

Global impact assessment of alien grasses occurring in South Africa

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Environmental Affairs
Agriculture, Forestry and Fisheries
Water Affairs



Impacts of alien grasses

- Examples: environmental impacts



Impacts of alien grasses

- Examples: socio-economic impacts



Alien grasses in S.A

Working for Water

South African Journal of Science **100**, January/February 2004

Grasses as invasive alien plants in South Africa

Sue J. Milton*

Bothalia - African Biodiversity & Conservation

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Original Research

Grasses as invasive plants in South Africa revisited: Patterns, pathways and management



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Background: In many countries around the world, the most damaging invasive plant species are grasses. However, the status of grass invasions in South Africa has not been documented

Alien grasses in S.A

- Inventory of alien grass species in the county (256 species)
- Pathway of introduction
- Status on the 'introduction-naturalisation-invasion continuum'
- Current distribution
- Potential and actual impact studies- limited and poorly documented

Aims and objectives

To determine the potential environmental and socio-economic impacts of alien grasses, occurring in South Africa for management prioritisation purposes

- Rank grass species according to their maximum impact recorded
- Determine the mechanisms through which impact occurs
- Investigate habitats impacted by alien grasses
- To discuss the possibilities of recorded impacts to occur in S.A

Method: assessing impact

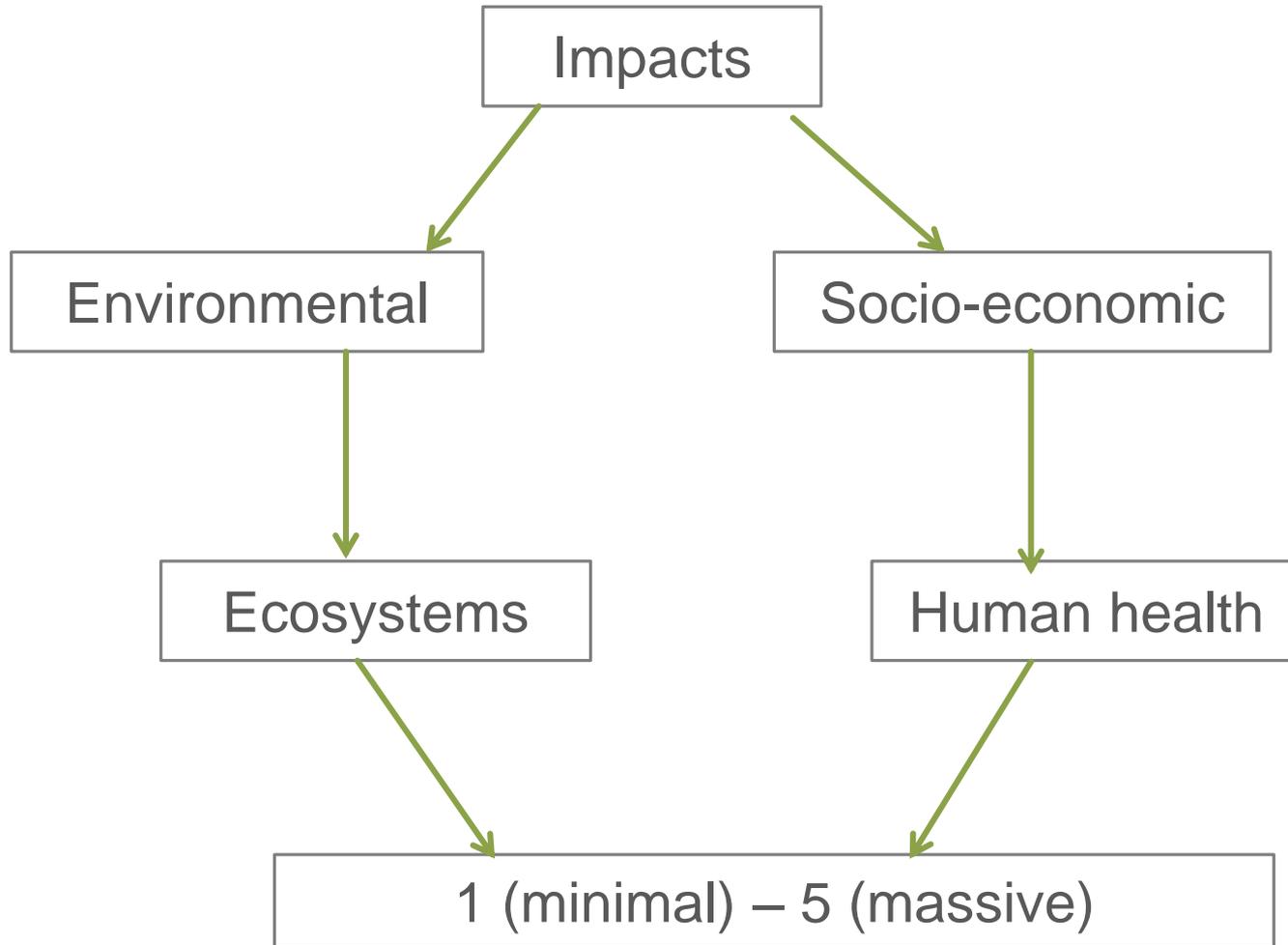
- Systematic review of published literature on Impact of alien grass

