



AFRICAN FORUM
ON URBAN FORESTS

2nd African Forum On Urban Forests

Green Horizons: Shaping the Future Resilience of African Cities through Urban Forests

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in partnership with:



Food and Agriculture
Organization of the
United Nations



Citizen science for the management and early detection of invasive alien plants: Kloofendal Nature Reserve, Johannesburg, South Africa

Dr Takalani Nelufule



Introduction

- The global increase in human population exacerbated the transformation of landscapes globally



Pearson Prentice Hall, Inc

Alien plant species



Botany one



Introduction

Food

Timber

Aesthetic purpose

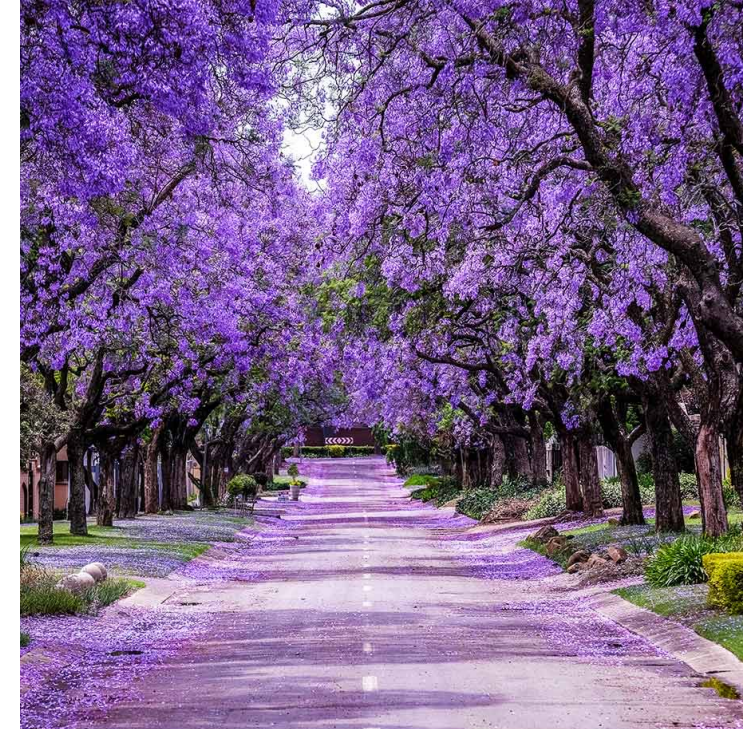
Ecosystem services



Bling.com



Dreamstime.com



Fast growing trees



Introduction

- Some escape from gardens or confinement into the wild
- Suitable environmental condition and habitat
- Only a subset have become invasive in South Africa
- Cause negative impacts on : Ecosystem
: Socio-economy
- Their management cost South Africa billions
ZAR855 million spent by the Working for Water program



mstine.com



Impact of alien plant species

Human livelihood



Potgieter et al.

Drought



Use up more water than natives

On the environment



Compete with native species
in protected areas



National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)

Category 1a: Invasive species requiring compulsory control.

Category 1b: Requires compulsory control as part of invasive species control programme. No permits will be issued.

Category 2: Regulated by area. A demarcation permit is required to import, possess, grow, sell, **etc.**

Category 3: Regulated by activity. An individual plant permit is required.

No permits will be issued for Cat 3 plants to exist in riparian zones.



