# The distribution, composition, and dominance of street trees in selected Eastern Cape towns
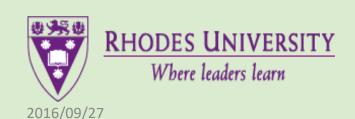
**Nanamhla Gwedla & Charlie Shackleton**

Department of Environmental Science

Rhodes University, South Africa

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# BACKGROUND

- Urbanisation & Urban sustainability

- Urban forestry for urban sustainability

- Street trees as a strategy

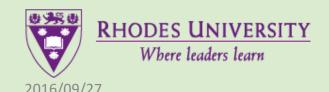- Threats to street trees

- Importance of tree inventory

# AIM & OBJECTIVES

o Investigate the composition, diversity and density of urban street trees in relation to the perceptions of horticulturists, across a range of ecological and social contexts

❖ Assess the abundance, species composition, diversity and dominance of street trees planted in a range of Eastern Cape towns

❖ Investigate why specific tree species are planted and the characteristics of what horticulturists regard as good species for street planting
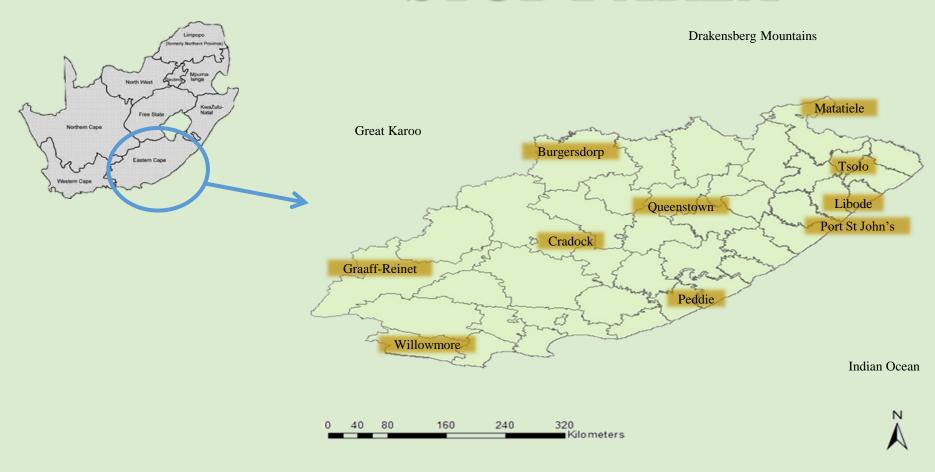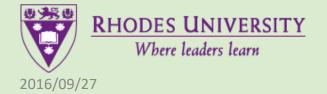
# STUDY AREA



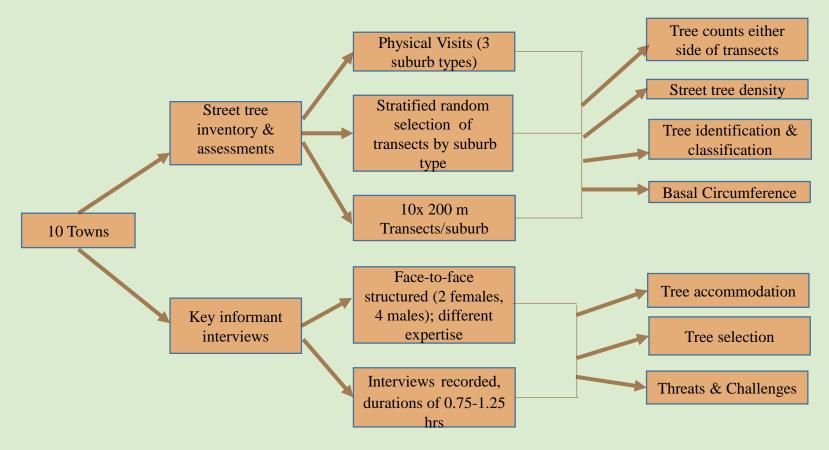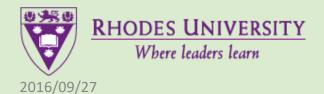Figure 1: Eastern Cape map highlighting sample towns

# METHODS



Figure 2: Procedure followed in collecting data

# KEY FINDING 1: STREET TREE DISTRIBUTION

Table 1: Distribution of street trees between towns.

