

# Urban ecology and ecological design: New Zealand perspectives and future pathways

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CHRISTCHURCH - NEW ZEALAND

New Zealand's specialist land-based university

# Urban Ecology in New Zealand: a story of complexity

- ***Unique indigenous*** nature and culture
- ***Colonial history:*** science and design models imported from around the world, but predominantly from Europe
- ***Complex*** historical, bio-geographical, ecological and socio-economic dynamics



Canterbury

# Contemporary diversity and plurality

- **Plural society** with multiple, sometimes conflicting values
- **Diverse** and **competing** paradigms of knowledge, policy and management of urban nature
- **Tension** between theoretical knowledge and practical implementation
- **Competing** demands for limited urban space



# Globalisation of species and symbols



***Create challenges for scientific understanding, design, management and differentiation of ecology in cities***

# Urban Ecology- an Emerging Discipline

- Urban Parks and Garden Cities
- Native plant movements in Europe and US
- Human ecology – ecology as a metaphor for studies of urban society *[Chicago School]*
- Urban biodiversity studies
- Restoration ecology
- Urban Ecology as an integrated science

# Urban ecology concepts

- *Remnant ecosystem ecology*
  - Offers guidelines for ecosystem protection



Travis  
Swamp,  
Christchurch



Riccarton  
Bush,  
Christchurch

# Urban ecology concepts

- *Restoration ecosystem ecology*
  - Offer techniques for regeneration of urban ecosystems and can have a strong social dimension



# Urban ecology concepts

- *Urban human ecology*
  - Coupled human-environmental systems
  - Ecosystem services
  - Adaptive learning and decision making



Pegasus Town



Auckland



# Challenges

- Developing science database and models
- Connecting ecological science to policy, planning and design
- Working with plural social values-  
e.g., accommodating “ecological”  
(dynamic, functional) versus “scenic”  
(static, picturesque) aesthetics

# Ecological Design and Planning

- Origins in landscape design (e.g. 'wilderness' in parks & gardens)
- Pioneers (Robinson 'Wild Garden'; Jens Jensen 'Prairie Garden'; European 'wild flower' parks)
- Ecological parks and xeric gardens
- 'Design with Nature'
- 'Nature in Cities'
- 'Sustainable' design
- 'Eco revelatory' design
- Increasing integration with urban ecology



Midwest,  
USA



Sheffield,  
UK

# Ecological Design Concepts: e.g. Low Impact Urban Design and Development (LIUDD)

- Planning and design for physical sustainability and biodiversity
- Integrate principles of landscape and urban ecology with city function
- Alternative, **cost-effective design** and development approaches that involve designing and **working with nature** - creating community environments that respect, conserve, and enhance by or with natural processes
- Relevance (sense of place)



Green Roof: Waitekere City Council



Detention Pond: Aidanfield, Christchurch

# Ecological Design Concepts

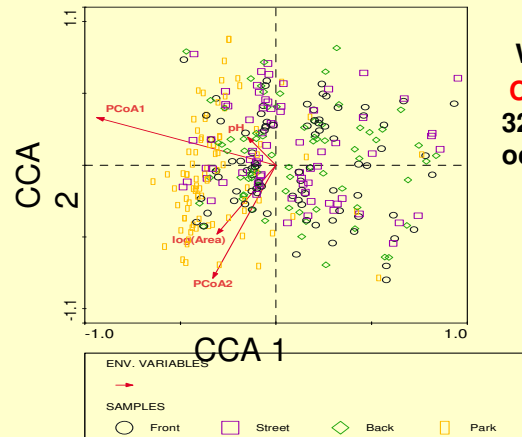
- Eco-Revelatory Design (USA):  
“Design that reveals and interprets ecological phenomena, processes and relationships”
- Design with respect to ecological processes (work with nature)
- Make nature visible



Waitangi Park, Wellington, Designer: M.Wraight

# Strategic Pathways for Action:

- Science
- Education, interpretation and 'outdoors' experience
- Policy and implementation



What drives lawn composition?  
**CCA biplot** showing site scores for 327 lawns and the 47 species that occurred in >2% of lawns

