

A Comparison of Urban Tree Populations within Four UK Towns and Cities

Trees, People and the
Built Environment 2014

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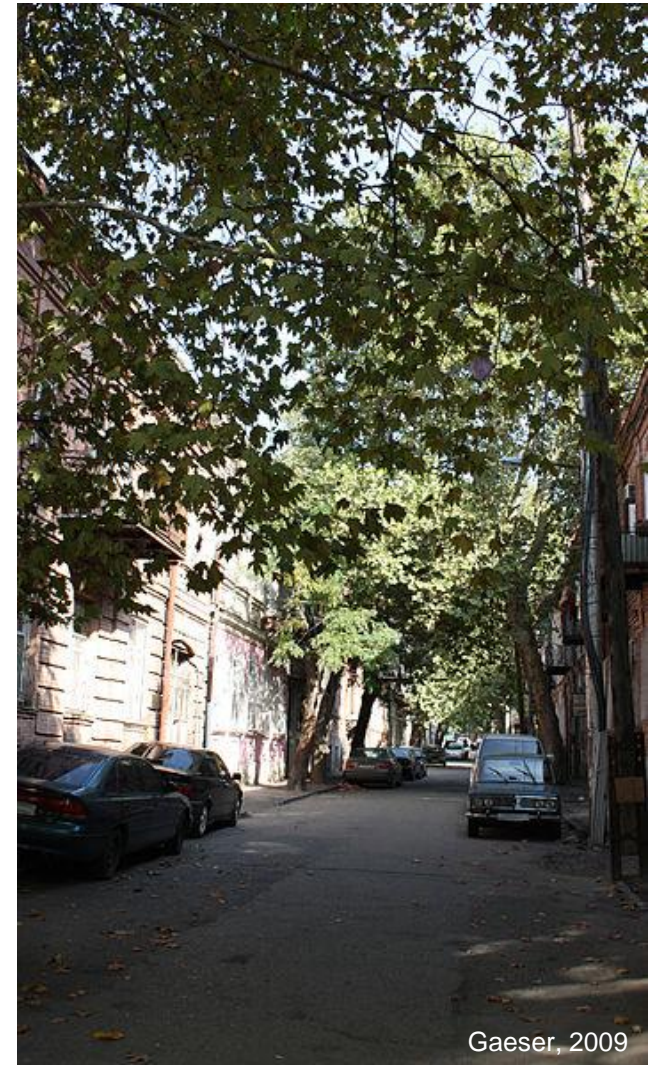
The problem - Urbanisation

- 80% live in cities
- This will increase
- Environmental problems
 - Pollution
 - Flooding
 - Loss of wildlife
 - Urban heat island



The solution – Trees?

- Provide numerous ecosystem services
 - Carbon capture
 - Filter airborne pollutants
 - Alleviate flooding
 - Provide habitat
 - Cool surrounding areas
 - Increase mental wellbeing
 - Aesthetic appreciation



Gaerer, 2009

- How many trees are in the urban environment?
- What ecosystem services do they provide?
- What is driving urban tree populations?
- What challenges do urban trees face?



i-Tree

- Developed by the USDA
- Used worldwide
- Field based method to assess the ecosystem services provided by trees



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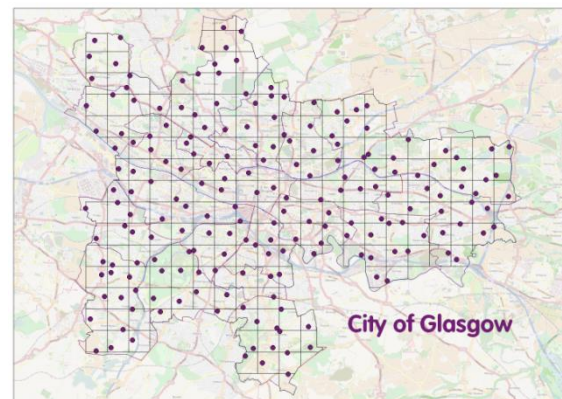
- What is driving urban tree populations?
 - Species
 - Size
 - Land use types
- What challenges do urban trees face?
 - Pests and diseases
 - Diversity
 - Climate change
 - Drought
 - Waterlogging



- Four i-Tree surveys



- 200-241 plots sampled
- Recorded land characteristics
- Recorded tree characteristics
 - Species
 - Height
 - Canopy width
 - DBH
 - Health



