Exploring the degree of overlap between high value grazing areas and invasion by Wattle species at a national level

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Introduction

- **South Africa's natural rangelands supply an array of services**:
  - forage,
  - water,
  - wildlife habitat and
  - fertile soils

- **Invasion by alien plants interferes with natural process that are essential for the functioning of rangelands**:
  - resource supply,
  - fire intensity and frequency,
  - hydrological regimes

- **As a consequence the delivery of services by these ecosystems is negatively affected**

❖ **Wattle species**: *Acacia mearnsii, A. dealbata & A. decurrens*

AIM: To understand the degree of overlap between important grazing areas and invasion by wattle species the at a national level

Objectives:

- Where are the key grazing areas in South Africa?
- Where are the wattle invasions in South Africa?

METHODS:

GIS database:

Extracting natural land areas

- ✓ **Magisterial district layer**
- ✓ **National Land Cover 2000 (NLC 2000)** (Fairbanks *et al*., 2000)

Identifying high grazing potential areas

- ✓ **SA maps of areas of homogenous grazing potential Map** (Scholes, 1998)
  (units of land area with the potential to support a similar number of foraging animals under current and previous climatic conditions in a natural state)
  - Categories (ha/LSU): *high (3-6), moderate (7-15), low (16-30), very low (>30)*

Identifying wattle invaded areas

- ✓ **National Invasive Alien Plant Survey (NIAPS)** (Kotze *et al*., 2010)
  - Categories: *very scattered (0 – 225), scattered (>225 – 1200), moderate (>1200 – 4300), dense (>4300 – 5699)*

METHODS:

- Natural land cover areas extracted from NLC 2000 and overlay with magisterial districts

= [natural land cover map for SA's magisterial districts]:

- To identify high grazing potential areas: calculated proportional areas of high grazing potential **(Fig. 1)**

- To identify wattle impacted districts: calculated proportional areas of wattle invasion **(Fig. 2)**

- To understand the level of overlap: both Fig. 1 and Fig. 2 were combined

- = high grazing potential land invaded by wattle

RESULTS

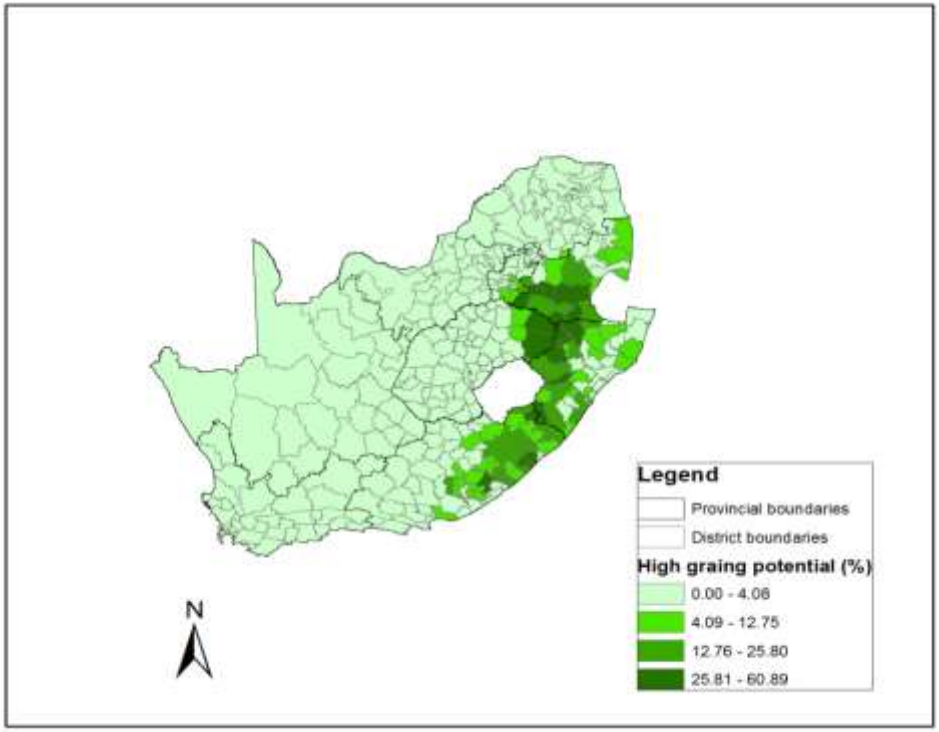


Figure 1: High grazing potential areas (Scholes, 1998)

