



Super Trees for Sustainability Initiative

Targeted Native Tree Species for Enhancement of Ecosystem Services



Background: *The Regional Super Trees for Sustainability Initiative* is a multi-year, large-scale native tree planting collaborative facilitated by Houston Wilderness that incorporates the 25-mile Houston Ship Channel (HSC) TREES Program, the multi-county Riverine Targeted-Use-of-Buyouts (TUBs) Program, and targeted urban forestry projects in communities around the 13+ county region to enhance biodiversity and reduce health risks associated with urban heat, air and water pollution and flooding.

Houston Ship Channel (HSC) TREES Program - A 10-year collaborative project with multiple private/public partners focused on large-scale *Super Trees* plantings along the 25 miles of the HSC's industrial complex, targeting native tree species based on their respective levels of air pollution absorption (including CO₂, GHGs and PM) as well as water absorption and erosion control. This pioneering program has public and private funding to support over 150,000 trees planted, to date.



Riverine Targeted-Use-of-Buyouts (TUBs) Program - a region-wide approach to coastal and riparian resilience, erosion and sediment reduction, and hazard mitigation through implementation of green stormwater infrastructure (GSI) techniques on contiguous buyout properties adjacent to riparian corridors. This multi-partner effort results in biodiversity enhancements through *Super Trees* plantings and bioswales on over 3,000 acres of new green space along critical waterways in the region.

Biodiversity to Reduce Health Risks Projects - Often in working in EJ communities, these urban forestry projects target *Super Tree* plantings on contiguous properties (block by block, pavement by pavement) based on their ecosystem services needs. The use of researched, calculated, and ranked ecosystem service values associated with planting *Super Trees* contiguously allows these high health-risk neighborhoods to maximize the benefits of large-scale forest biodiversity vs. small-scale, landscape-style planting.



Goals & Impacts: HW collaborated with NGO, Rice University and Houston Health Dept partners to create a framework to develop native tree planting programs that capitalize on three key components: 1) identification of optimal native tree species for climate change adaptations and air pollution mitigation around variables important locally (called the region's native *Super Trees*); 2) selection of large-scale native tree planting locations where populations are already disproportionately experiencing flooding, increased heat and air pollution related health effects that could be further exacerbated from climate change; and 3) engagement of multisectoral leadership broadened beyond those traditionally working on climate change resilience through heightening awareness of the link to human health. The *Super Trees* species are selected among all native tree species in the region according to the different capabilities of the region's many native trees in carbon sequestration, air pollutant reduction, flood mitigation through water absorption, and urban heat reduction (canopy). The unique properties between individual native tree species can be prioritized to optimize response to the above-mentioned program goals and educate the community about their benefits. For example, in Houston, the Live Oak ranks high in annual carbon sequestration, GHG absorption and water absorption but lower in tree canopy size, whereas the American Sycamore ranks high in canopy size, GHG absorption and water absorption but lower in carbon sequestration. (Reference: Hopkins, L. P., January-Bevers, D. J., Caton, E. K., & Campos, L. A. (2021). A simple tree planting framework to improve climate, air pollution, health, and urban heat in vulnerable locations using non-traditional partners. *Plants, People, Planet*, 1–15. 10245. <https://doi.org/10.1002/ppp3.10245>)

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