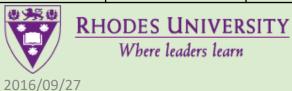| Town | Number of transects with trees (n=30/town) | Number of street trees |
|---|---|---|
| Burgersdorp | 8 | 117 |
| Cradock | 7 | 90 |
| Graaff-Reinet | 10 | 293 |
| Libode | 3 | 4 |
| Matatiele | 11 | 95 |
| Peddie | 3 | 12 |
| Port St John's | 6 | 43 |
| Queenstown | 8 | 131 |
| Tsolo | 5 | 12 |
| Willowmore | 8 | 91 |
| Total | 69 | 888 |

Table 2: Distribution of street trees between suburbs in each town.

| Town | Number of transects with trees (n=30/town) | | | Number of street trees | | |
|---|---|---|---|---|---|---|
| | Suburb | | | Suburb | | |
| | Affluent | Township | RDP | Affluent | Township | RDP |
| Burgersdorp | 7 | 1 | 0 | 115 | 2 | 0 |
| Cradock | 5 | 2 | 0 | 78 | 12 | 0 |
| Graaff-Reinet | 8 | 2 | 0 | 267 | 26 | 0 |
| Libode | 3 | 0 | 0 | 4 | 0 | 0 |
| Matatiele | 5 | 3 | 3 | 63 | 25 | 7 |
| Peddie | 1 | 0 | 2 | 4 | 0 | 8 |
| Port St John's | 6 | 0 | 0 | 43 | 0 | 0 |
| Queenstown | 7 | 1 | 0 | 123 | 12 | 0 |
| Tsolo | 5 | 0 | 0 | 12 | 0 | 0 |
| Willowmore | 6 | 2 | 0 | 65 | 26 | 0 |
| Total | 53 | 11 | 5 | 774 | 99 | 15 |

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# KEY FINDING 1: STREET TREE DISTRIBUTION
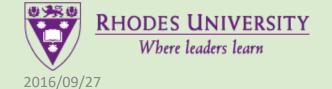


Photo By: Google Street Visualisation

Affluent Suburb



Photo By: Google Street Visualisation

Township Suburb



Photo By: Researcher

RDP Suburb

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# KEY FINDING 2: STREET TREE ATTRIBUTES

Table 3: Attributes of street trees in the sample towns.