The regulation listed a total of 559 alien species as invasive

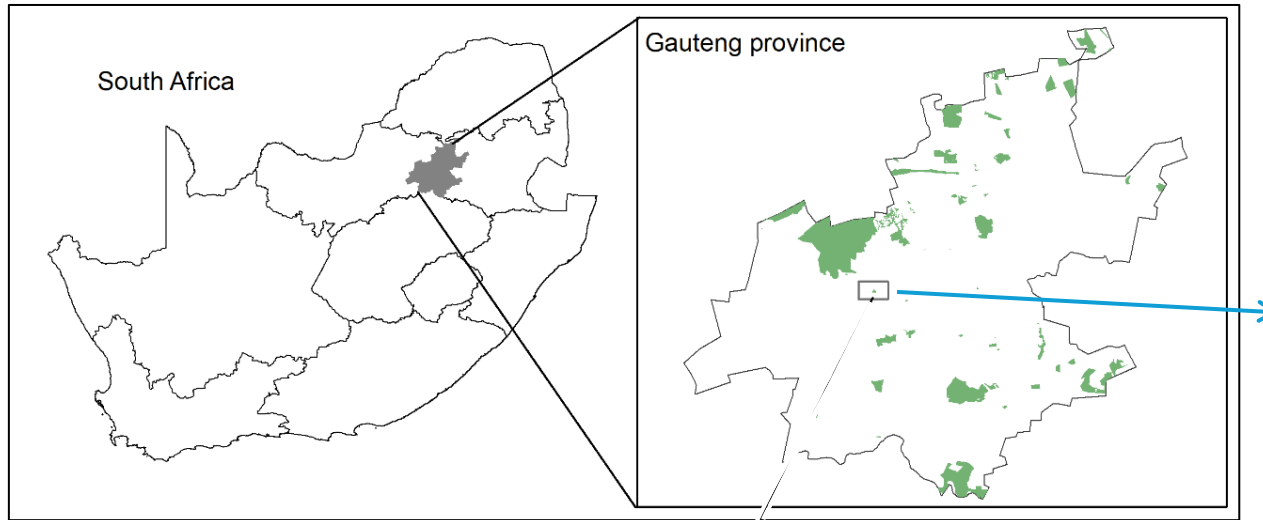


Aims

- To identify alien plant species found within the Kloofendal Nature Reserve
- Report on the involvement of community members in managing alien plant species
- Report on the actual removal and controlling of individual invasive alien plants



Study area



Kloofendal Nature Reserve

Managed by JCPZ



Methods



Recorder



Administrator

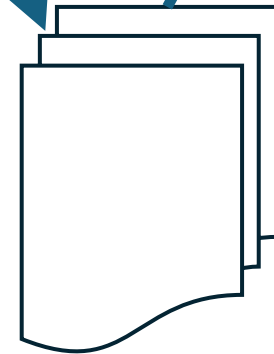


GPS Essentials App



KML file exported and WhatsApped

Listings, displays,
analysis & research



Database files



Present status - ongoing

FroK Weeding team, weeding early mornings, two or three times a week.



Present status - ongoing

Public participation – Community Service – Schools - Organizations



JCPZ



EPWP



Training first



Tool used to remove AIPs



Tree poppers



Removal of root stock



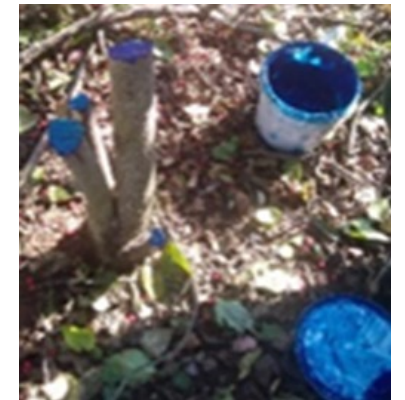
Pick



Secateurs, handsaw, strong weeding fork & panga



Panga/ Machete



Chemical

- Hand pull



Example of recording in the field

Day 20250303		Day 20250304		Entire period	
58	Bugweed	15	Bugweed	73	Bugweed
18	Cestrum	32	Fmn	18	Cestrum
6	Fmn	124	JC	38	Fmn
3	Gooseberry	23	Mothcatcher	3	Gooseberry
1	Heliotropium	36	Pompom	1	Heliotropium
93	Inkberry	1	Seringa	93	Inkberry
127	JC			251	JC
1	Lantana			1	Lantana
1	Pompom			23	Mothcatcher
2	Verbena			37	Pompom
				1	Seringa
				2	Verbena