From "Urban Lawn"  
LIUDD Study, 2009



Christchurch



Pacific Museum,  
Paris

# Science Strategies

- 'Evidence based'
- Interdisciplinary
- Sustainable human ecosystems



Lincoln



Christchurch

# Science Strategies

- Place biographies

*Telling stories about landscape character and change*

*Using science to make natural and cultural history legible*

(Eg Ecosystem maps, Lucas Associates & Meurk)



Wellington



"Rain Garden", Ellerslie Flower show, 2007

# Science Strategies

- Modelling ecosystem risks (biosecurity)
- Identifying opportunities (biodiversity & regeneration)
- Measuring performance and benefits (ecosystem services)



Canary Palm: Picton



Escaped from cultivation



Te Papa Museum,  
Wellington



# Educational strategies

- Knowledge transfer  
(Continuing Professional Development)
- Intergenerational learning,  
knowledge and  
experiences



# Educational strategies

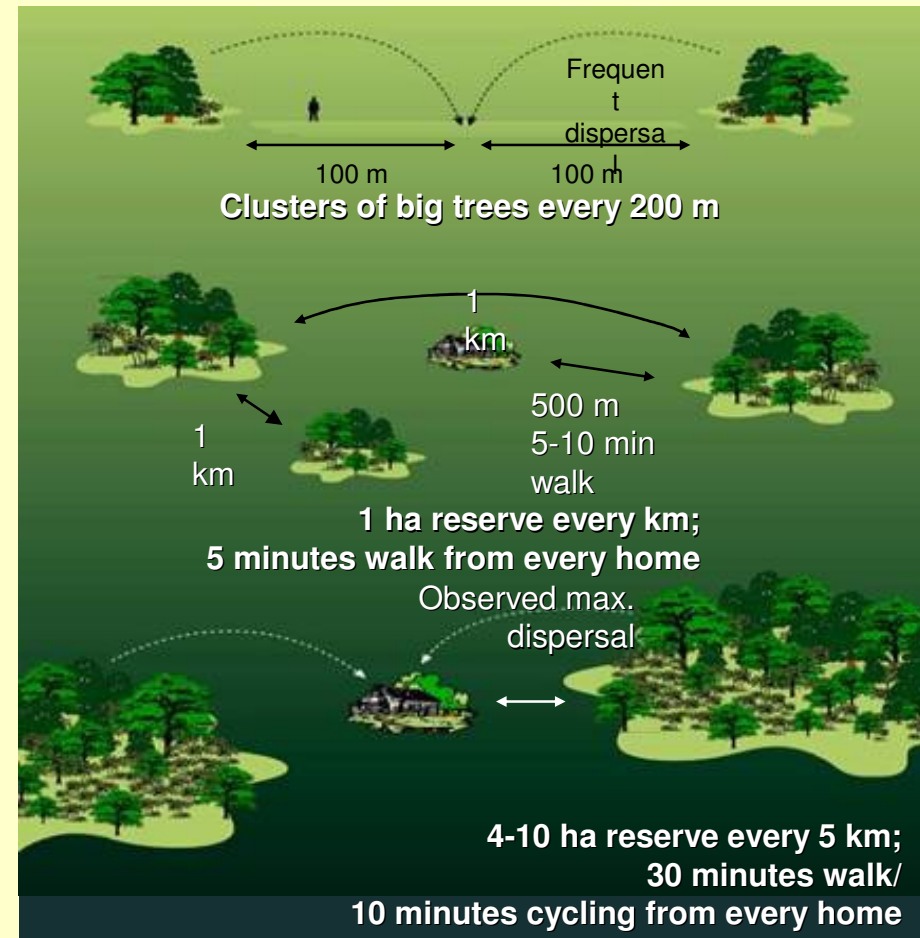
- Exemplars/ interpretation (demonstration projects)
- Experiential learning - putting people in touch with ‘urban wild’
- Tool boxes – practical knowledge



# Planning, design and implementation strategies:

## Ecostructure as part of infrastructure

- Planning, design and implementation strategies at a range of scales
- City wide blue /green networks
- Habitat restoration and ecological parks
- Patch configurations



# Ecostructure as part of community

- Ecopolis and Eco-village
- Ecosystem services
- Ecological footprints
- Urban agriculture
- Plant signatures
- Accent plants as 'cues for care'



