

The U.S. Forest Service's National Urban and Community Forestry Advisory Council (NUCFAC) funded the Bloomington Urban Forestry Research Group (BUFRG) to study tree planting projects supported by nonprofit organizations, including The Greening of Detroit.

This brochure presents the results of part of the project: a re-inventory of trees planted by The Greening of Detroit from 2009 to 2011 and benefit estimates from i-Tree Streets.

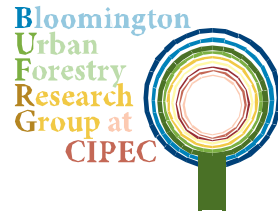
The Greening planted more than 7,000 trees from 2009 to 2011. In June and July of 2014, teams of volunteers, supervised by The Greening, re-inventoried 1,241 of those trees. In our analysis of the re-inventory data we found:

- Survival rate was 79%.
- 72% of trees were in good condition.
- Average DBH (diameter at breast height) was 2 inches.
- Elm cultivars were the largest, with an average DBH of 3.3 inches.
- The estimated total replacement value of the trees is \$215,000.
- Estimated total annual benefits of the trees are \$8,500.

If all trees planted from 2009 to 2011 had the same species composition, average DBH, and mortality rates as the re-inventoried trees, they would provide around \$50,000 in total annual benefits.

For more information, visit:

www.greeningofdetroit.com
http://www.indiana.edu/~cipec/research/bufrg_about.php
www.iTreetools.org

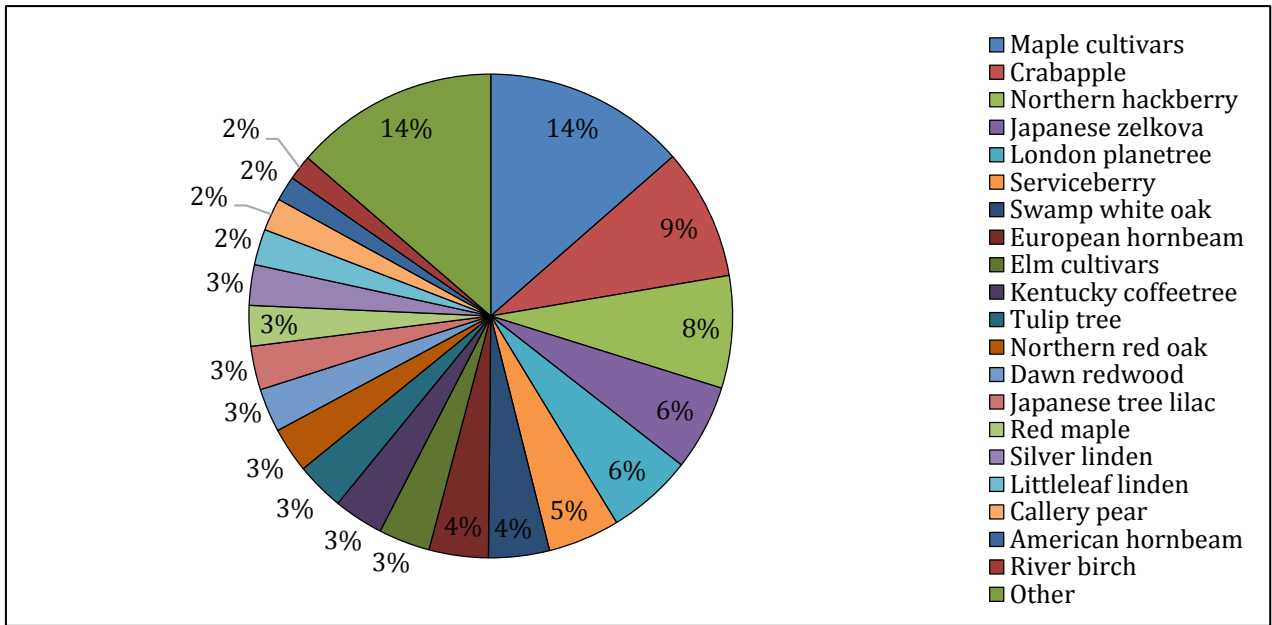


The Greening of Detroit

Planted Tree Re-Inventory: Survival and Benefits of Recently Planted Trees

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February 2015

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USDA Forest Service
National Urban & Community Forestry
Advisory Council (NUCFAC)
USDA Forest Service, Northern
Research Station