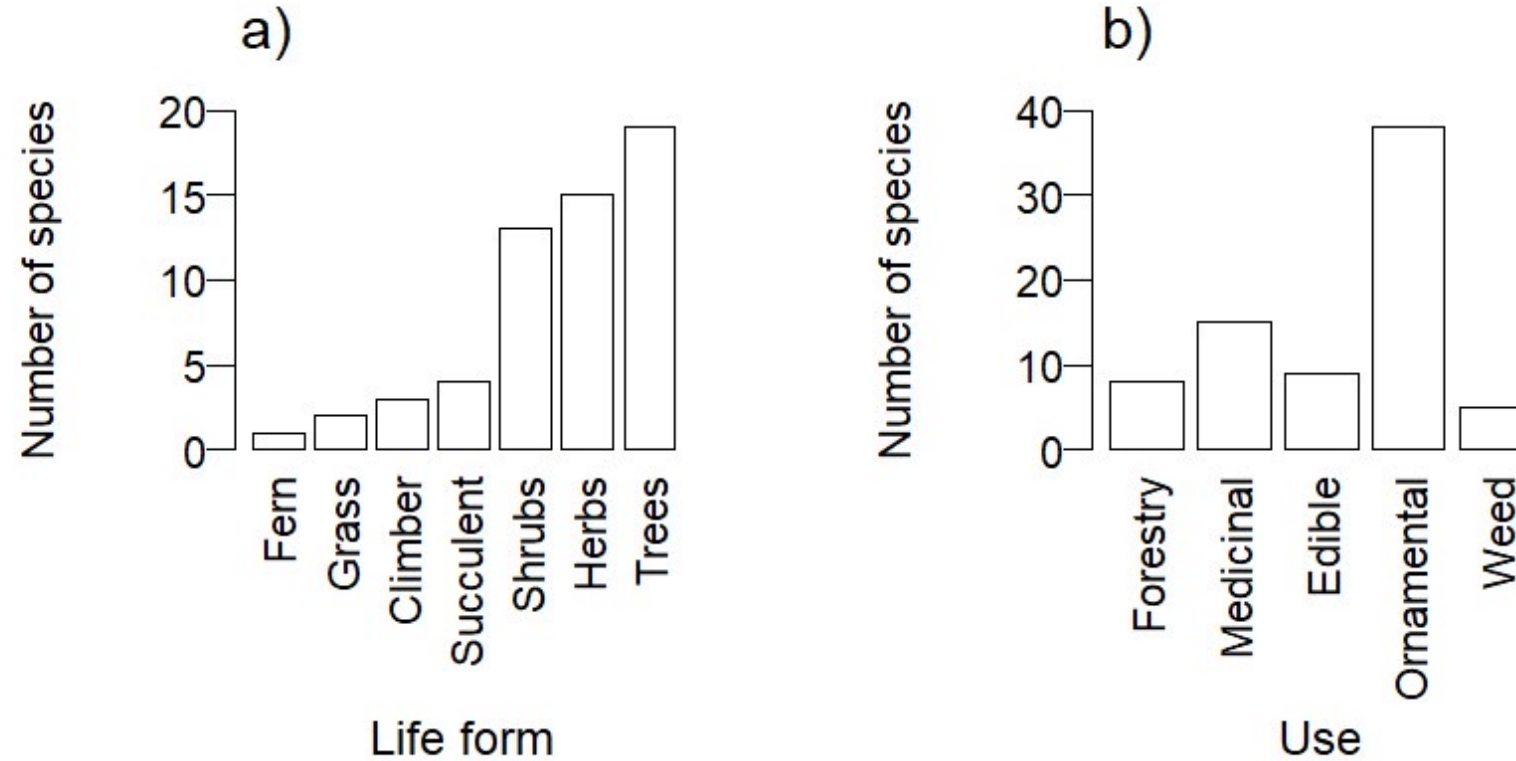


Results

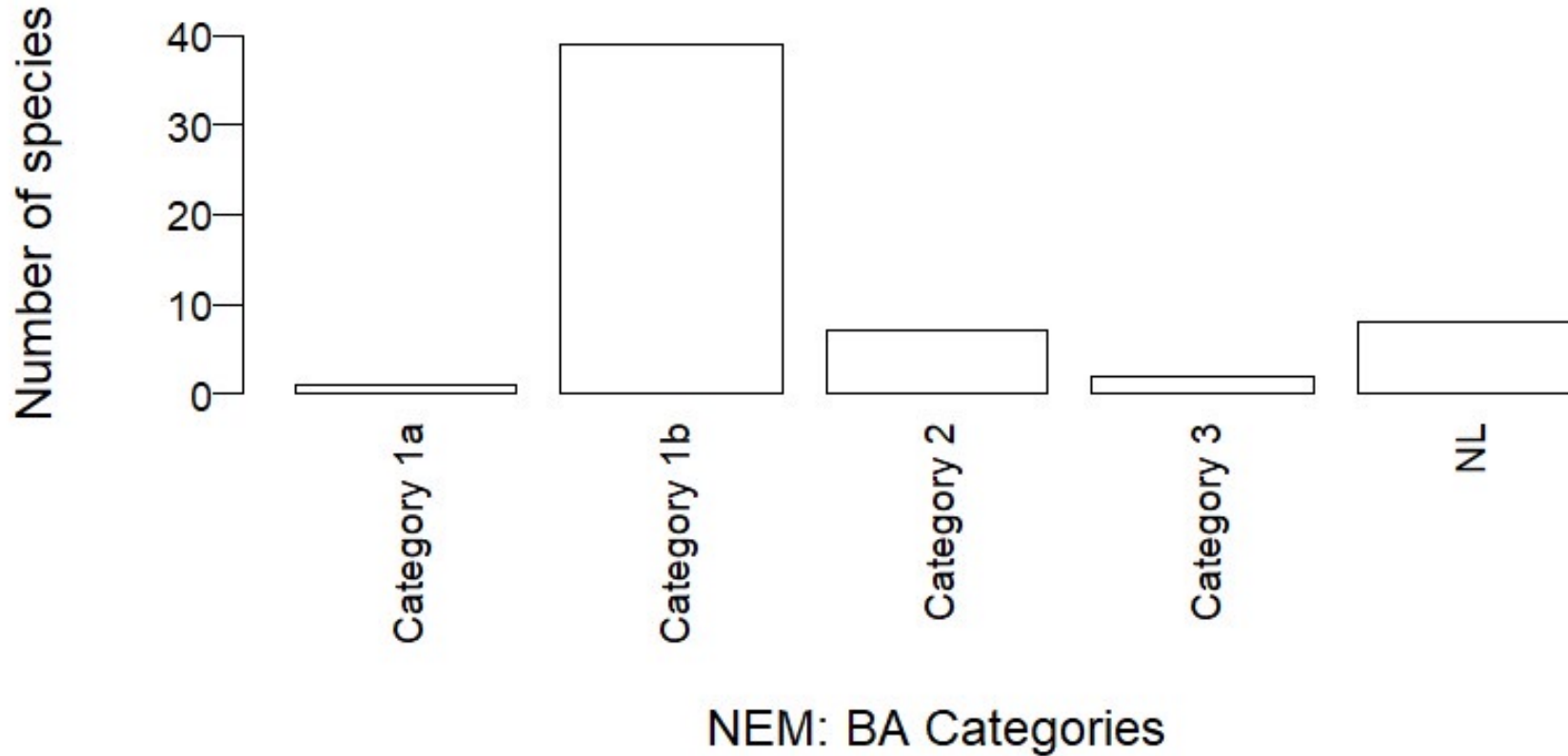
- A total of 58 alien plant species
- 28 different plant families.
- Dominant plant family was Fabaceae, Solanaceae, Rosaceae, Myrtaceae and Asteraceae
- A total of **141,765** individual plants removed between 2020 and 2024