Species composition – top ten species

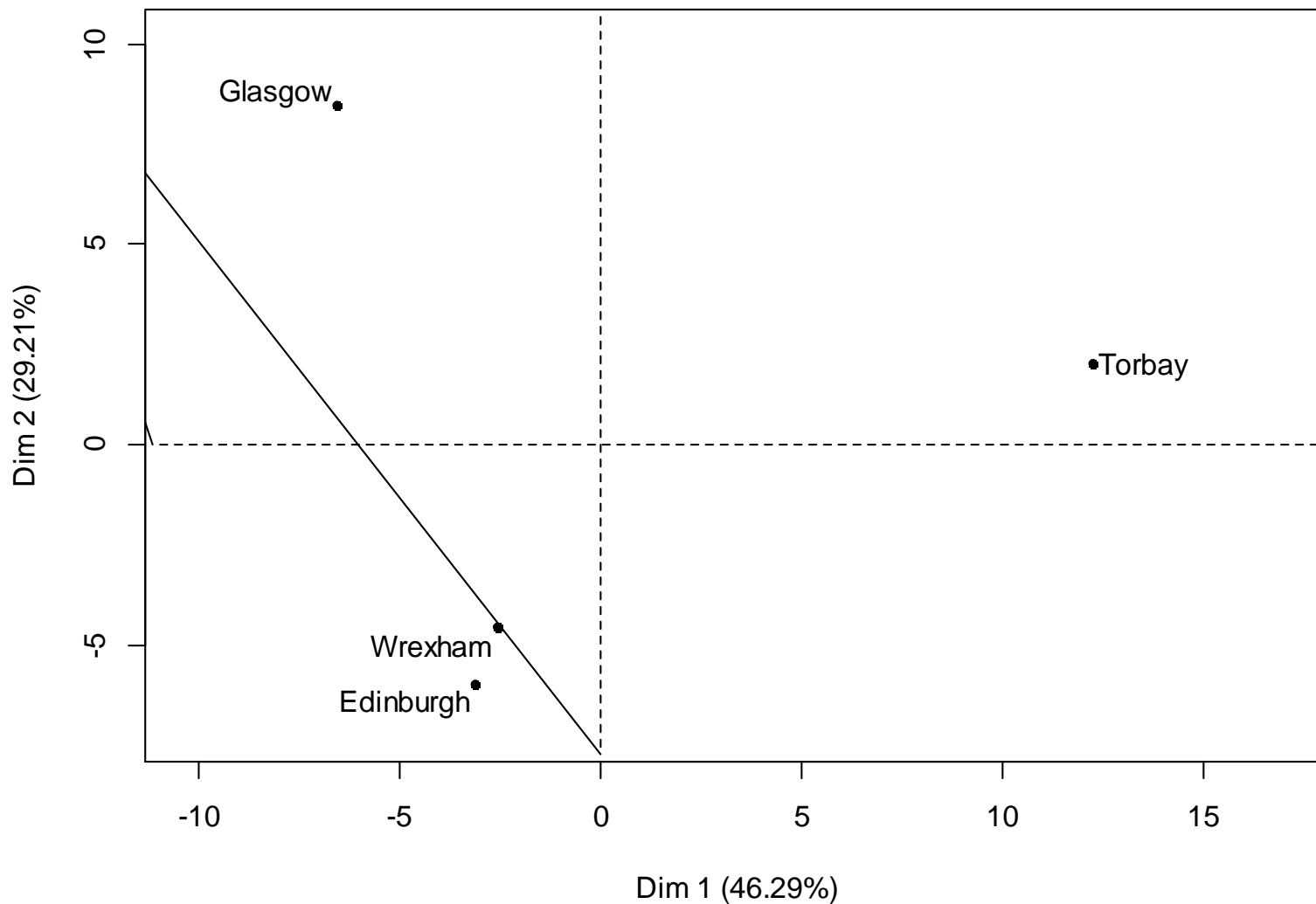
All four study areas

