

Gentry East Tree Inventory

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Introduction

A street tree inventory of the Gentry East subdivision, located East of Bloomington, IN on State Road 446, was completed on April 3, 2016. A portion of the neighborhoods' street trees suffered significantly from a windstorm in 2014. As a result, many damaged street trees were removed, creating potential planting sites and an opportunity to introduce diversity into the street tree population. Currently, Bradford pears (*Pyrus calleryana*) dominate the neighborhood's right-of-way, and there is no homeowners association or street tree management plan to address this issue. The goal of this research is to provide the Gentry East community with a better understanding of their urban forest, and ways to improve its sustainability.

Map of the Gentry East Neighborhood

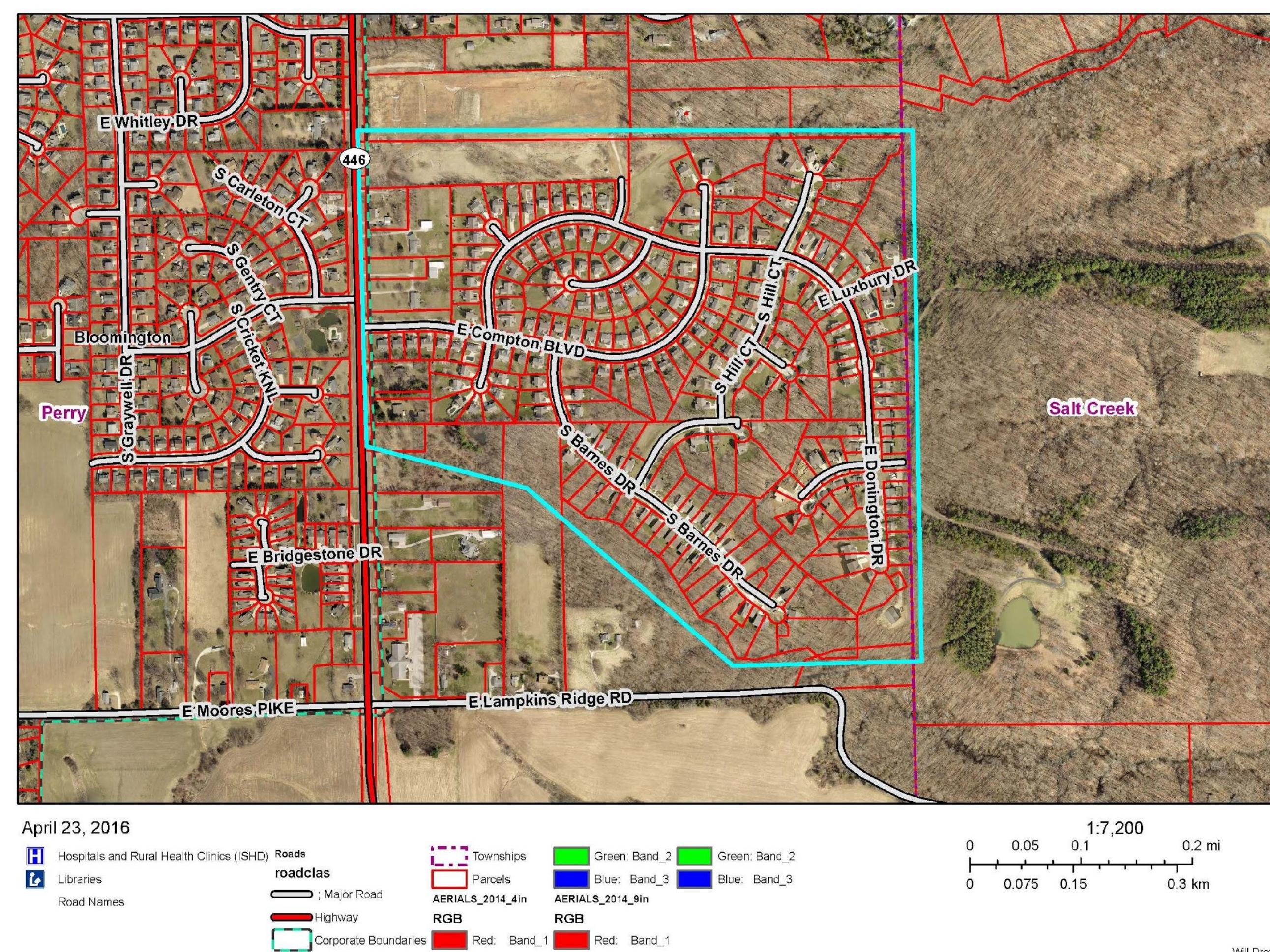


Figure 1. Map of the Gentry East neighborhood created with 39° North.