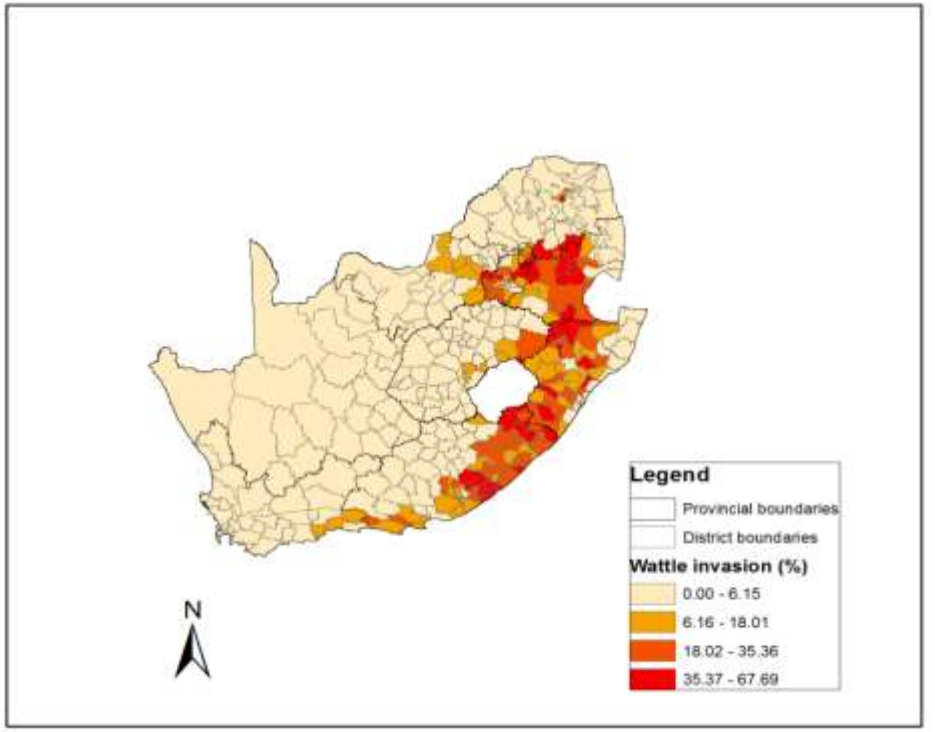
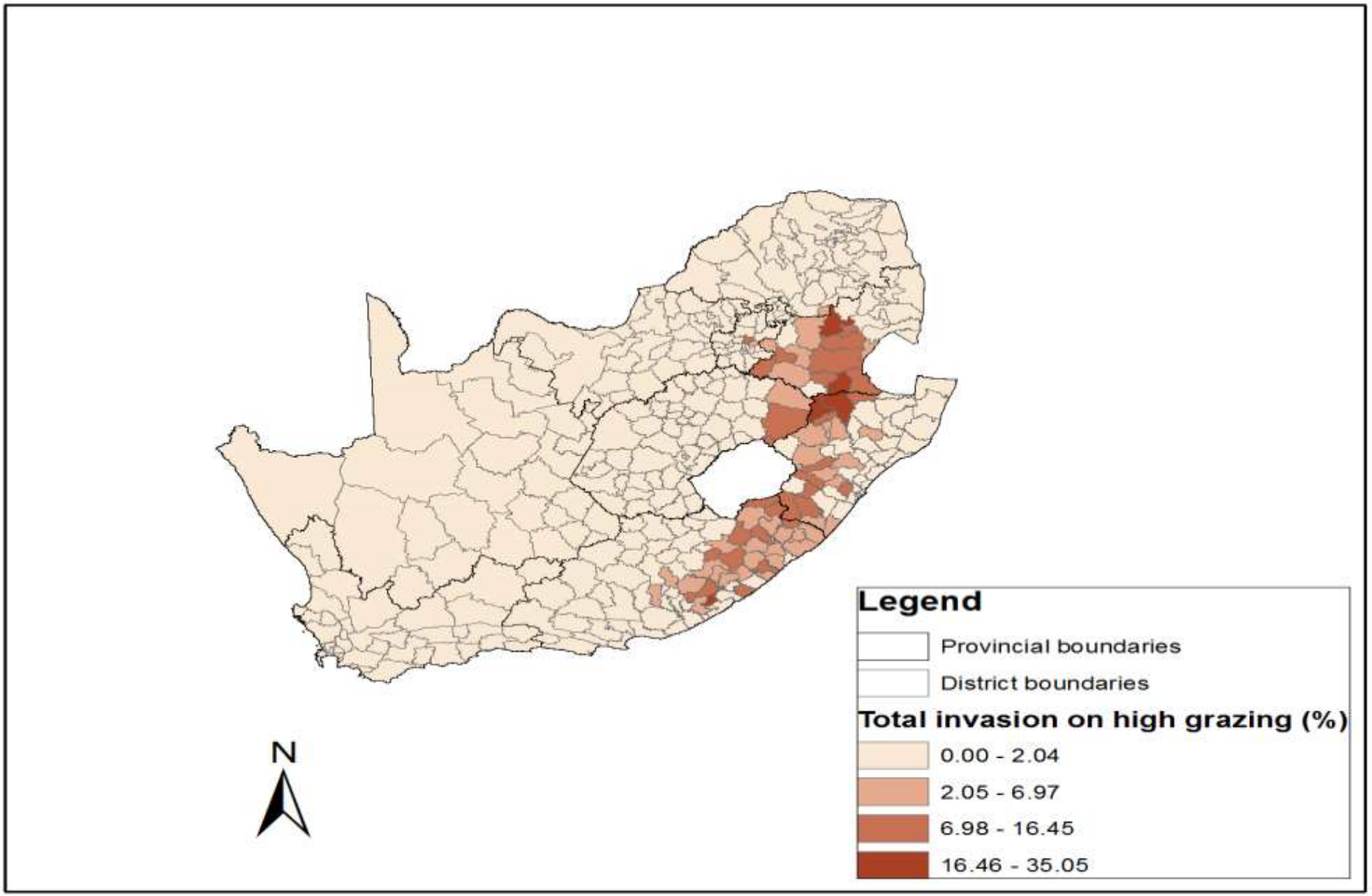