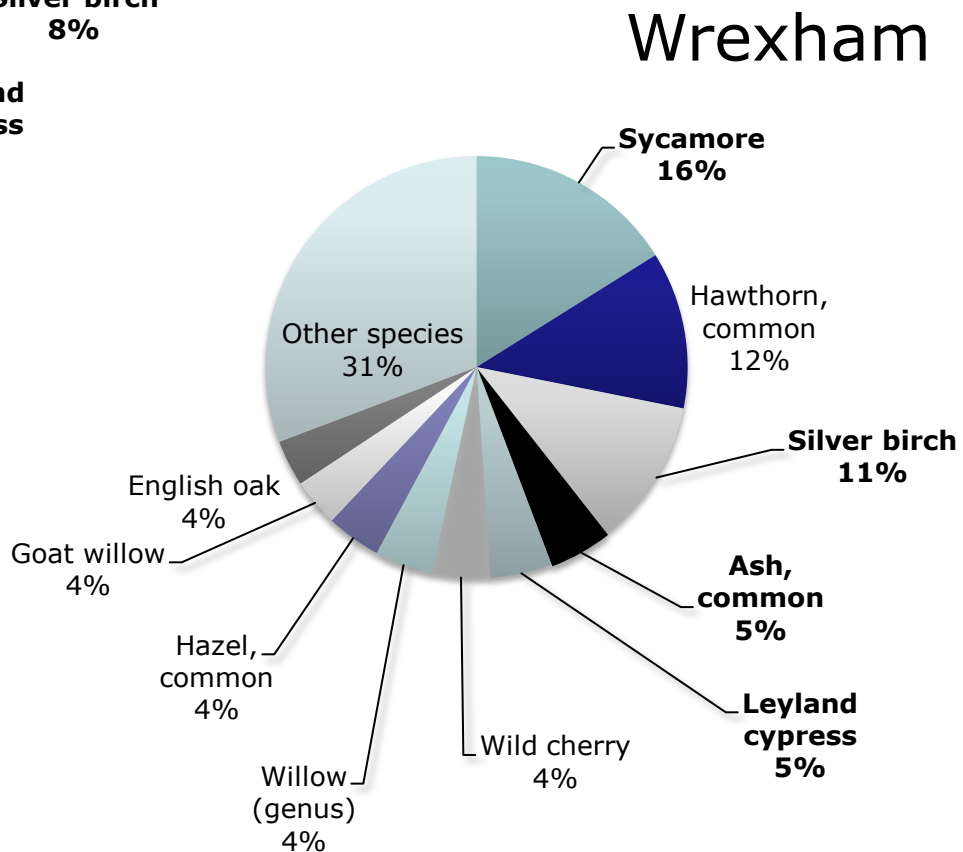
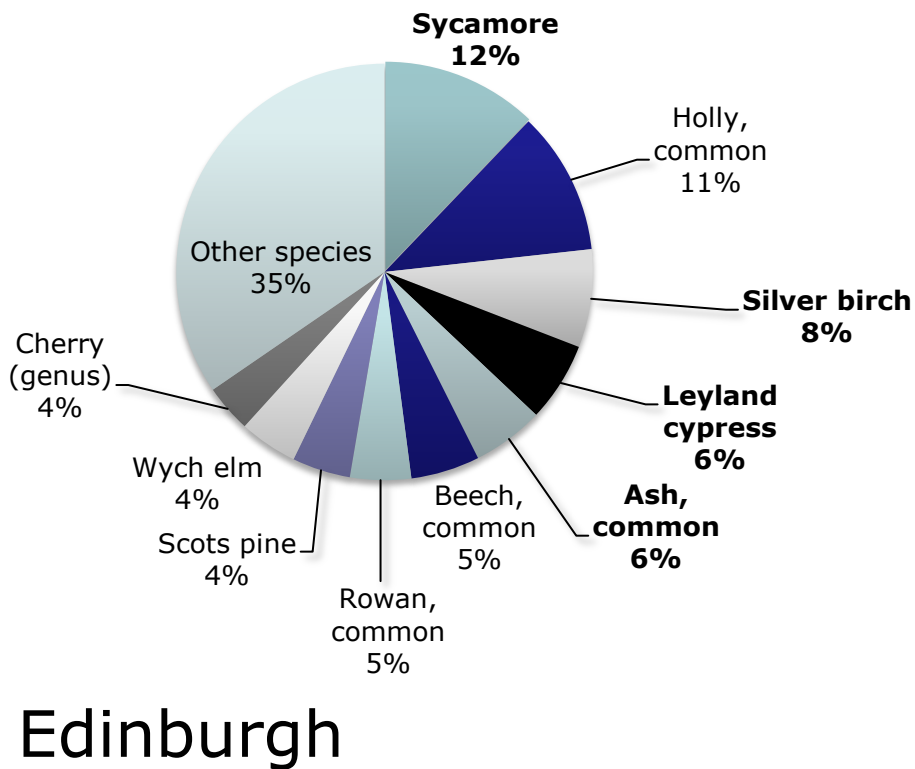
- *Acer psuedoplatanus*
- *Fraxinus excelsior*

