Vegetation and Plant Species Observed along Waller Creek

Within the Campus of the University of Texas at Austin, 2015-2016

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During the first few weeks of November 2015, I heard or read statements from three different biologists from the University of Texas at Austin in which the campus stretch of Waller Creek, a small perennial stream, was described as being either “intact” or “relatively intact.” That description seemed kind of odd to me, having always assumed that the hydrology and vegetation of the Waller Creek watershed were both highly altered. But when I stopped to think about my experiences on the creek, I realized that, while I’d botanized both upstream and downstream from campus within the last few years, it had been something like 30 years since I’d looked at the campus stretch.

So on a pleasant Saturday morning in November 2015, I spent a couple of hours walking along Waller Creek, beginning at a point a few hundred feet south of East Dean Keeton Street and ending at the bridge on Martin Luther King Boulevard. Being uneducated about hydrology, I could only note that the creek does flow in an essentially unimpeded fashion. Manhole covers suggest that a sanitary sewer line is buried under or along the streambed, as along just about every other creek. But there are no significant dams along the campus stretch, and on this date water flowed clear and shallow over Austin Chalk. Whether that bare streambottom represents good hydrology or bad is not known to me.

Naturally I spent most of my time looking instead at the vegetation and flora in the streambed and on the short and often steep adjacent slopes. (The topographic profile of the creek is mostly V- or narrowly U-shaped, and alluvial terraces are narrow or absent.) The woodland along this stretch has several strata, but the most obvious is the uppermost, the layer occupied by the tops of old baldcypress (*Taxodium distichum*). Almost all of the campus buildings that abut the west bank of the creek were built since I was last in the bottom of Waller Creek, and I have to admit that glimpses of them, in strong morning light through gaps in the baldcypress foliage, was the highlight of the day’s walk. Below and often intermingling is a layer of broadleaf deciduous trees, most notably green ash (*Fraxinus pensylvanica* and/or *F. berlandieriana*), box-elder (*Acer negundo*) and black willow (*Salix nigra*). Eastern sycamore (*Platanus occidentalis*) is present but rather uncommon. All of these species are native to central Texas riparian woodlands on both sides of the Balcones Escarpment. Exotic tree species, such as Chinaberry (*Melia azedarach*) and Chinese tallow (*Triadica sebifera*), are rare in comparison. The same cannot be said of the shrub layer, where an evergreen ligustrum (either *Ligustrum japonicum* or *L. lucidum*) is so common as to be the dominant species in many areas, especially those on steep slopes. (I wondered whether this invasive had been removed by conservation crews from the site’s more accessible slopes.) For me the most interesting member of the shrub layer is a *Sabal* species with large—hell, huge-- costapalmate leaves from trunks currently only a few feet tall. No one who sees these plants would for a second confuse them with palmetto (*Sabal minor*), which could also occur along the creek, since the petioles of the leaves of this undetermined palm are more than twice as long as the entire leaf (petiole plus blade) of palmetto. I mean, these are monster palms. I had always assumed that these plants, which started showing up in Austin riparian woodlands maybe 20 years ago, are natural offspring of Mexican sabal palm (*Sabal mexicana*) that were long ago introduced to the area for horticultural purposes and are known to produce fertile seed. Dr. Bob Harms, never one to allow an unvouchered casual identification to go unchallenged, suggests that *Sabal* x *brazoriensis* (see Goldman et al., 2011) is also a possibility; its occurrence here would seem to depend on deliberate introduction by the senior author of that paper, which in and of itself is an intriguing possibility. Otherwise, the shrub layer is tough to characterize. Species native to the Edwards Plateau have been intentionally introduced to the dry tops of steep limestone slopes at street level; they’re not part of the riparian woodland, but they are included on the attached plant list because anyone passing by would notice them. What caught my eye were feral individuals of two exotic shrub species that have been cultivated in Austin for decades-- ad nauseum in one case—and yet seldom if ever escape, presumably due to seed viability issues. Two or three oleander (*Nerium oleander*) shrubs were found in the bottom of the creek, rooted in an area of shallow water over exposed limestone where no sane person would ever have planted them; similarly, I encountered a single small Asian mimosa (*Albizia julibrissin*) in a spot where no horticultural benefit could have been anticipated. For all I know, cuttings (rather than seeds) were involved, and seeing them in this setting didn’t alarm me in the slightest.