Methods

The inventory only includes trees located in the public right-of way. Since Gentry East will likely be incorporated into the City of Bloomington in the coming years, we followed the City's methods for street tree inventory. Data collected includes street address, tree location (i.e. front or side of house), species, condition (i.e. good, fair, poor), diameter at breast height (DBH), planting site width, maintenance needs of the tree, potential for electrical wire conflict, and general comments. We measured DBH with two-inch classes using a Biltmore stick. Inventory data was consolidated and analyzed in excel and i-Tree.



Figure 2. Barnes Street in the Gentry East neighborhood is dominated by 6-inch Bradford pear trees.

Results

The street tree inventory is summarized below in figures 3 through 5. Results show an overwhelming dominance of Bradford pears. Additionally, the population distribution is predominantly young-to middle aged trees. Though most trees were in good condition, Bradford pears are invasive and susceptible to damage..

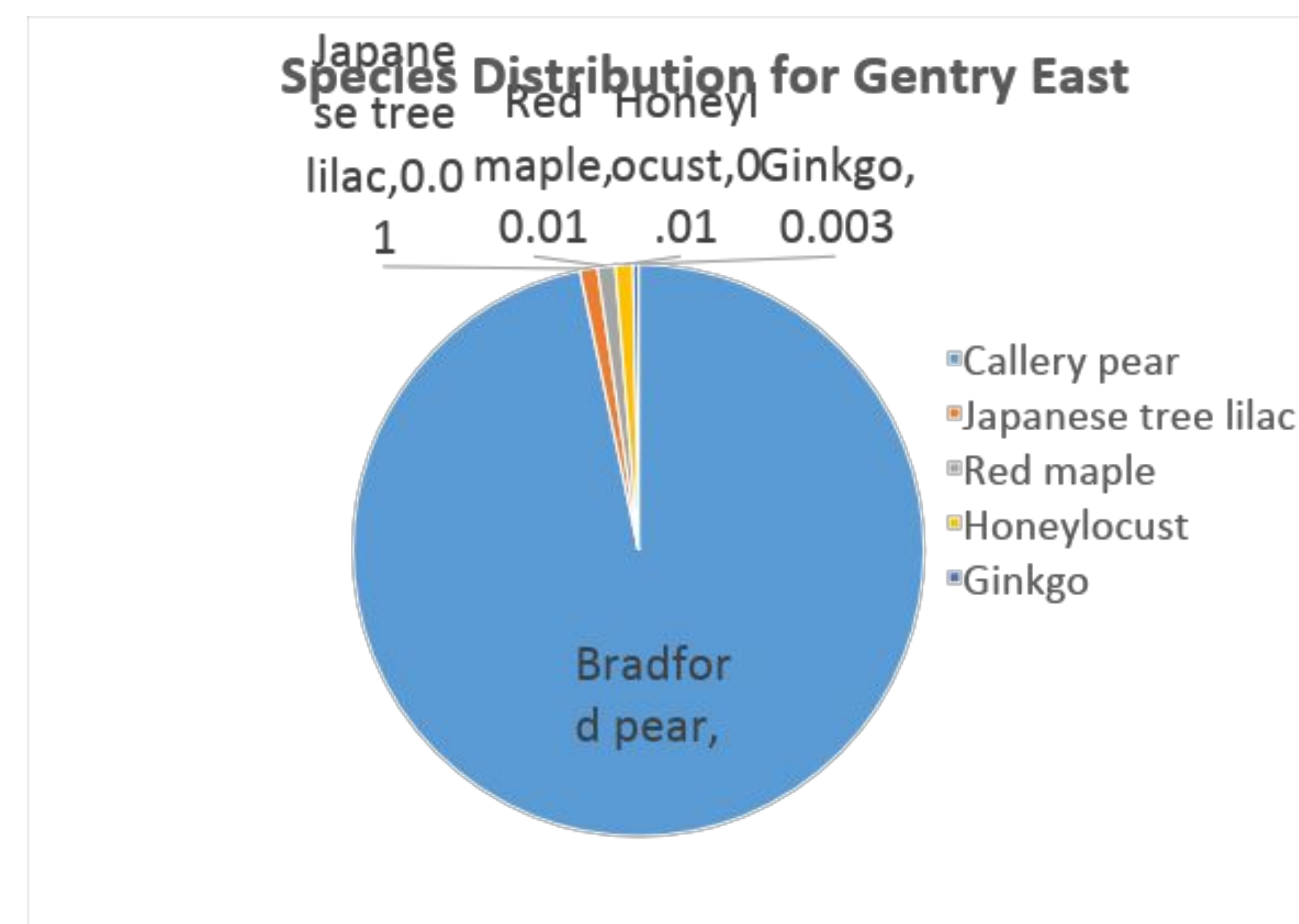


Figure 3. Tree species distribution in the Gentry East neighborhood. The neighborhood is predominantly Bradford pears (>96%), an invasive species.

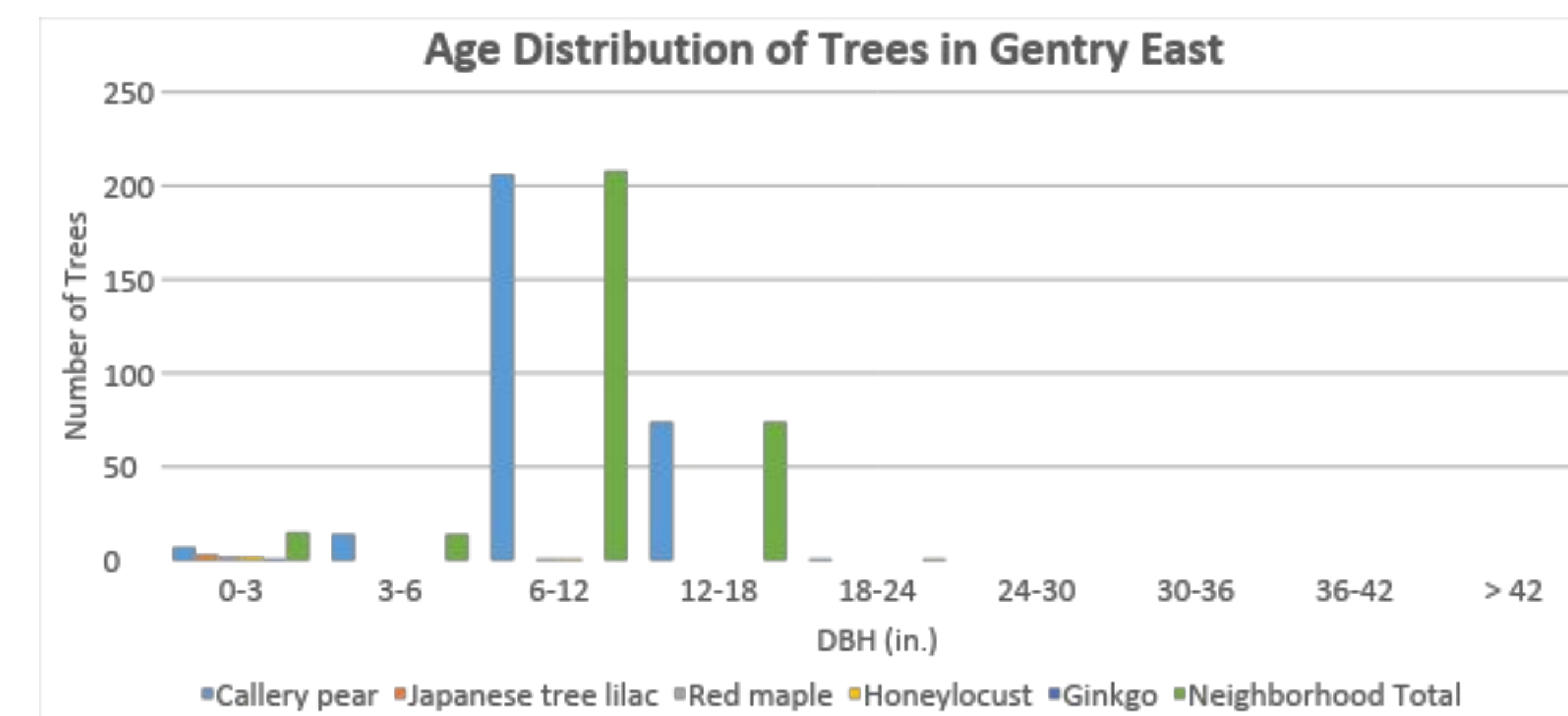


Figure 4. Tree species age distribution in the Gentry East neighborhood. Most trees are in the 6-12 inch age class, though native species are in smaller classes.