Ecopolis:  
Christie  
Walk,  
Adelaide,  
Australia



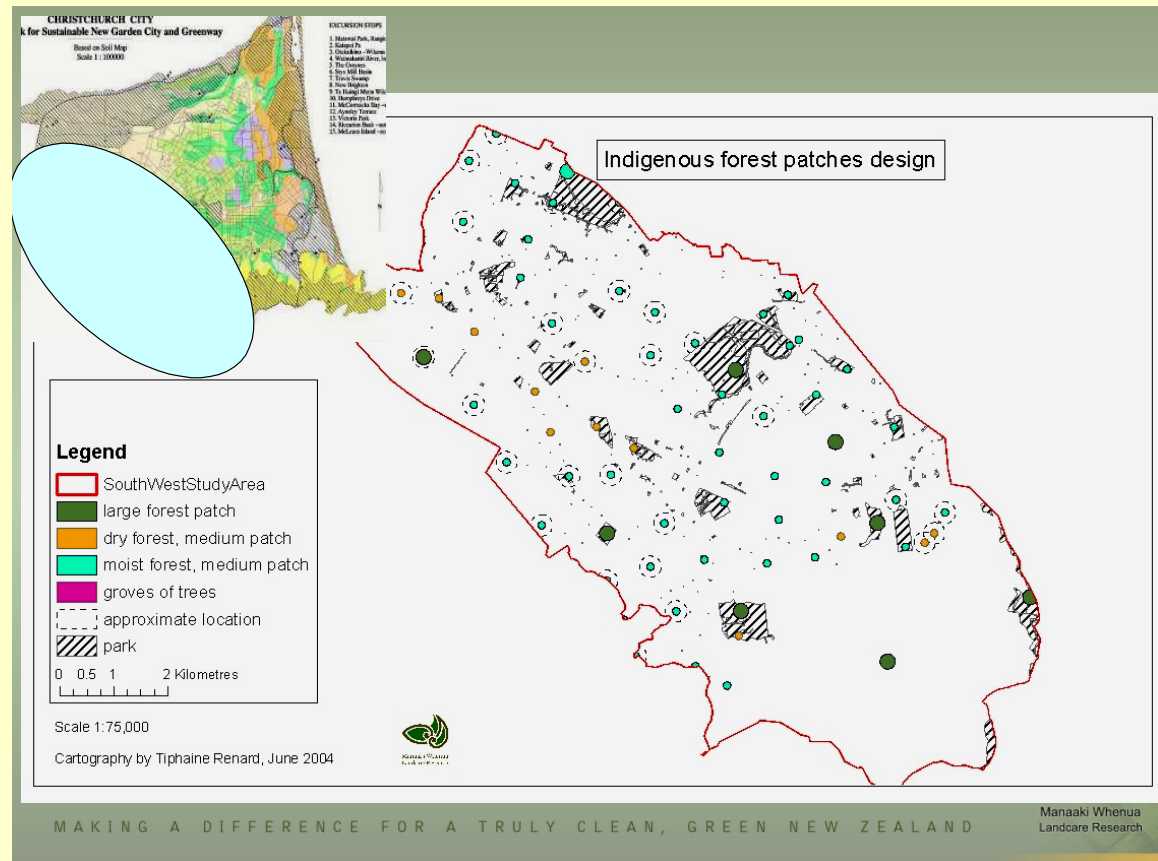
Car park,  
Wellington



Regis Park Subdivision,  
Auckland

# Planning, design and implementation strategies

- Adaptive management
- Action research
- Collaborative learning



# Planning, design and implementation strategies

- Design experimentation
- Mediation and conflict resolution
- Champions/ leadership



Design with Indigenous Plants:  
Christchurch Botanic Gardens

# Conclusion

- Plenty of bottom up initiatives but little top down policy/leadership (e.g. surveys of public preferences versus council actions)
- A more strategic approach to integrating ecology into urban governance (LGA; RMA)
- Greater appreciations by ecologists of urban planning and design processes and demands
- Increased collaborations between city councils, universities research institutes practices and ngo's

# Positive actions from this workshop

- Regular workshops in urban ecology and design networking for cities in New Zealand (new projects, design and research)
- Create a New Zealand urban ecology network

*Lincoln University to champion this through the Isaac Centre for Nature Conservation*