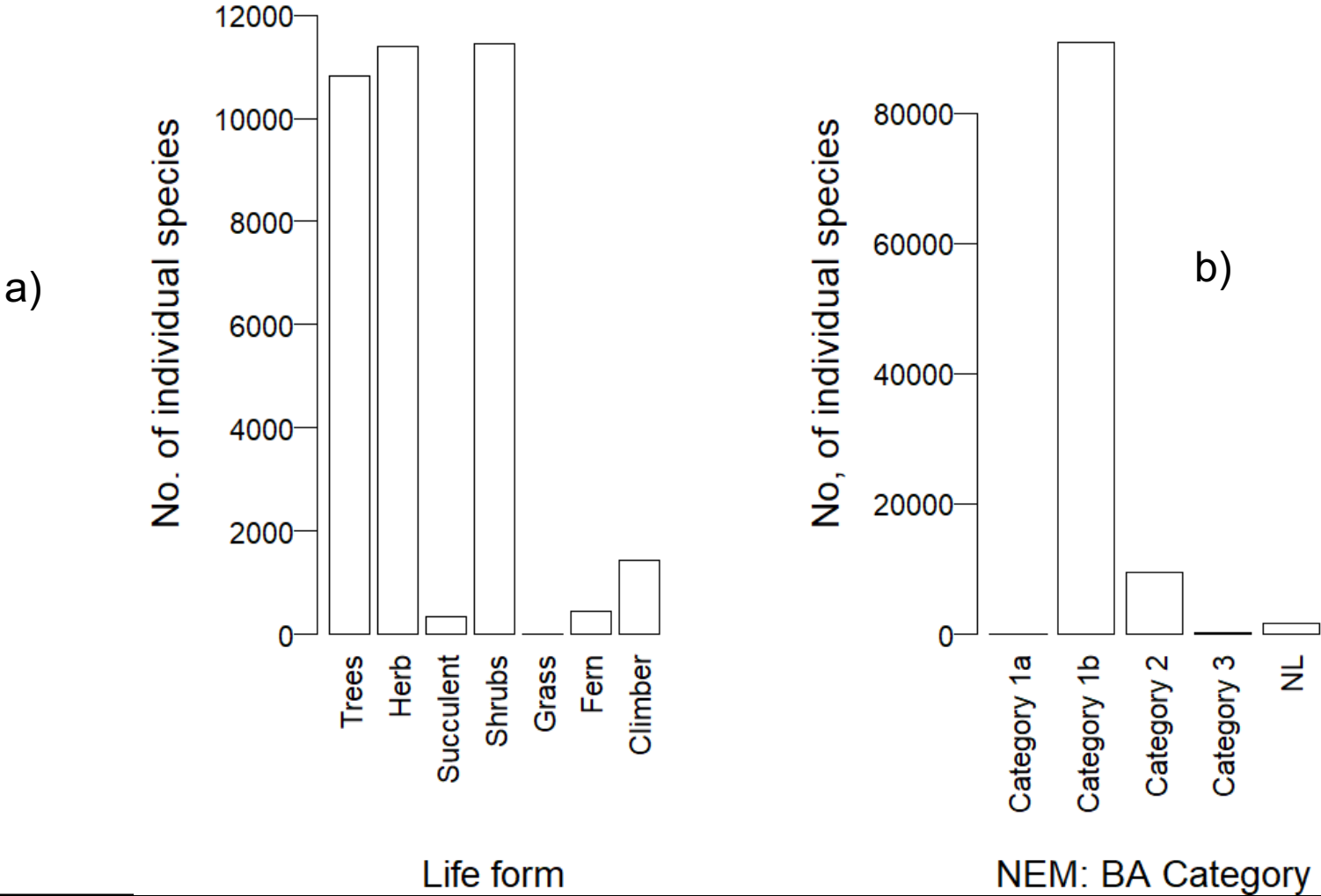
Number of species



Number of species by NEM:BA categories

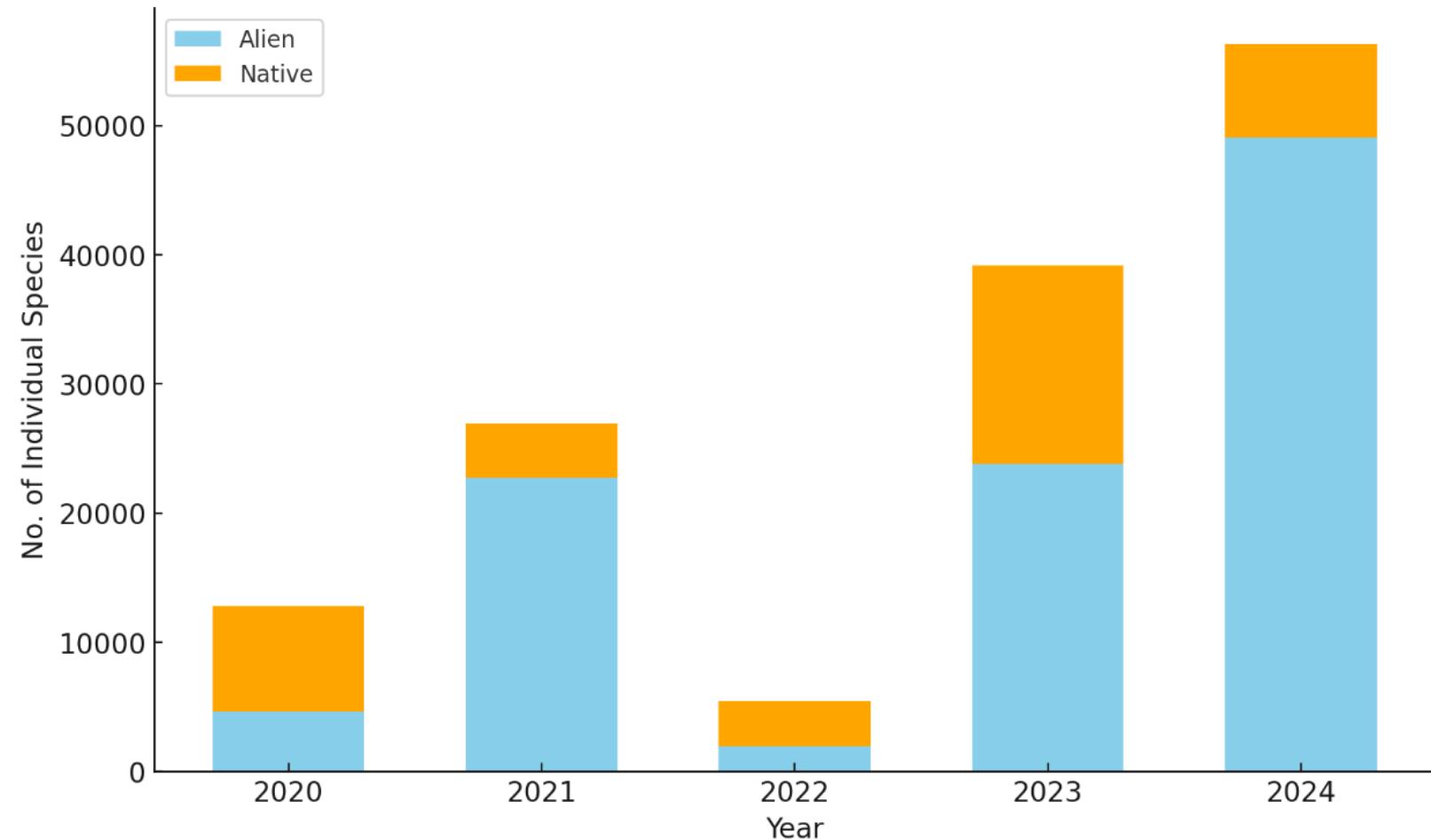


