

# TOM LEE PARK

## ECOLOGICAL SYSTEMS & PLANTING DESIGN NARRATIVE



### Summary

Tom Lee Park is a 31-acre riverfront park running alongside the Mississippi River in downtown Memphis. After five years of planning, design, and construction, it reopens in 2023 as the centerpiece of the city's riverfront—and a national model for welcoming, beautiful, and ecologically restorative urban parks.

The park's overall design is organized into a series of programmatic zones that mimic the dynamic hydrology and sediment flows of the Mississippi River—defined by riffles, pools, micro-deltas, and tailouts that weave together circulation and topography into spaces that showcase hardy riparian ecosystems.

The design will add over a thousand new trees (where there had once been less than 50) and replenish soils to support an extensive collection of new native plantings. The park is divided into four major zones, each distinct in design but sharing an overall palette:

- **The Civic Gateway** will feature a grove of oak trees where visitors can sit and find shade in summer months.
- **The Active Core's** rolling hills of native shrubs, grasses, and perennials are interspersed with oak and evergreen trees to frame a series of open recreational spaces.
- **The Community Batture** uses topography and planting to shape expansive views of the river, including a thicket of birch trees that create an immersive entry walk.
- **The Habitat Terraces** will feature a variety of native riparian trees—including the pawpaw (*Asimina triloba*), the only known host plant for the larvae of the zebra swallowtail butterfly (*Protographium marcellus*).

### Designing for biodiversity

Planting design for Tom Lee Park prioritizes native species that occur naturally across Tennessee. These support, in turn, an astonishing diversity of other species, including birds, insects, and other plants that benefit from their presence.

Tom Lee Park is situated at a critical stopover point in the Mississippi flyway—the busiest migratory path in the U.S. for birds and insects seeking warmer climates to ride out the winter—making it all the more important to restore habitat along the river's edge. Trees and other plants have primarily been sourced from regional nurseries across the Southeast.

A few highlights:

- **A restored oak canopy**  
A matrix of nearly 300 oaks across the park will support a vast array of bird and insect life, building back the historic canopy of the Mississippi bluff and bottomlands.
  - Oaks support more species than any other North American tree, as renowned entomologist Douglas Tallamy discusses in a recent book, "The Nature of Oaks." They are also the foundation of Tennessee's forest ecosystems, dominating both the floodplain and bluff along the Mississippi River.

- A single oak tree can support over 500 individual species of caterpillars (the base of a vast food web), produce three million acorns (high in protein and other nutrients), drop up to 700,000 leaves per year (creating micro-habitat for insects and other critters), filter water through its canopy and roots, and sequester carbon.<sup>1</sup>
- Oaks that are more adaptable to flood conditions will be planted throughout the park's bottomland forest, along the groves and 'riffles.'

- Bottomland species

**Bur oak** (*Quercus macrocarpa*); **Overcup oak** (*Quercus lyrata*); **Nuttall oak** (*Quercus nuttallii*); **Swamp white oak** (*Quercus bicolor*); and **Willow oak** (*Quercus phellos*).



**Bur oak**  
(*Quercus macrocarpa*)



**Monarch butterfly (caterpillar)**  
(*Danaus plexippus*)

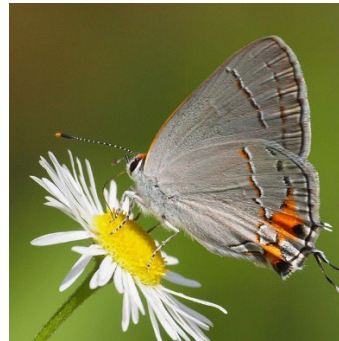
- Oaks that are native to the upland region will be planted along the edge of lawns and landforms throughout the wider park.

- Upland species

**Red oak** (*Quercus rubra*); **Shumard oak** (*Quercus shumardii*); **Post oak** (*Quercus stellata*); **Chinquapin oak** (*Quercus muehlenbergii*); and **White oak** (*Quercus alba*).



**Red oak**  
(*Quercus rubra*)



**Gray hairstreak**  
(*Strymon melinus*)

- **A fruiting understory**

Dispersed among the oak canopy, a variety of nearly 700 native trees will bring seasonal interest, texture, and bursts of spring flowers to the understory. Many of these species were selected as the 'host plants' for endangered insects—meaning they are the only (or one of the only) plants on which that particular insect feeds—with the goal of restoring those populations within the future park.

