



**World Forum on
Urban Forests**
Mantova 2018

PS 2.2 Changing spaces and places

Beyond the trees: designing shrub communities for the urban forest

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Presentation

1. Shrubs and related plantings in urban landscapes
2. Natural shrub communities
3. The Woody Meadow Project



Many plantings in public landscapes are dominated by shrubs and “shrub mass”



Many are also dominated by massed plantings of grasses and related plants



Highly functional, low maintenance BUT low in diversity with poor aesthetic values

Meadow and 'prairie' plantings are increasingly popular in urban landscapes



Melbourne



London Olympic Park



Chicago



RHS Wisley, UK

BUT are resource intensive and difficult to sustain in hot, dry climates

Natural shrub-dominated plant communities are common across the globe



Maquis shrubland, Greece



Fynbos, South Africa



Coastal heathland Western Australia

These “heathland” communities: floristically rich, diverse and high aesthetic



Heathland plant communities are strongly adapted to fire and regenerate by:

- **Reseeding:** from seeds protected by woody capsules/fruits and cones
- **Resprouting:** from lignotubers and epicormic buds

Reconstructing heathland in disturbed landscapes is complex and difficult, while fire as a management tool is unsuitable for use in urban environments





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Can we develop 'woody meadow' plantings in urban landscapes derived from heathland

communities?

A low maintenance, functional and highly aesthetic planting with Australian shrubs, maintained by biennial/triennial coppicing.

Research project from 2015-2016

Three phases:

- Design concept and plant selection
- Plant coppice experiments
- Field plots

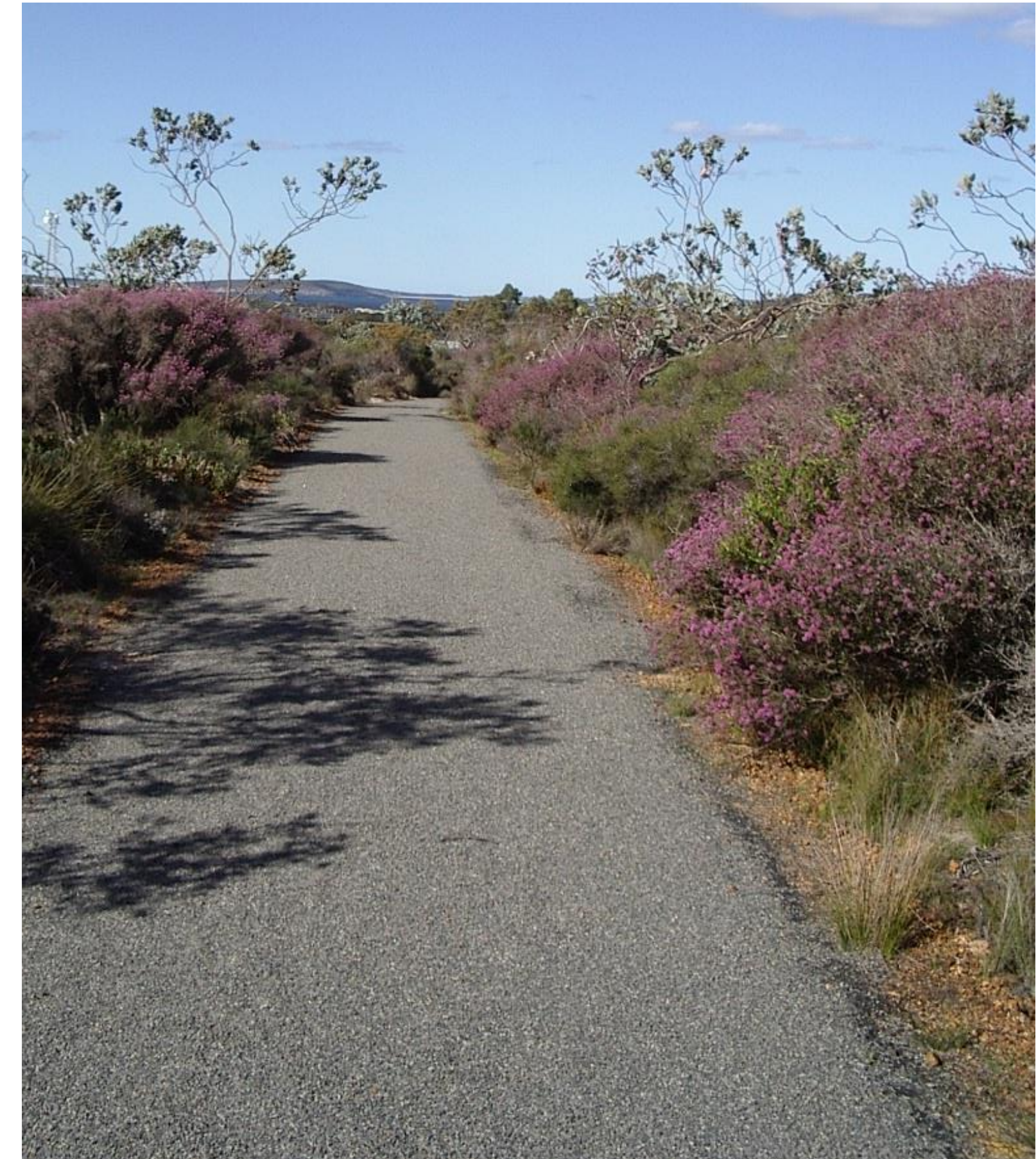
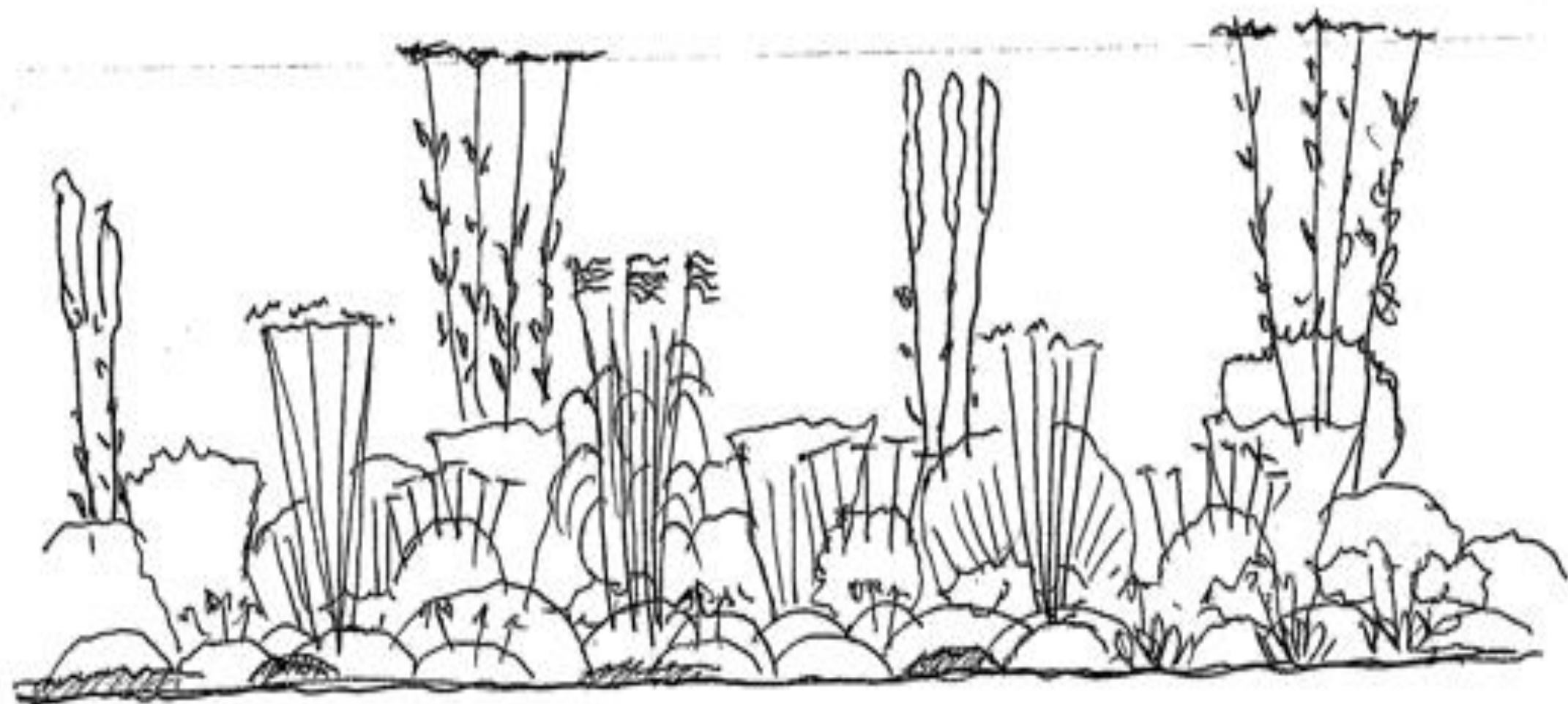