Three study areas

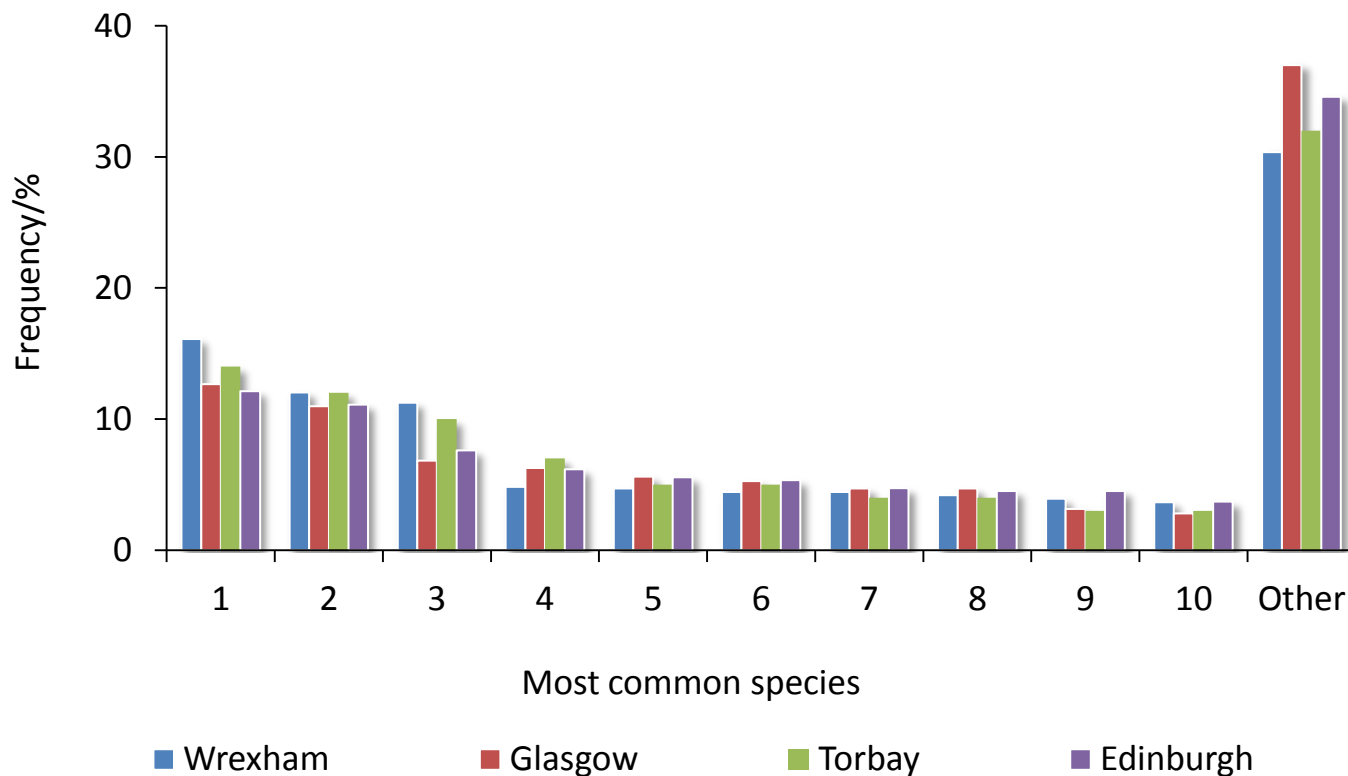
- *Cupressocyparis leylandii*
- *Crataegus monogyna*
- *Betula pendula*