Information about the ground layer is still being developed; it was the focus of a spring-season walk on 12 March 2016. The composition of regularly-mown lawns is fairly straightforward and simple, consisting of St. Augustine (*Stenotaphrum secundatum*) and Bermudagrass (*Cynodon dactylon*) along with a diversity of weeds, most of them winter annuals from the Old World. Over the decades, I’ve heard about several plans to convert these lawns to a prairie of the sort that may have occurred on the Austin Chalk at some point in the distant past, but during these walks I have found no trace of such efforts.

The ground layer of woodlands is less consistent and more difficult to characterize. Areas with a dense understory of ligustrum are generally devoid of herbaceous plants, but a few native woodland graminoids and forbs can be found in other places. Giant spiderwort (*Tradescantia gigantea*) and hairy chervil (*Chaerophyllum tainturieri* var. *dasycarpum*) are widespread in the spring, and two native aster species, lanceleaf aster (*Symphyotrichum lanceolatum*) and Texas aster (*S. drummondii* var. *texanum*), are common during the fall. One spot, on the upper slope on the west side of the creek behind (east of) San Jacinto Residence Hall, at N30o16’58.2”, W097o44’03.2 and south”, supports less common natives such as Missouri violet (*Viola missouriensis*) and caric-sedges (*Carex blanda, C. bulbostylis, C. cephalophora*) are locally common. However, such places are rare. Some of the more frequently encountered herbaceous plants in woodlands are exotics such as Naples onion (*Allium neopolitanum*), pink oxalis (*Oxalis articulata*), and Japanese youngia (*Youngia japonica*). On lower slopes, St. Augustine has migrated from lawns down into the riparian woodland. Much of the creekbed is flood-scoured and hosts few herbaceous plants; perhaps the most common species in that environment is Britton’s wild-petunia (*Ruellia caerulea*), a garden perennial that has only recently become established along various creeks and waterways in Travis County.

To summarize, the riparian woodland along the campus stretch of Waller Creek is intact in the sense that its canopy is dominated by bald cypress, a native species that is presumably naturally-occurring at this location. However, there *are* issues with exotic species in other layers. About 42 percent of the species detected on these walks are exotic species occurring in a feral state, i.e., not as a result of intentional planting. (For comparison, most of the Texas ranches, state parks, military facilities and nature preserves that I have surveyed have florulae composed of between 5 and 15 percent exotic species.) Not only is the percentage of exotic species extremely high, but the area covered by some of those species is very problematic. A *Ligustrum* species is probably the dominant plant in the shrub layer, and Britton’s wild-petunia is very common in the creekbed. In addition to exotics, there is a problem with soil compaction due to heavy foot traffic in some areas. While the hydrology of the campus stretch of Waller Creek may be reasonably intact, the same cannot be said of the area’s vegetation and flora.

References

Goldman, D. H., M. R. Klooster, M. P. Griffith, M. F. Fay and M. W. Chase. 2011. A preliminary evaluation of the ancestry of a putative Sabal hybrid (Arecaceae: Coryphoideae), and the description of a new nothospecies, *S. x brazoriensis*. Phytotaxa 27: 8-25.

In the plant list below, scientific names generally follow the USDA PLANTS database (<http://plants.usda.gov/java/>). Common names, if eventually added, will follow personal whim. Codes in Nativity column: E = exotic (not native to Texas) but occurring along Waller Creek in a feral state; N = native to Texas and occurring here naturally; I = introduced (planted) in this landscape. Codes in Form column: AQ = aquatic forb; FA = annual forb; FAV = annual vine forb; FB = biennial forb; FP = perennial forb; FPV = perennial vine forb; GA = annual grass or grasslike plant; GP = perennial grass or grasslike plant; PP = perennial fern or fern ally; S = shrub; T = tree; WV = woody vine. Comments are based on limited observations and should be taken with a grain of salt.