Render of proposed Woody Meadow, Melbourne, 2016

The Woody Meadow: Design concept

Designed plant community of three planting layers:

- 50 cm **base layer** (low ground covers)
- 100 cm **'bump' layer** (upright shrubs)
- 150 cm +: **emergent layer** (scattered taller shrubs)



The Woody Meadow Project: plant selection

Extensive literature review of suitable Australian species

Based on recovery from coppicing recovery, flowering, drought tolerance

A total of ~1200 species identified

- 287 plants shortlisted (expert panel advice)
- 48 chosen for coppicing experiment



The Woody Meadow: plant coppice experiments

- 2015-2017
- Raised beds and ground level plots
- 48 plant species
- Coppiced to 10 cm
- Plant survival and biomass
(6 months post-coppicing)



Botanic Gardens
Cranbourne



Trawalla Plots Burnley Campus

The Woody Meadow: field plots

Two field sites with 20 x 9m² experimental plots

Mineral planting substrate (200 mm depth)

Treatments of planting density and species diversity

- Diversity: low (12 spp.) vs. high (21 spp.)
- Density: high (38 cm spacing) vs. low (52 cm spacing)

Measures of canopy cover, three layers and mortality

Planted September 2016

Coppiced March 2017 (to 10 cm plant height)

Analysis and evaluation Jun 2018





Two City of Melbourne field sites: Birrarung Marr (top) and Royal Park (bottom)

January, 2017 (4 months after planting)



Royal Park site

March 2017: just prior to coppice treatment



Birrarung Marr site

April 2017

4 weeks after coppicing



Birrarung Marr site



Birrarung Marr site

August
2017



Royal Park site

November 2017



Birrarung Marr site

August 2018



Birrarung Marr site

November 2018



Birrarung Marr site

Coppice experiments

The Woody Meadow: results and learnings

- Most plants tolerate coppicing (~95% survival after 6 months)
- Coppiced plants are shorter, denser, more hemispherical in shape

Field plots

- plant mortality increased after 1 year (16 to 21%)
- low diversity (12 spp/3m²) and high density (38 cm/3m²) produced the 'best' results (survival, cover, flowering, height, etc.)
- the three designed layers (base, bump, emergent) were evident

The Woody Meadow: next steps

- Continuing the research project
- Significant interest from the parks and landscape architecture community
- Applications of the woody meadow to parks, reserves, streetscapes, roadsides, etc.
- New five-year research project in Victoria (state), with major partners including
 - Local government authorities
 - Public land management agencies





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