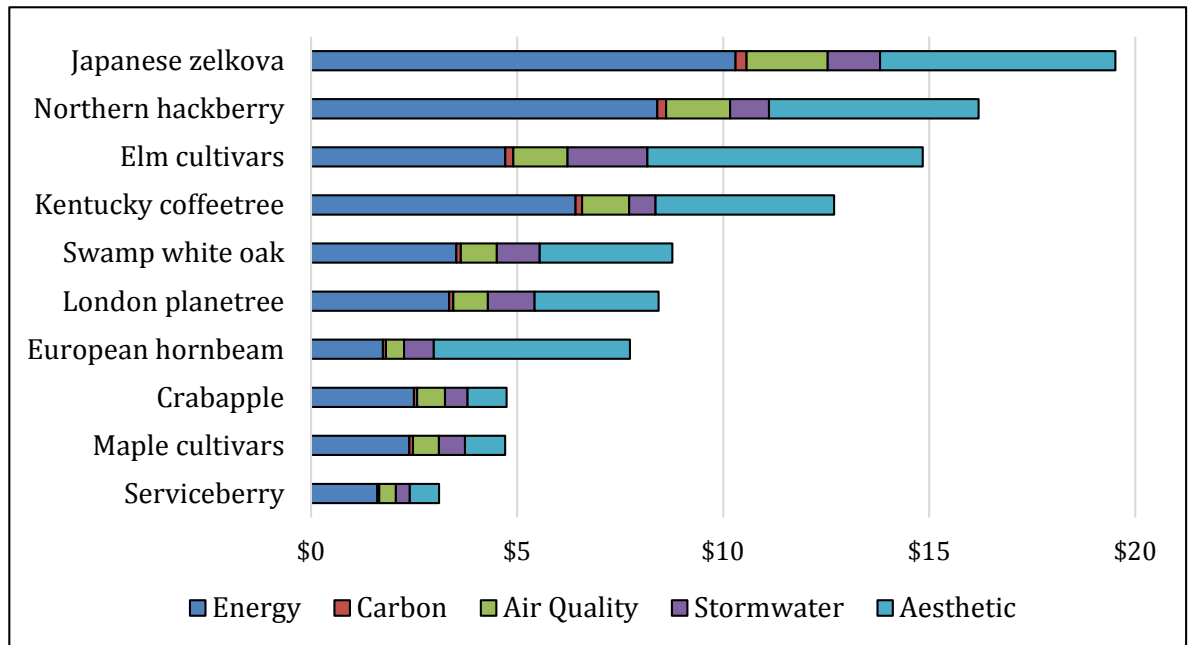
Above: Species distribution of surviving re-inventoried trees. Maple cultivars make up 14% of surviving re-inventoried trees, and 9% of surviving re-inventoried trees are crabapples.

Tree Benefits

We used i-Tree Streets to estimate the energy, carbon, air quality, stormwater, and aesthetic benefits and canopy cover provided by the re-inventoried trees. i-Tree takes into account the species and size class of each tree in calculating canopy cover and incorporates energy costs and climate in calculating benefits.

Most (45%) of the current annual benefits are energy benefits. Japanese zelkovas contribute most to total energy benefits because of their relatively large size and high abundance.

Below: Estimated annual benefits per tree, by type, provided by the ten most common surviving tree species.



The re-inventoried trees . . .

- Provide \$8,500 in total estimated annual benefits.
- Provide \$3,800 in annual energy benefits, corresponding to 460 GJ of reduced energy usage.
- Sequester or avoid 16,000 kg of CO₂ each year.
- Take up or avoid 13 kg of ozone, 43 kg of nitrogen dioxide, 9 kg of particulate matter, and 19 kg of sulfur dioxide each year.
- Intercept 97,000 gallons of rainfall each year.
- Provide \$3,000 in increased property value (aesthetic benefits).
- Provide 54,000 ft² of canopy cover.