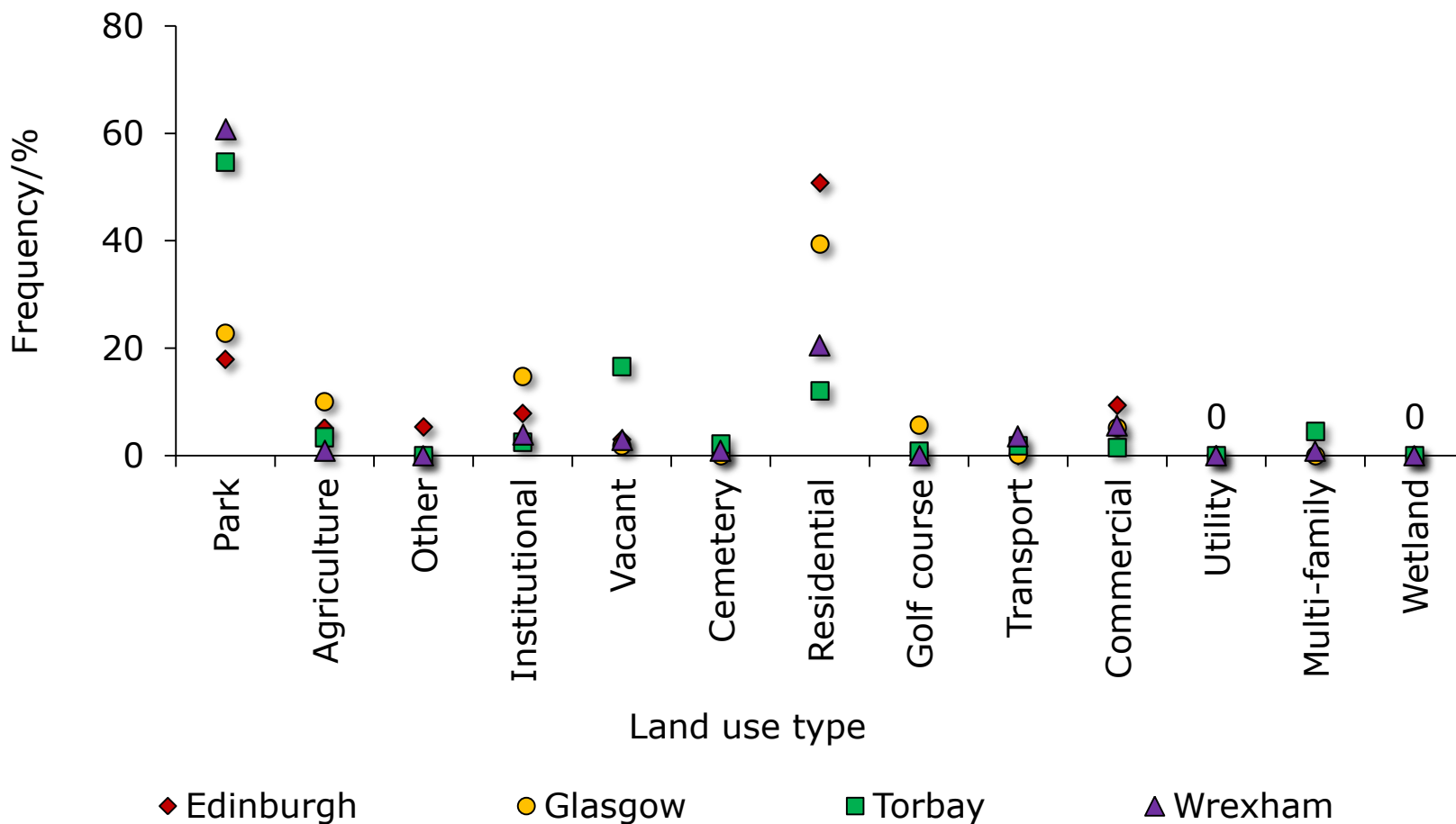




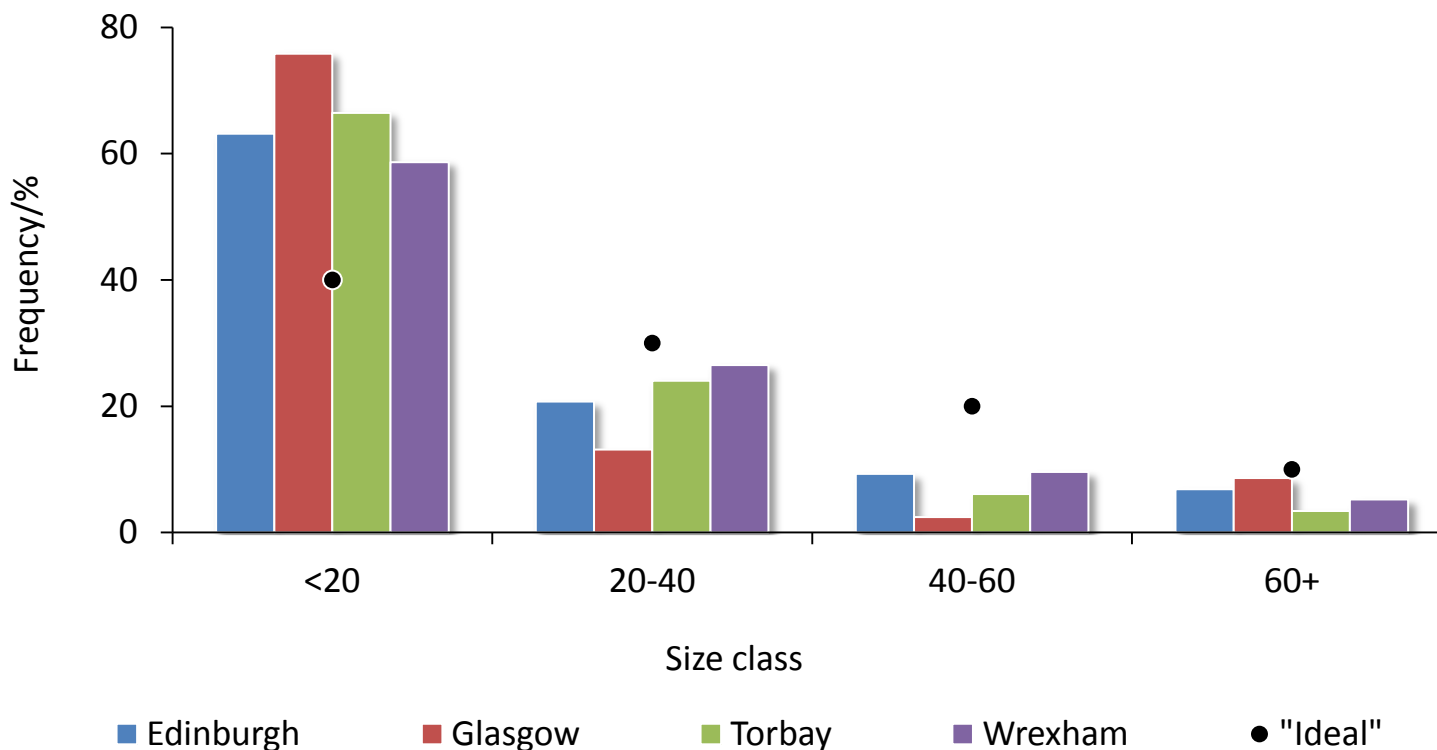
Top ten species frequencies



Frequency by land use type



Size distributions



Diversity - The “10:20:30” rule

No species more than 10%:

- Edinburgh
 - *Acer psuedoplatanus*, 12%
 - *Ilex aquifolium*, 11%
- Glasgow
 - *Fraxinus excelsior*, 13%
 - *Crataegus monogyna*, 11%
- Torbay
 - *Cupressocyparis leylandii*, 16%
 - *Fraxinus excelsior*, 13%
- Wrexham
 - *Acer psuedoplatanus*, 17%
 - *Crataegus monogyna*, 13%
 - *Betula pendula*, 12%

Diversity - The “10:20:30” rule

No genus more than 20%:

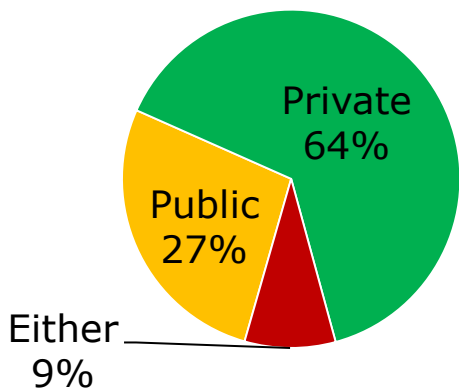
None

No family more than 30%:

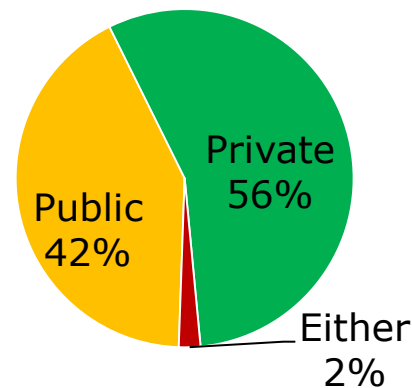
None

Private or public

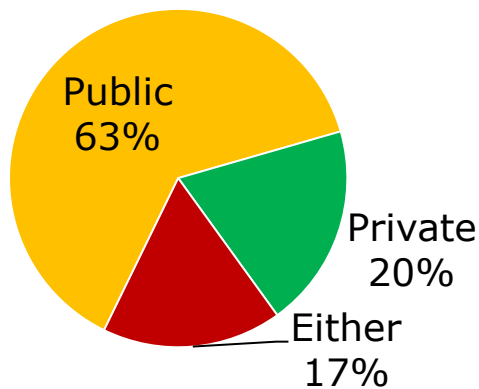
Edinburgh