Figure 2: wattle invasion (Kotze *et al*., 2010)

RESULTS: proportional overlap



District	Dense	Moderate	Scattered	Very scattered	Total invaded
Amersfoort	0.00	0.06	4.88	5.19	10.13
Belfast	0.00	5.36	8.47	4.25	18.09
Carolina	0.00	4.37	5.98	1.48	11.83
Dannhauser	0.00	0.00	14.54	0.64	15.18
Engcobo	0.00	7.22	2.67	0.64	10.52
Ermelo	0.00	2.16	8.70	0.99	11.86
Harrismith	0.00	3.31	9.37	0.43	13.11
Highveld ridge	0.00	0.00	9.96	0.29	10.25
King William's town	0.00	11.69	10.79	1.60	24.08
Maluti	0.00	2.44	8.01	0.10	10.55
Mooirivier	0.00	1.51	8.46	0.51	10.48
Mount Ayliff	0.00	0.00	10.08	1.57	11.65
Mount currie	0.00	5.57	5.66	3.13	14.35
Mqanduli	0.00	2.32	8.20	0.07	10.58
Newcastle	1.57	14.57	7.08	0.59	23.80
Paul Pietersburg	0.00	3.23	8.82	4.39	16.45
Stutterheim	1.24	2.64	9.63	1.45	14.96
UMzimkhulu	0.00	4.33	4.68	2.20	11.21
Utrecht	0.00	9.26	5.96	5.36	20.58
Wakkerstroom	0.00	15.18	14.56	5.32	35.05
Waterval boven	0.00	5.00	2.65	3.17	10.83

RESULTS: National overview

Grazing classes	Wattle invasion				
	Dense	Moderate	Scattered	Very scattered	Total
High	0.03	0.8	1.52	0.59	2.94
Average	0.03	1.95	4.34	2.27	8.58
Low	0	0.21	0.82	0.49	1.52
Very low	0	0.03	0.08	0.04	0.15

Conclusions

- Despite relatively low levels of overlap between high grazing potential areas and wattle invasion at national level. High resource areas at smaller scales are under serious threat of invasion.
- We need more research like this to identify such areas

Applications

- Prioritisation data for programs: National Land care, Working for Water

- Government departments: Water, Agriculture, Environment:



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