Removed populations

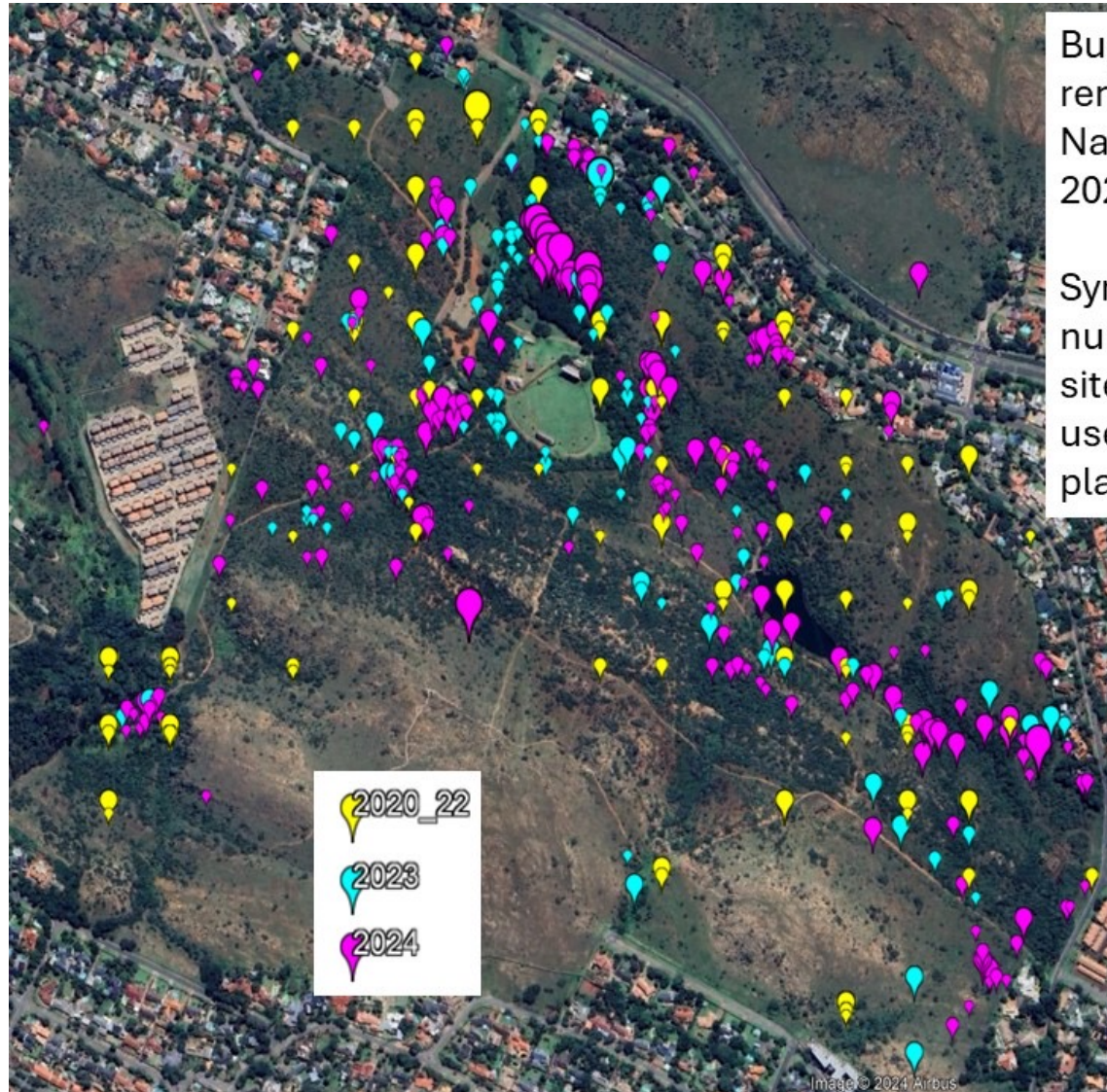


Population removed by years

- Native problem plants
- Alien plants



