification system (internationally recognized, most comprehensive)

IUCN Protected Area categories

IUCN Category	Name	Prime objective
1a	Scientific reserve	Scientific research
1b	Wilderness area	Wilderness protection
II	National park	Biodiversity cons/tourism
III	Natural monument	Protection of natural/cultural features
IV	Habitat/species management	Rare species/habitat
V	Protected landscape	Maintain cultural/traditional attributes
VI	Multiple resource use area	Sustainable use of natural resources/ecosystem

IUCN protected area categories and key selection criteria

IUCN Category	Name	Level of human influence/ strict protection	Level of use	'Conservation value'	Livelihood value
1a	Scientific reserve	High	Low	+ + +	0
1b	Wilderness area	↓	↑	+ +	0
II	National park	↓	↑	+ + +	Low
III	Natural monument	↓	↑	+	?
IV	Habitat/species management	↓	↑	++	Low
V	Protected landscape	↓	↑	+	High
VI	Multiple resource use area	Low	High	+	Very high

Methodology and approach

- Indicators
- GIS spatial data sets
- Rule based modeling (expert systems), linked to GIS

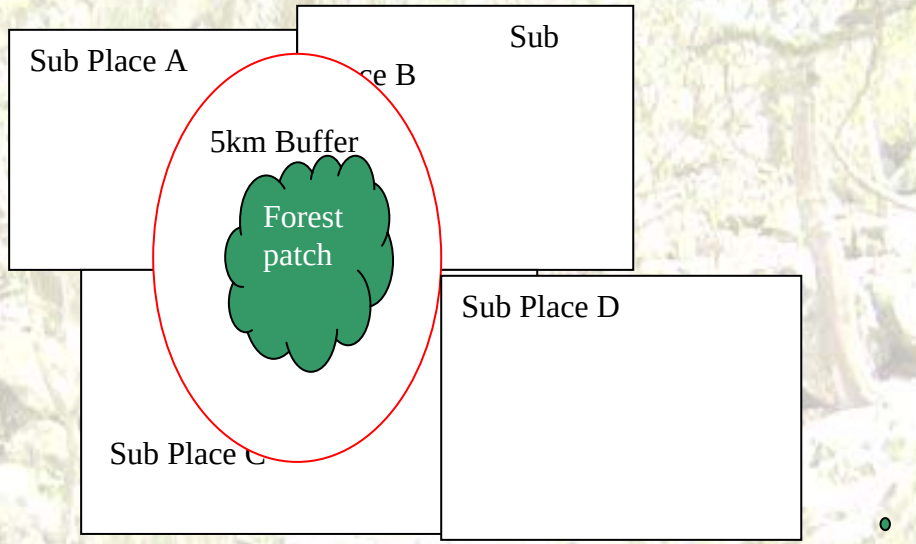
Indicator based modeling approach

- Indicators of conservation value (irreplacability)
- Socio-economic indicators (National census)
- Use of rule-based modeling to derive Composite indicators

Irreplacability values/map

- Index of ‘conservation value”
- Probability that a forest patch (will be needed to achieve conservation targets)
- Map of options (100% irreplacability implies no option)

Incorporating socio-economic spatial data into design



Approach : GIS analysis of national census data using proportional averaging to enable inheritance of enumerator/Sub Place data within 5km forest buffer

Integrating socio-economic data

Within 5 km forest buffer areas Indicators of :

- Population density
- poverty level
- Fuel wood use (households)
- Forest accessibility

➢ Enables approximation of subsistence/livelihood value of forest patches

➢ Opportunity costs (used in trade-off analysis biodiversity gains vs socio-economic loss)

