



Chinquapin oak (*Quercus muehlenbergii*)

## Human Health and Trees

*We think of discoveries as providing answers, but research also creates more questions and uncovers new mysteries. Human health and trees have strong links, some unrevealed at present, according to results obtained from following human populations in American cities with severe tree loss.*

**Trees near our homes can add beauty and value to property.** For instance, shade can lower cooling costs. Leaves act as traps for dust and particles, filtering the air. Hospitalizations for childhood asthma are lowered in urban areas with denser street trees. In heavy rains, a mature tree can hold 100 gallons of water on its leafy surface, and allow water to evaporate or saturate the ground slowly. This process replenishes the ground water and will lessen flooding, especially in cities where large tree canopies exist. Roots also absorb runoff, helping cities avoid erosion and pollution, each tree often managing several hundreds of gallons of water yearly.

**Trees provide even broader services that are less obvious, and our understanding of the full relationship between our quality of life and trees is incomplete.** This became evident as the arrival of the invasive emerald ash borer beetle (EAB)\* destroyed ash trees and stripped tree-lined streets bare in Midwest cities.

**Researchers who studied human health in these communities found surprising results: Increases in deaths from vessel and heart disease; and lung illnesses or pneumonia.** The numbers of additional deaths are significant; including 15, 000 extra from heart and vessel diseases, and 6,000 more from lung illnesses, supported by 18 years of data from over 1200 counties in 15 states. There was a natural skepticism about such high numbers, initially attributing differences to racial or ethnic variation, income or education, but these factors did not emerge as statistically relevant.

**Scientists speculate that populations suffered from a number of consequences of tree loss, including poorer air quality, elevation of stress, loss of temperature modulation, and less attractive areas for outdoor exercise.** \*\* While there is no certainty that the tree loss caused extra deaths or that trees provided protective benefits, past studies indicate that all of these connections are possibilities, and should be explored in further research. Other links between health and trees have been observed previously, including better recovery from illness in the presence of green space, and greater longevity where walkable green space is available. Low birth weight babies are less frequent in women who live near green space and trees. A number of other mechanisms, both physical and psychological, may be at work, and these are waiting to be discovered.

\*The emerald ash borer has killed 100 million trees in the eastern and Midwestern states

\*\*Geoffrey H. Donovan, David T. Butry, Yvonne L. Michael, Jeffrey P. Prestemon, Andrew M. Liebhold, Demetrios Gatzolis, Megan Y. Mao. **The Relationship Between Trees and Human Health.** *American Journal of Preventive Medicine*, 2013; 44 (2): 139  
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