Discussion



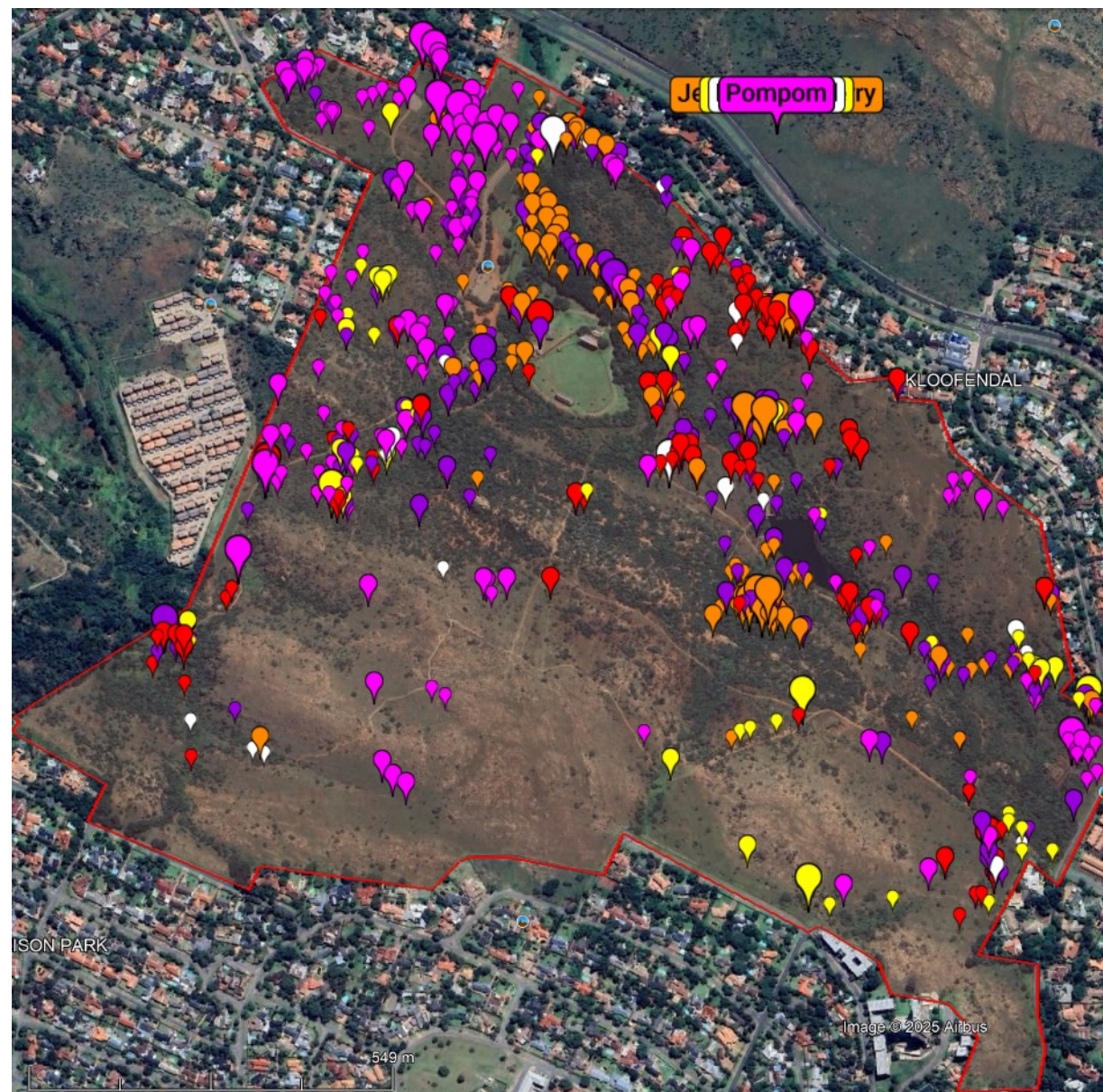
Bugweed recorded and removed from the Kloofendal Nature Reserve 2020 to 2024.