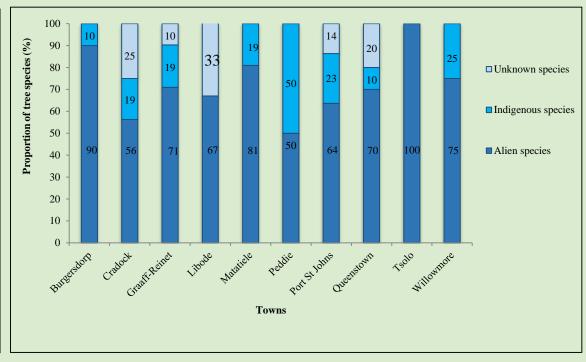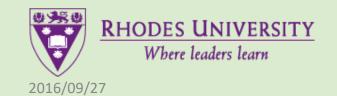| Towns | Street tree attributes | | | | | |
|---|---|---|---|---|---|---|
| | Mean tree density (per 200 m transect) ± SE | Range of tree density (per 200 m transect) | Mean circumference (cm) ± SE | Range of circumference (per tree) (cm) | Species richness (no. of tree species) | Shannon Diversity Index |
| Burgersdorp | 3.9±1.6 | 0-40 | 90.4±4.2 | 6.6-200.3 | 19 | 4.0 |
| Cradock | 3.0±1.2 | 0-22 | 103.2±5.6 | 8.3-290.2 | 16 | 2.3 |
| Graaff-Reinet | 9.8±2.9 | 0-51 | 102.6±2.9 | 7.9-329.8 | 31 | 2.7 |
| Libode | 0.1±0.1 | 0-2 | 125.7±8.1 | 103.9-143.0 | 3 | 1.0 |
| Matatiele | 3.2±1.1 | 0-22 | 103.6±6.7 | 3.2-276.3 | 21 | 2.4 |
| Peddie | 0.4±0.3 | 0-7 | 51.9±20.1 | 9.1-233.5 | 2 | 0.6 |
| Port St John's | 1.4±0.6 | 0-15 | 166.5±20.0 | 13.2-598.9 | 22 | 2.9 |
| Queenstown | 4.3±1.5 | 0-28 | 115.9±5.7 | 3.8-360.2 | 20 | 2.4 |
| Tsolo | 0.4±0.2 | 0-4 | 134.5± 28.7 | 50.7-420.3 | 7 | 1.7 |
| Willowmore | 3.0±1.1 | 0-19 | 70.9±6.0 | 6.1-246.8 | 4 | 1.3 |
| Significance | p>0.05 | n/a | p>0.05 | n/a | n/a | n/a |



Figure 3: The proportions of indigenous, alien and unknown tree species per town.

# KEY FINDING 2: STREET TREE ATTRIBUTES



*Jacaranda mimosifolia*

Photo By: https://www.environment.co.za/



*Fraxinus velutina*

Photo By: http://elkhornforestry.weebly.com/



*Fraxinus americana*

Photo By: http://extension.missouri.edu/p/G6800-27

Alien Species
(**71 %**)



*Celtis africana*

Photo By: http://www.gardengoods.co.za/



*Searsia lancea*

Photo By: http://www.plantbook.co.za/



*Podocarpus falcatus*

Photo By: http://www.seedsforafrica.co.za/

Indigenous Species
(**12 %**)

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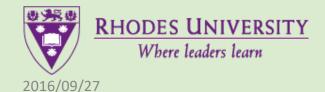Institute of Environment and Recreation Management

# KEY FINDING 3: HORTICULTURISTS' PERSPECTIVES

- Tree Selection Characteristics: Root system, Eventual size/shape, Alien or indigenous, Adaptability to climate

- Tree Siting: Planting by need, Random selection, Yard planting, Cost

- Tree Removal: Obstruction to traffic & interference with electricity lines, Residents' requests, Old trees with falling branches

- Threats to Trees: Vandalism, Lack of education & awareness, Crime, Political conflict, Climate Change

- Challenges: Limited funding, Lack of skilled personnel, Lack of equipment, Communication with residents
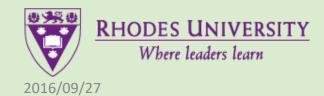
# SUMMING UP

- Urban forest assessments-> mortality reduction & benefit enhancement

- Address disparities in street tree distribution

- Greening of RDP suburbs->  cooperation and constant communication

- Alien vs Indigenous species
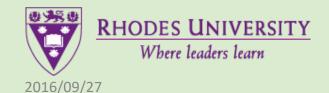
- Training for horticulturists

# CURRENT RESEARCH

## Barriers and enablers to tree planting in low-cost housing suburbs: lessons from participatory learning approaches

### Research Question:

- Which participatory learning model/s is likely to be the most effective for the introduction and care of trees in low-cost housing suburbs in rapidly urbanising, small, South African towns?

### Aim:

- To theoretically and practically evaluate existing or new participatory learning models to address barriers to and enhance enablers of residents' involvement in tree planting and care in low-costs housing suburbs in small South African towns.

# ACKNOWLEDGEMENTS