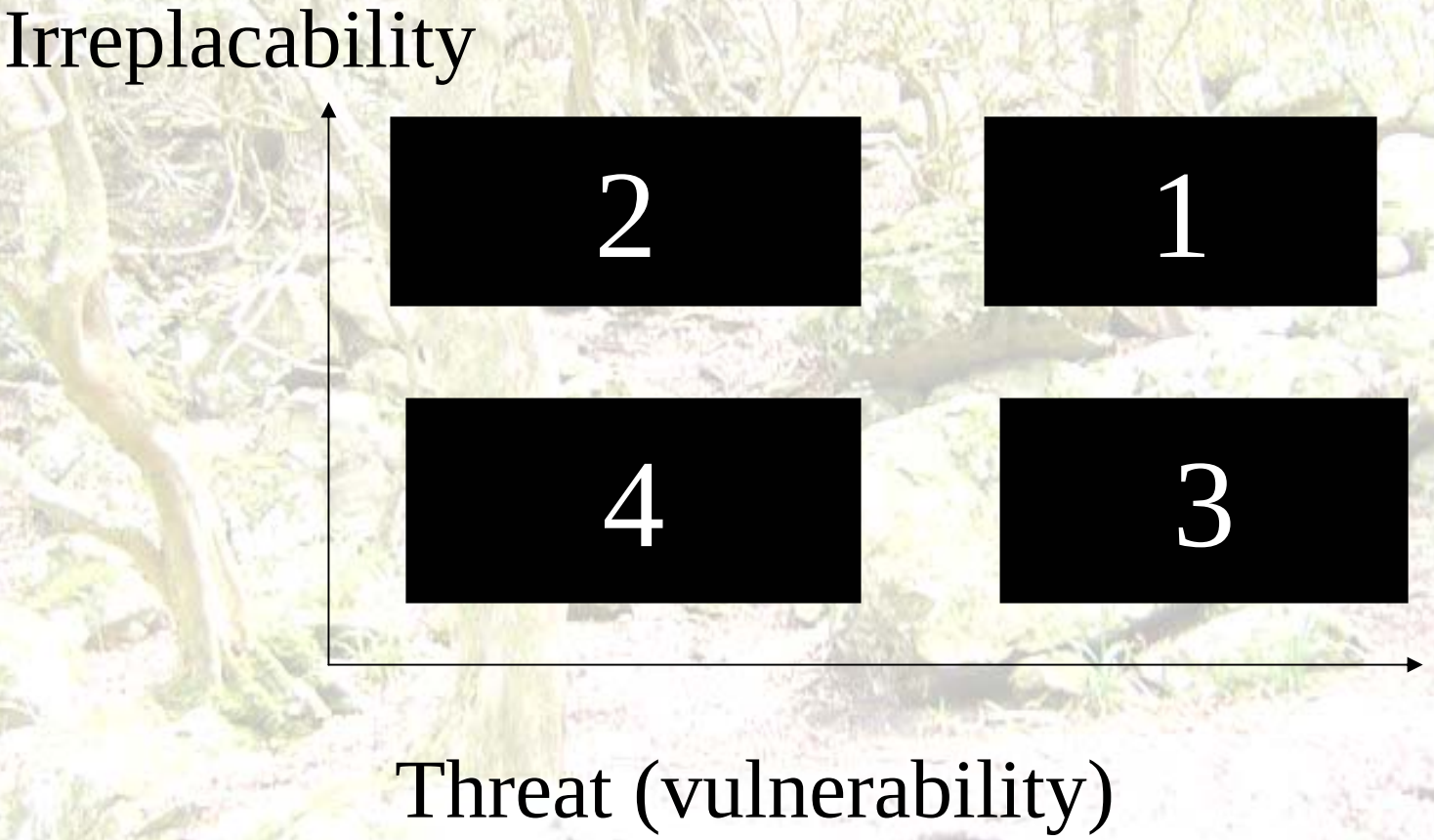
Using rule based models to derive indices