Symbol sizes indicates the number removed from each site, with largest symbol used for more than 100 plants removed

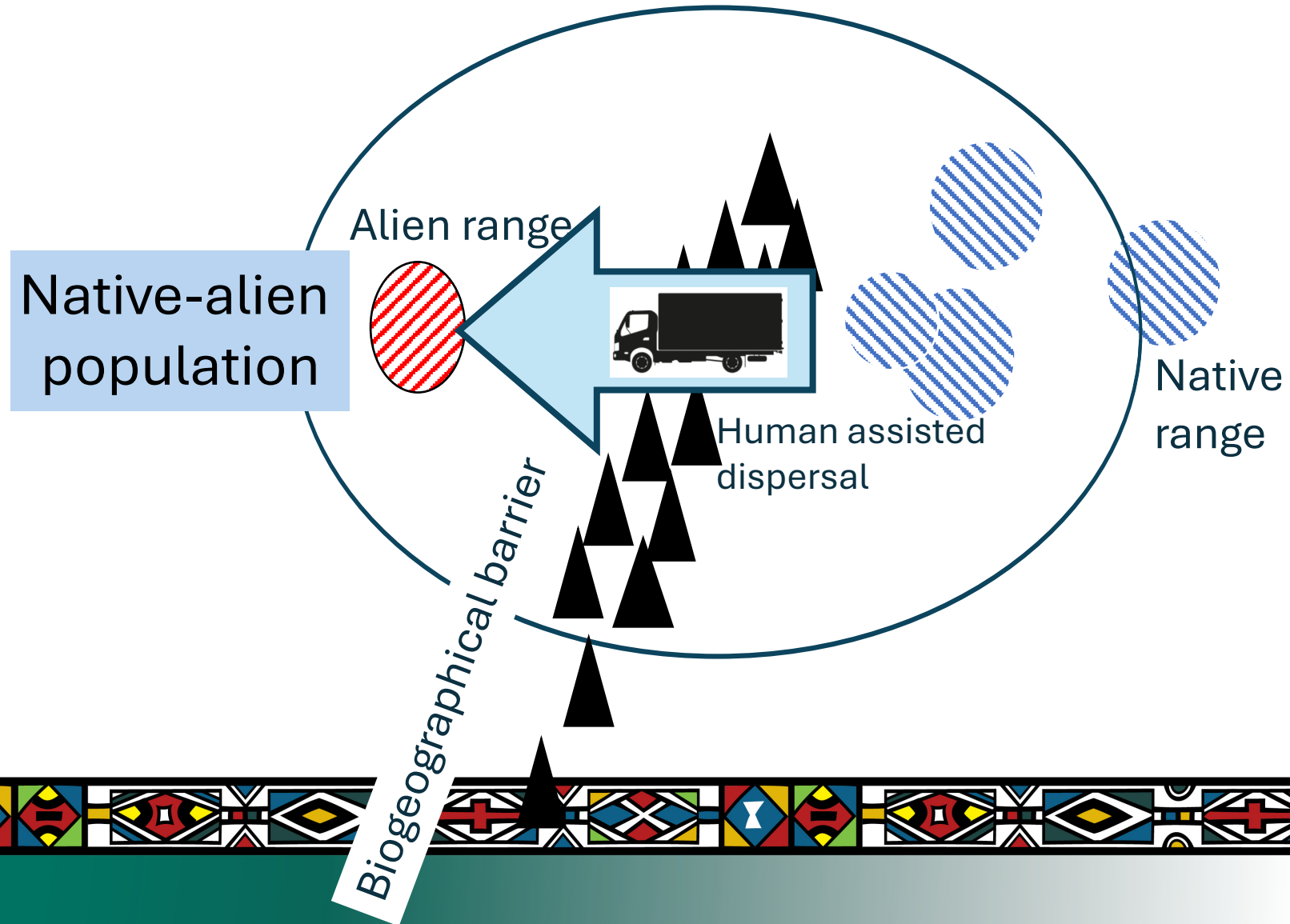
Solanum mauritanium



Discussion



Movement of native species within the country



Discussion

Podranea ricasaliana



Pink trumpet vine



Recommendation

- Urban protected areas to include community members in AIPs management
- Municipalities should run campaigns to educate communities about invasive species
- Formal risk assessment done before plants can be introduced for urban forest to avoid invasion risk and negative impacts



Conclusion

- Study highlight the importance of stakeholder engagement in IAPs management.
- Community involvement is effective in early detection, monitoring, and control of invasive species
- Help ensuring compliance with national regulations such as NEM:BA.
- Challenges include as persistent seed banks, continuous introduction of ornamental plant escapees from nearby residential areas
- This study provides a model for other nature reserves
- This model can help achieve long-term ecological sustainability.



Field Guidebook available

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Thank You.

Ndi a livhuwa.

- Co-authors; Frok; EPWP contractors; Volunteers; JCPZ employees

