

The Benefits of Trees for Livable and Sustainable Communities



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Key Findings: Trees can help us reach 15 out of 17 UN Sustainable Development Goals

- The world is increasingly urban and suburban.
- Society must confront challenges posed by the Anthropocene and climate change.
- The benefits of trees can alleviate many of these challenges.
- We need to plant and protect trees in our cities.

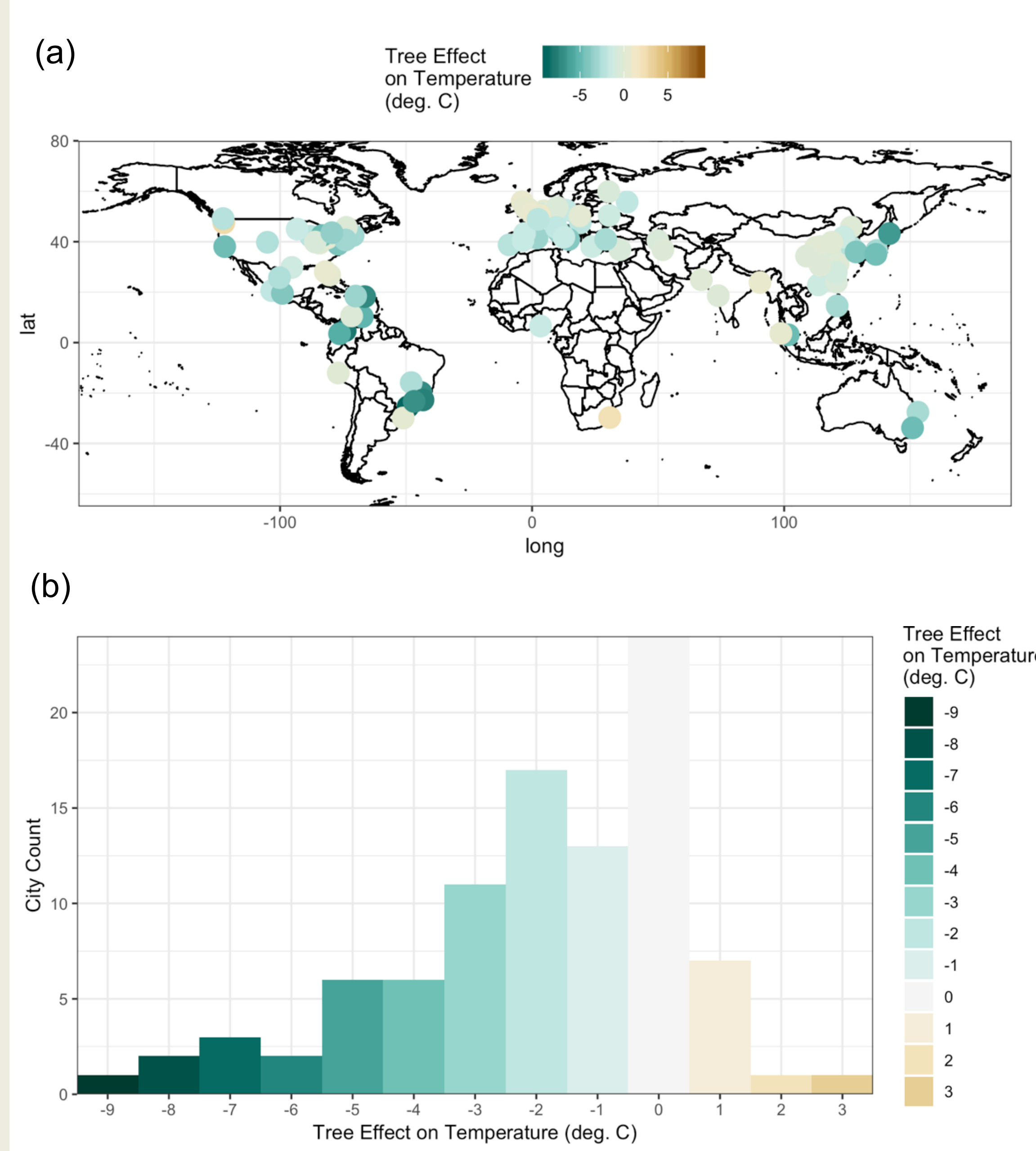


FIGURE 1

(a) Trees greatly contribute to urban cooling. Cities included in this evaluation have an estimated population in the metropolitan area greater than 2 million in the year 2000, a metropolitan area greater than 1,000 km², and an urban heat island effect greater than 1°C (Center for International Earth Science Information Network - CIESIN - Columbia University, 2016). The effect of trees on urban cooling was calculated by subtracting the temperature in areas without trees from the observed temperatures.

(b) While the standard deviation is large, it is not normally distributed. The impact of trees on cooling the urban environment is ecologically and statistically significant.

Takeaway: Trees greatly contribute to urban cooling. The impact of trees on cooling the urban environment is ecologically and statistically significant.

Figures by Dr. Christy Rollinson
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In this review, the scientific benefits of trees are placed in the following categories:

Health and Well-Being

- Reduce pollution
- Improve physical and mental health
- Strengthen community ties
- Increase physical activity
- Decrease aggression and violence
- Reduce crime



Number of source cited: 58

Cognitive Development and Education

- Improve student performance
- Reduce stress
- Increase in concentration
- Reduce symptoms of ADD/ADHD
- Increase in attention
- Increase in self-discipline



Number of source cited: 13

Economy and Resources

- High investment returns
- Support tourism
- Increase home values and rental rates
- Reduce energy use and bills
- Promote food sustainability
- Provide resources and firewood



Number of source cited: 31

Climate Change Mitigation and Habitat

- Reduce Urban Heat Island Effect (see figure 1)
- Store and sequester carbon
- Provide critical habitat



Number of source cited: 13

Green Infrastructure

- Manage storm water
- Reduce pollution
- Protect life below water and on land



Number of source cited: 9

To maximize the benefits of trees, we need to:

- Plant the right tree, in the right place, give it the right care.
- Care for trees so they reach maturity. Mature trees provide more benefits.
- Incorporate green infrastructure early in city planning and recognize the true value of trees over time. City budgets should prioritize tree planting, care and maintenance.
- Acknowledge the long-term benefits of trees and treat them as an investment that appreciates in value.
- Support a new era of horticulture where we focus on how to best grow trees and plants in the complexities of the urban environment and how we can incorporate green infrastructure as a way to address society's greatest challenges.