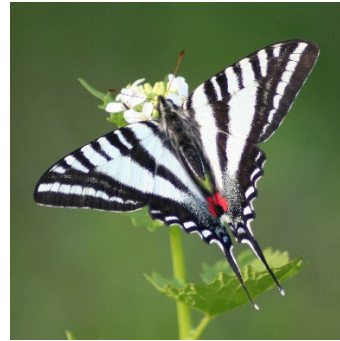
- Planted throughout the Habitat Terraces, the **pawpaw tree** (*Asimina triloba*) is the only known host plant for the **zebra swallowtail butterfly** (*Protographium marcellus*), whose larvae have co-evolved

<sup>1</sup> See "Why You Should Plant Oaks" by Margaret Roach in *The New York Times* (March 31, 2021): <https://www.nytimes.com/2021/03/31/realestate/oak-trees-why-you-should-plant.html>

to rely on the tree as their only food source. Pawpaw fruit has a sweet, custard-like flavor. Its small, tightly clustered flowers are pollinated primarily by beetles.



**Pawpaw**  
*(Asimina triloba)*

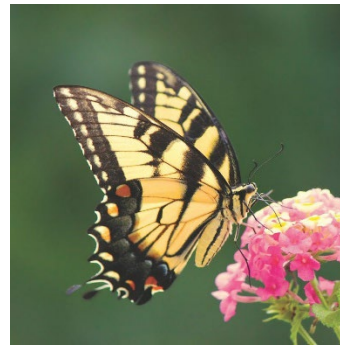


**Zebra swallowtail butterfly**  
*(Protographium marcellus)*

- o Planted at the bridge overlook, the **sassafras tree** (*Sassafras albidum*) is a host plant for the **Eastern tiger** and **spicebush swallowtail butterflies** (*Papilio glaucus*; *Papilio troilus*) as well as a variety of moths and birds. Its leaves, bark, and wood have been used for a wide range of medicinal purposes by Native American tribes—as well as an aromatic oil and cooking spice.

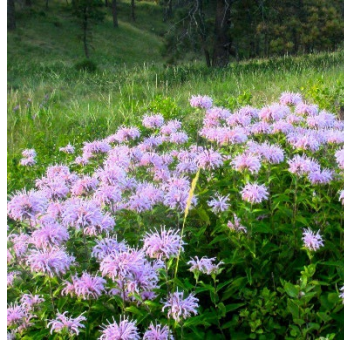


**Sassafras**  
*(Sassafras albidum)*



**Eastern tiger swallowtail butterfly**  
*(Papilio glaucus)*

- o Planted throughout the park, **witch hazel** (*Hammamelis vernalis & virginiana*) is a host plant for the **spring azure butterfly** (*Celastrina ladon*) and several other species. Its astringent and antiseptic qualities have lent it well to a variety of medical and cosmetic uses—most commonly as an over-the-counter topical salve or ointment.
  - o Additional understory trees: **River birch** (*Betula nigra*); **Eastern redbud** (*Cercis canadensis*); **Serviceberry** (*Amelanchier arborea*); **Carolina buckthorn** (*Franula caroliniana*); and **American persimmon** (*Diospyros virginiana*).
- **A learning landscape**  
Nestled within the Habitat Terraces, the Pollinator Lab is a more intimate space for park-goers and students of all ages to learn about the relationships between plants and insects. Situated along the River's edge, the Lab will feature an outdoor classroom and an elevated deck with 'teaching' beds of native perennial species.
    - o Planted along the shoreline, **wild bergamot** (*Monarda fistulosa*) is a summer-blooming native flower that supports a variety of butterflies, including swallowtails, skippers, and sulphurs, as well as moths like the **hummingbird clearwing** (*Hemaris thysbe*).



**Wild bergamot**  
*(Monarda fistulosa)*



**Hummingbird clearwing moth**  
*(Hemaris thysbe)*

- Planted throughout the Pollinator Lab, **buttonbush** (*Cephalanthus occidentalis*) is a particularly important food source for a number of butterflies and moths—including the **titan sphinx** (*Aellopos titan*), **hydrangea sphinx** (*Darapsa versicolor*), **royal walnut moth** (*Citheronia regalis*)—as well several species of waterfowl and mammals.



**Buttonbush**  
*(Cephalanthus occidentalis)*



**Royal walnut moth**  
*(Citheronia regalis)*

- Additional Pollinator Lab species  
**Foxglove** (*Penstemon digitalis*); **Virginia mountain mint** (*Pycnanthemum virginianum*); **Tickseed** (*Coreopsis palmata*); **Western sunflower** (*Helianthus occidentalis*); **Balsam groundsel** (*Packera paupercula*); and **Goldenrod** (*Solidago sp.*).