IF [fuel wood demand] is HIGH

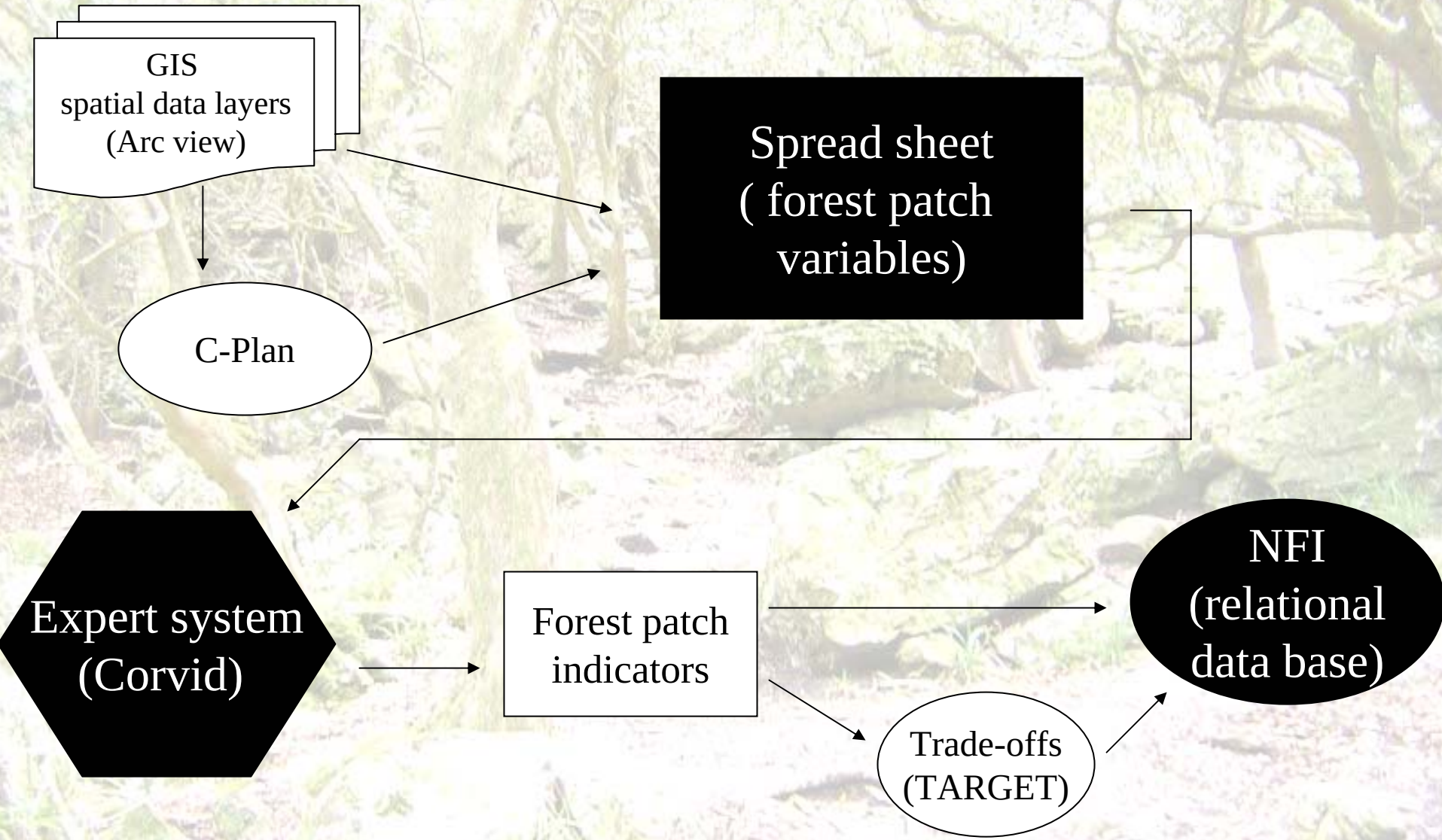
AND [Accessibility] is HIGH

Then [subsistence resource use pressure index] is HIGH

Selecting Priority Conservation Areas



Computer tools used



Some potential implications for for PFM

- Indicators of socio-economic and conservation value of forest used to identify ‘hotspot’ areas
- Use of protected area classifications assist with guiding sustainable utilization/CBNRM projects (IUCN V, V1)
- National and systematic level approach to strategic implementation
- Application/adaptation of tools and products: (Irreplacability, GIS maps, Expert systems , data base)

DATA BASE : Example

- Grootbosch forest (Tzaneen)
- Forest ID number 3310