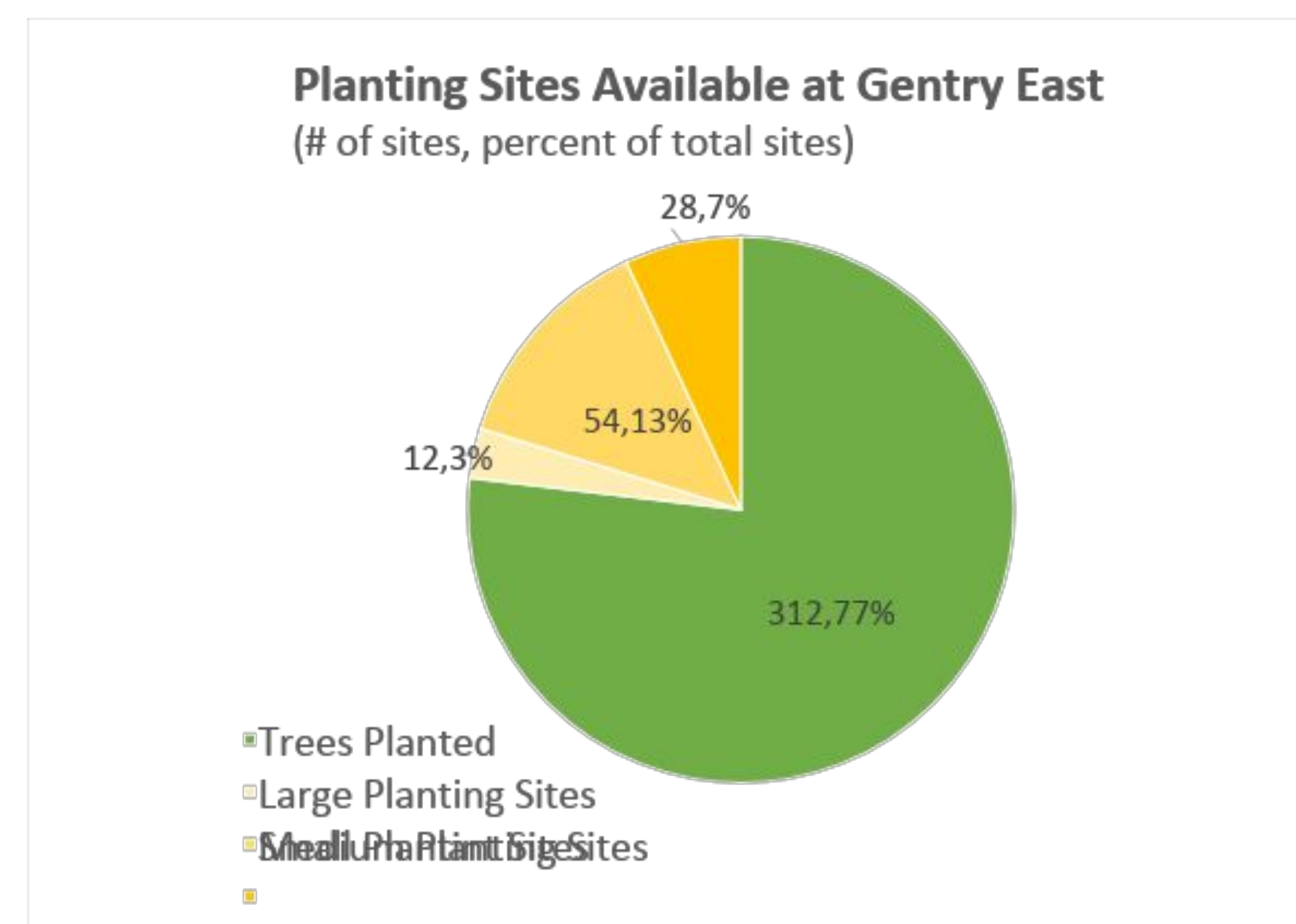


Figure 5. Planting sites available in the Gentry East neighborhood. About one quarter of planting sites are vacant and could be planted with native species.

