Using a citizen science tool to model the health benefits of roadside trees

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Using a citizen science tool to model the health benefits of roadside trees

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April 2017

@treezilla_org
Health effects of air pollution

Cardiovascular and pulmonary diseases linked to transportation

40,000 deaths

20 billion pounds

The Open University

The Open Science Laboratory

An initiative of The Open University and The Wellcome Trust

treezilla

the monster map of trees
Roadside trees improve the urban environment

- Provide shade
- Slow cars down
- Reduce the urban heat island effect
- Filter air pollution
Previous studies on trees and particulate matter

- i-Tree Eco (Rogers et al., 2015)
- Remote sensing (Tallis et al., 2011)
Valuing trees the citizen science way

• OpenTreeMap: learning about the value of individual trees

• Treezilla: developing a ‘monster map of trees’ for GB
Project VITAL: Valuing Green Infrastructure Through Tree Assessment Tools

We're making a monster map of Britain's trees. Use Treezilla to record the trees near you and to find out how they benefit the local environment.

www.treezilla.org
Benefits of a citizen science approach

Treezilla.org is a platform that can help:

• Highlight the role of trees in urban environments and the ecosystem services they provide
• Help the general public learn and contribute
• Acknowledge this contribution and its role in the care and welfare of trees
Using Treezilla to study the removal of PM$_{10}$ by roadside trees
Grid roads and their trees

• Milton Keynes: a new town planned with a network of grid roads

• Unintended benefits of ‘screening’ the roads
Grid road trees mapped: ≈430ha within 50m of carriageway
Proportion of PM$_{10}$ removal by 8 most common species
PM$_{10}$ removal across MK

- 22.36 kg/ha
- 9.6 tonnes overall for the planted area of grid roads in MK
- 5.5-6.3% of estimated annual exposure for the high and low pollution scenarios respectively
Managing roadside trees

Thinning to:

• Promote larger trees

• Improve visual amenity

• Increase ground flora diversity
Effects of thinning on PM$_{10}$ removal
Value of pollution reduction

**In Treezilla:**
- £14,568 under current conditions;
- £12,998 under the thinning scenario.

**By UK government figures:**
- £637,115 under current conditions;
- £568,445 under the thinning scenario.
Challenges

• Mapping at street level difficult with consumer GPS

• Co-ordinating citizen scientists at scale

• Which figures to believe: PM$_{10}$ and ££££?
Conclusion

• A citizen science tool can provide sensible ball-park estimates of PM$_{10}$ removal.

• Uncertainties remain over precision of estimates and associated valuations.

  But these are not specific to the citizen science approach

• Future developments will enhance the ability of Treezilla to contribute to baseline assessments and decisions over management.
Acknowledgements

Project team

Forest Research
Treconomics
The Open University

Project partners

The Tree Council
Cyfoeth Naturiol Cymru
Natural Resources Wales
The Parks Trust
Milton Keynes

Project VITAL
funded by

NERC Science of the Environment

www.treezilla.org
Thank you!

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Get started, map and measure a tree today.

Learn how to use Treezilla

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