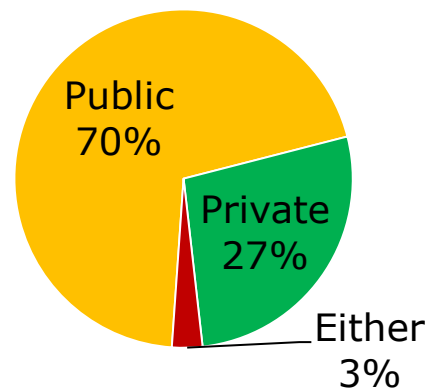
Glasgow



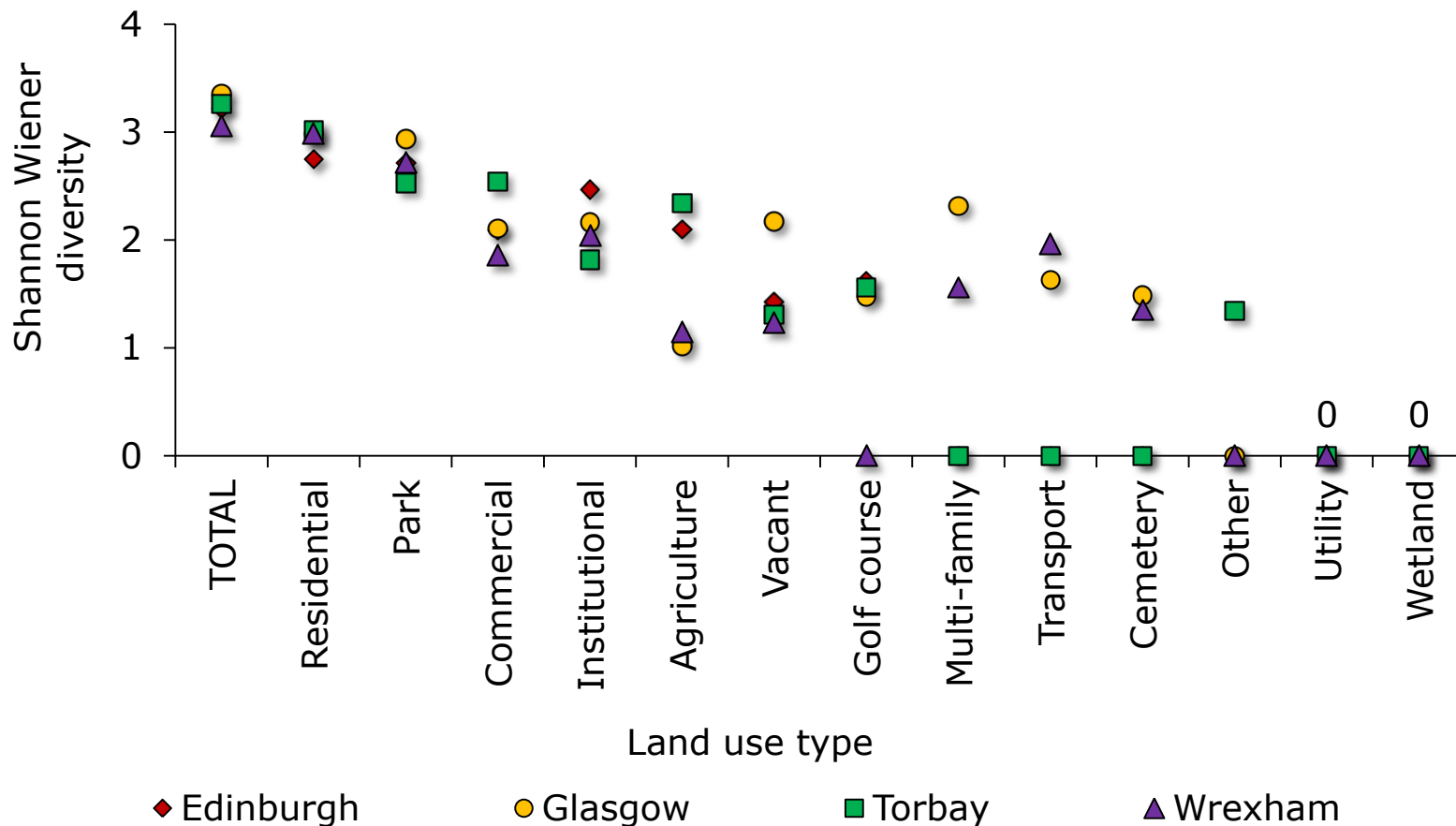
Torbay



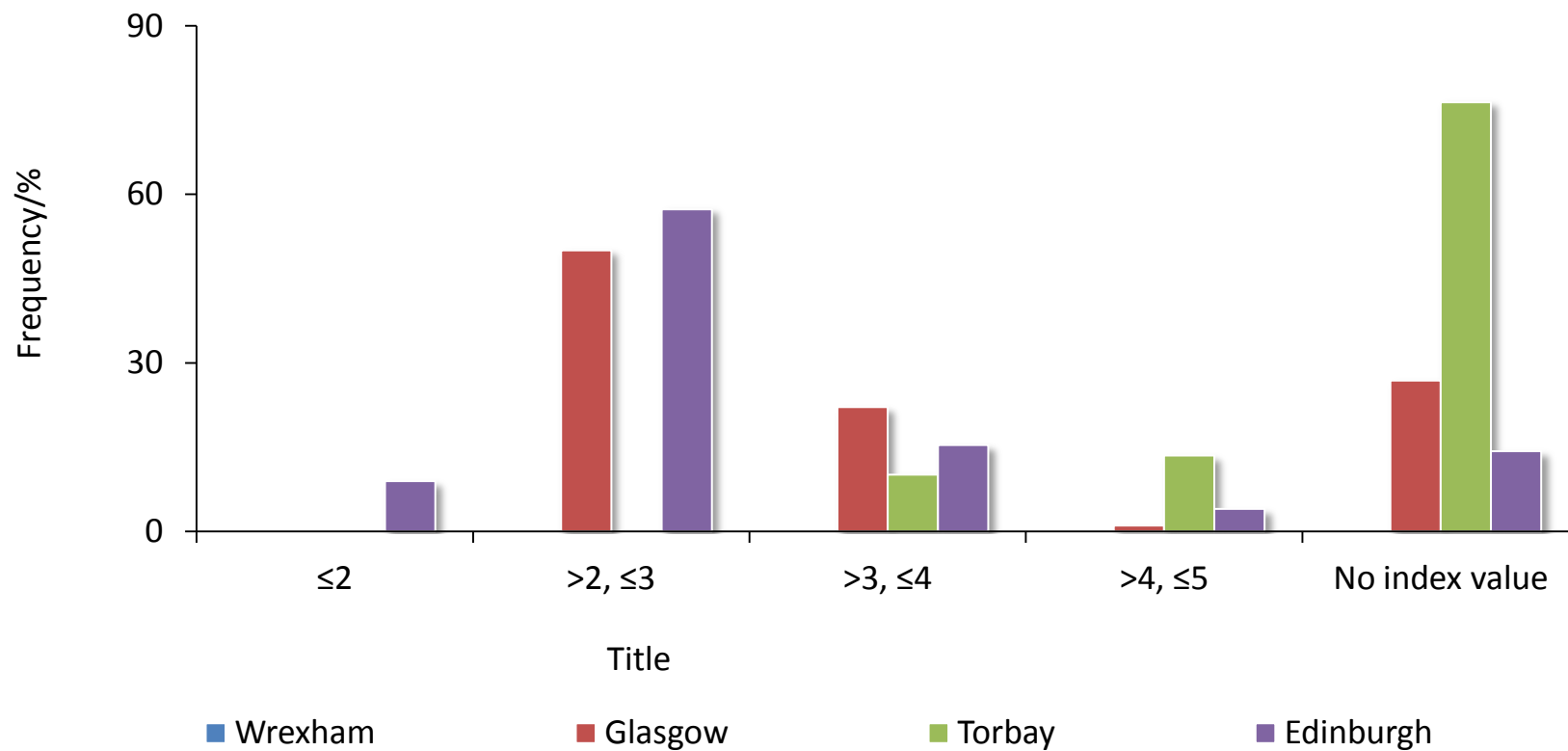
Wrexham



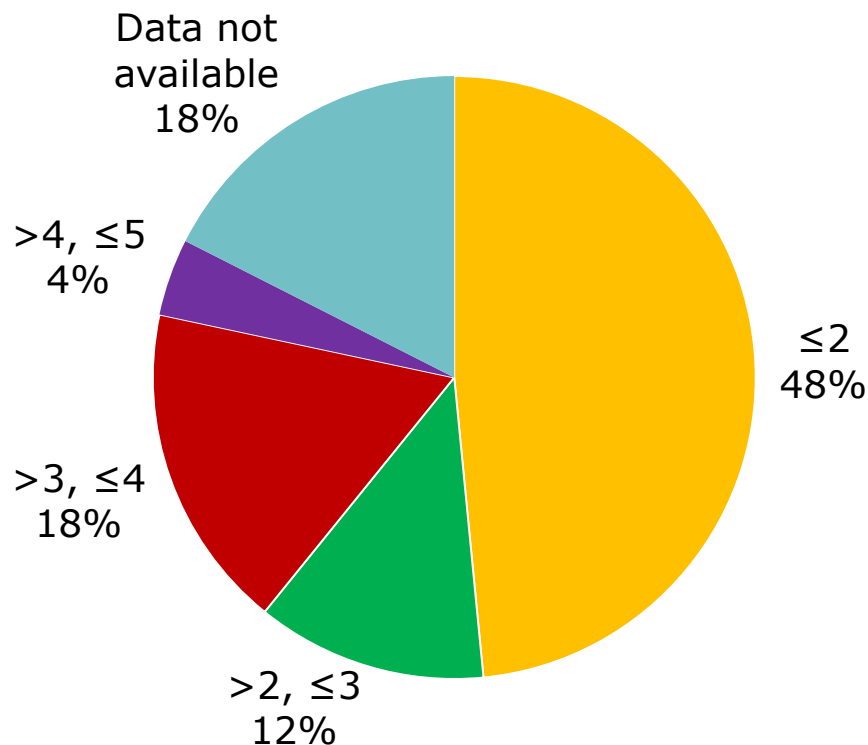
Diversity



Response to drought



Response to waterlogging, Glasgow



Conclusions

- i-Tree
 - i-Tree data can be used beyond ecosystem services
 - i-Tree provides a standardised data collection method
- UK tree populations
 - Self-seeding pioneers most common
 - Abundances similar to Trees in Towns II

Conclusions

- Diversity
 - Maintained land uses generally more diverse
 - Some species exceeded 10% abundance
 - Genus and family limits were not exceeded
 - Tree officers may have data missing when assessing this
- Resilience to climate change
 - Torbay had lots of drought tolerant species
 - Glasgow had few waterlogging tolerant species



Acknowledgements

- Edinburgh City Council
- Glasgow City Council
- Wrexham County Borough Council
- Torbay Borough Council
- NRW
- FC Scotland
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- Paul Taylor and Phil Handley of FR
- The Woodland Trust
- CEH
- SEPA

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