Issues Identified

- ❖ Lack of street tree management strategy
 - Further explains structural and diversity issues
- ❖ Inherently poor branching structure and weak wood
 - Bradford pear are vulnerable to storm, wind, and ice damage
- ❖ Homogeneous age structure of street tree population
 - Short lifespan of Bradford Pears (i.e. 20 years)

The abundance of Bradford pears negatively impacts street tree species diversity. An overreliance on any one species is an unsustainable street tree management strategy, but the magnitude of this decision is compounded by the negative traits exhibited by Bradford pears.

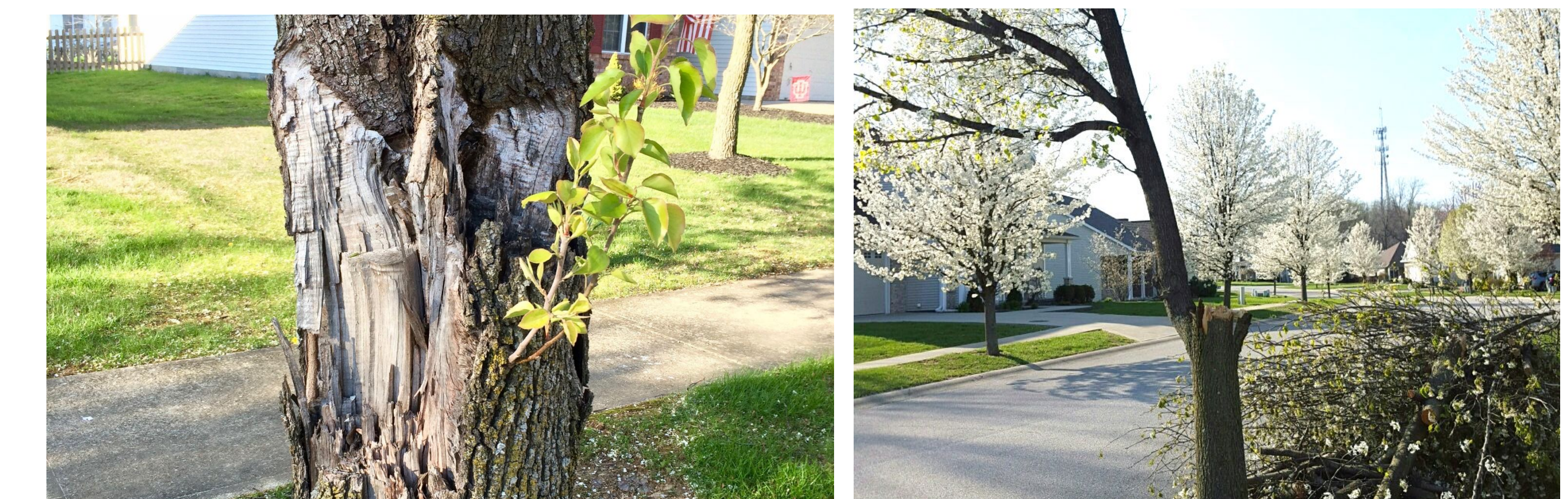


Figure 6. Left: damage to a Bradford pear from a fallen limb. Right: Bradford pear with storm damage.

Table 1. Costs for replacing all the trees in the Gentry East neighborhood, estimated by i-Tree. Despite the overwhelming number of Bradford pears, removal costs would be exorbitant.

	DBH Class (in.)					Total (\$)	% of Total
	0-3	3-6	6-12	12-18	18-24		
Callery pear	2,251	5,376	126,033	79,709	2,044	215,413	98.25
Red maple	634	0	678	0	0	1,312	0.60
Honeylocust	586	0	556	0	0	1,142	0.52
Japanese tree lilac	1036	0	0	0	0	1,036	0.47
Ginkgo	343	0	0	0	0	343	0.16
Neighborhood Total	\$4,850	\$5,376	\$127,267	\$79,709	\$2,044	\$219,246	100.00

Recommendations

Rather than immediately removing all the Bradford pears, residents of the Gentry East subdivision should phase-out the monoculture strategically. This will be more economical due to the exorbitant removal costs estimated by i-Tree (Table 1). The inventory shows that 23% of Gentry East planting sites are vacant. The residents should incorporate various native tree species in vacant sites to improve biodiversity of the street tree population. Finally, as trees are replaced, residents should refrain from planting Bradford pears.

Acknowledgements

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For information on Bradford pear alternatives, please visit Bloomington.in.gov/street-trees-and-landscaping