The screenshot displays the Web of Science search results interface. At the top, there are navigation tabs for 'Web of Science', 'InCites', 'Journal Citation Reports', 'Essential Science Indicators', and 'EndNote'. The 'Web of Science' logo is prominently displayed in orange. The search results section shows 'Results: 83 (from Web of Science Core Collection)'. The search criteria are 'You searched for: TOPIC: (bromus rubens) ...More'. The results are sorted by 'Relevance' and are on 'Page 1 of 9'. The first result is 'Seed longevity of Bromus rubens L and Bromus rigidus Roth' with 5K citations. Action buttons include 'Select Page', 'Save to EndNote online', 'Add to Marked List', 'Create Citation Report', and 'Analyze Results'.

- Impact scoring schemes

- Generic Impact Scoring Systems (GISS)
- Environmental Impact Classification for Alien Taxa (EICAT)

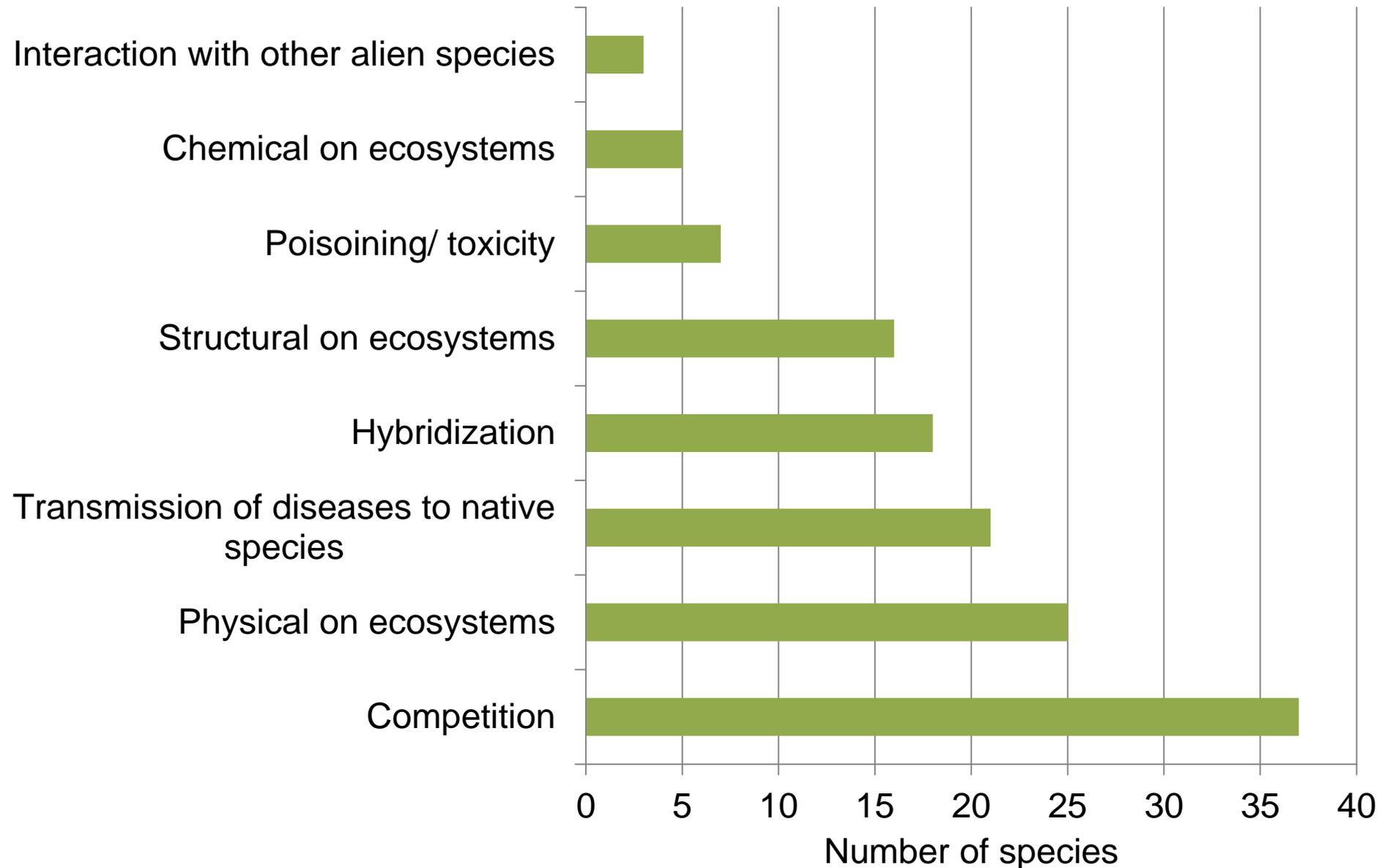
Method: assessing impact



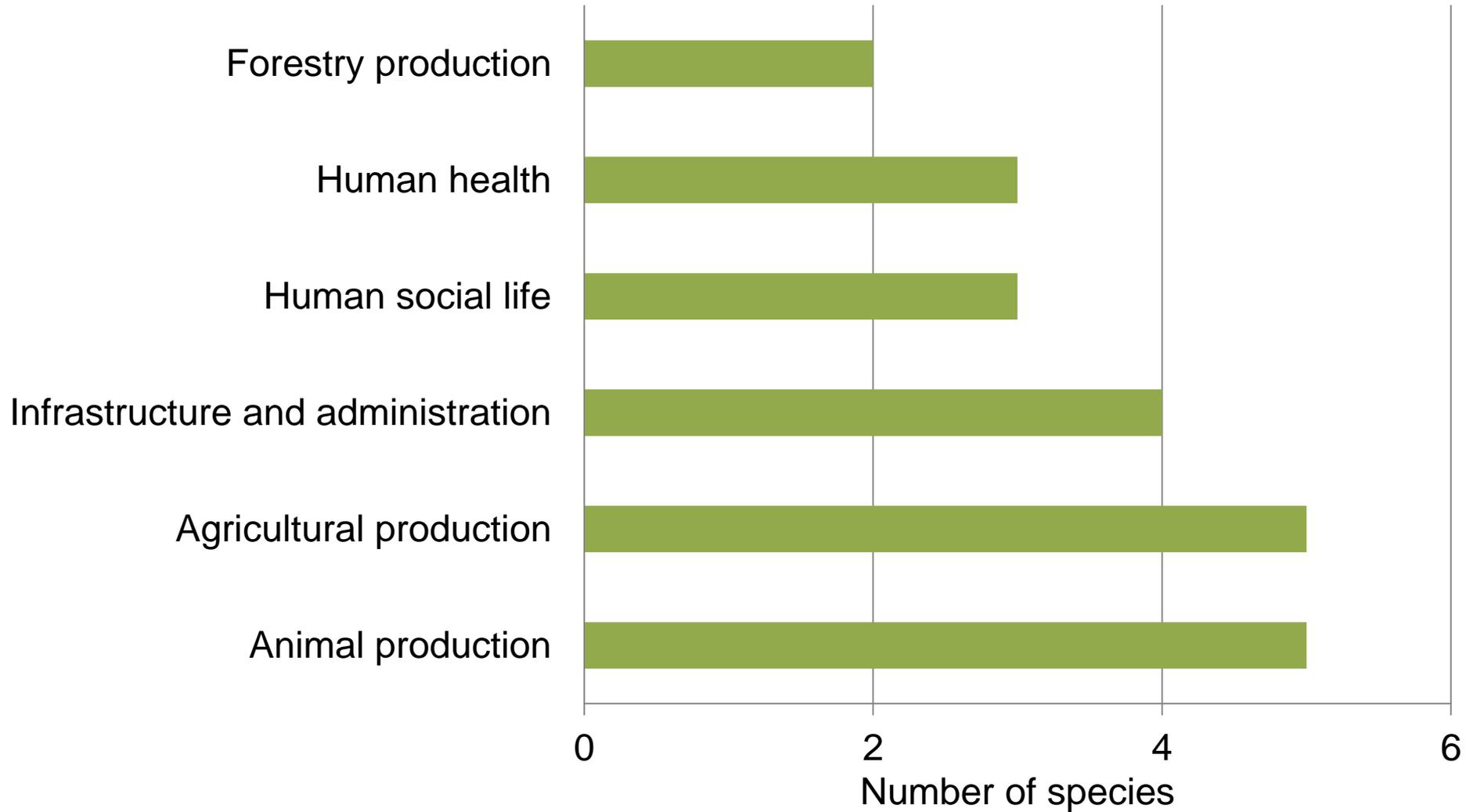
Method: data collected

- Impact type
- Mechanism
- Impact magnitude
- Confidence level
- Country
- Habitat
- Full references

Results: environmental mechanisms



Results: socio-economic mechanisms



Results: Prioritisation list

3. *Avena fatua* (Wild oats)



Agricultural plantations

- Hybridization
- Agricultural production
- Disease transmission

Results: Prioritisation list

2. *Arundo donax* (Spanish reed)



Riparian areas

- Infrastructure
- Ecosystem

Results: Prioritisation list

1. *Cortaderia selloana* (Pampas grass)



Disturbed areas: roadsides

- Forestry plantations
- Infrastructure
- Pollen allergen

Results: habitat impacted

- Based on Hawkins et al. 2016 (adapted from EUNIS Habitat classification)
 - Pasture lands (20)
 - Grasslands (27)
 - Plantations (29)

Results: probability of impacts to occur in S.A

- Some impacts have occurred as recorded elsewhere
 - e.g. Wild oats (*Avena fatua*) competes with short statured species by reducing their above and below ground biomass



Results: probability of impacts to occur in S.A

- Low chances of occurring in S.A
- e.g. In Europe, *Brachypodium distachyon* hybridises with other *Brachypodium* species
- Hybrids are vigorous, viable and long lived



Conclusion and future work

- Results can be used for prioritisation of resources available for the management of alien grass species
- No impact found on some grasses
- Risk assessment and risk management
 - Actual impact (field experiment)
 - Potential distribution
 - Management options

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