| Family | *Scientific Name* | Common Name | Nativity | Form | Comments |
| --- | --- | --- | --- | --- | --- |
| Acanthaceae | *Ruellia caerulea* | Britton’s wild-petunia | E | FP | Common in creekbed; perhaps the most common herbaceous plant along this stretch. |
| Acanthaceae | *Ruellia humilis* | low wild-petunia | N | FP | Rare in woodlands |
| Aceraceae | *Acer negundo* | box-elder maple | N | T | Common |
| Agavaceae | *Agave sp.* | agave | E-I | S | Planted along edge of woodland |
| Agavaceae | *Yucca rupicola* | twistleaf yucca | N | S | Numerous plants under *Ligustrum* on steep chalk slope, W side of creek E of Moore-Hill Dormitory; not planted |
| Anacardiaceae | *Toxicodendron radicans* | poison ivy | N | WV | Common |
| Apiaceae | *Bowlesia incana* | hoary bowlesia | N | FA | Occasional in lawns |
| Apiaceae | *Chaerophyllum tainturieri var. dasycarpum* | hairy chervil | N | FA | Common in woodlands |
| Apiaceae | *Hydrocotyle sp.* | water-penny | N | FP | Occasional in streambed |
| Apiaceae | *Scandix pecten-veneris* | Venus’s comb | E | FA | Occasional in lawns |
| Apiaceae | *Torilis arvensis* | tall sockbane | E | FA | Common in lawns and along woodland margins |
| Apocynaceae | *Nerium oleander* | oleander | E | S | Two or three shrubs in creekbed, where clearly not planted. |
| Apocynaceae | *Trachelospermum sp.* | jasmine-vine | E-I | WV | Planted; stems spreading into woodland. |
| Apocynaceae | *Vinca sp.* | periwinkle | E-I | WV | Planted at Alumni Center and spreading into woods |
| Aquifoliaceae | *Ilex decidua* | deciduous holly | N | S | Rare in riparian woodland |
| Aquifoliaceae | *Ilex vomitoria* | yaupon | N-I | S | Rare; planted |
| Araliaceae | *Hedera helix* | English ivy | E | WV | Climbing into trees near Alumni Center |
| Arecaceae | *Sabal sp. (S. mexicana by most interpretations)* | palmetto | E | T | Common, mostly young; trunks less than 5 feet tall |
| Asclepiadaceae | *Matelea reticulata* | pearl milkvine | N | FPV | Rare along W side of San Jacinto just S of 20th St. |
| Asteraceae | *Ambrosia trifida* | giant ragweed | N | FA | Common along woodland margins |
| Asteraceae | *Calyptocarpus vialis* | straggler daisy | N | FP | Common in lawns and woodlands |
| Asteraceae | *Cirsium texanum* | Texas thistle | N | FB | Rare in lawns |
| Asteraceae | *Hedypnois cretica* | Cretan composite | E | FA | Occasional in lawns near Dean Keaton |
| Asteraceae | *Lactuca serriola* | wild lettuce | E | FA | Rare in lawns |
| Asteraceae | *Ratibida columnifera* | pasture coneflower | N | FP | Rare in lawns |
| Asteraceae | *Silybum marianum* | blessed milk-thistle | E | FB | Rare in lawns |
| Asteraceae | *Sonchus asper* | sow thistle | E | FA | Occasional in lawns |
| Asteraceae | *Symphyotrichum drummondii var. texanum* | Texas aster | N | FP | Frequent on slopes |
| Asteraceae | *Symphyotrichum lanceolatum* | lanceleaf aster | N | FP | Common on banks |
| Asteraceae | *Taraxacum officinale* | dandelion | E | FA | Frequent in lawns |
| Asteraceae | *Youngia japonica* | youngia | E | FA | Local in woodlands |
| Berberidaceae | *Berberis trifoliolata* | agarito | N | S | Rare in woodlands |
| Berberidaceae | *Nandina domestica* | nandina | E | S | A few clearly feral plants in creekbed; planted (I) elsewhere. |
| Bignoniaceae | *Campsis radicans* | trumpet creeper | N | WV | Occasional in woodlands; also planted? |
| Bignoniaceae | *Macfadyena unguis-cati* | cat-claw vine | E | WV | Locally abundant in woodland |
| Brassicaceae | *Capsella bursa-pastoris* | shepherd’s purse | E | FA | Common in lawns |
| Brassicaceae | *Rapistrum rugosum* | bastard cabbage | E | FA? | Rare in lawns |
| Bromeliaceae | *Tillandsia recurvata* | ballmoss | N | FP | Common in trees |
| Caprifoliaceae | *Sambucus canadensis* | elderberry | N | S | Occasional along creek |
| Caryophyllaceae | *Cerastium sp.* | chickweed | E | FA | Frequent in lawns |
| Caryophyllaceae | *Stellaria media* | chickweed | E | FA | Common in lawns |
| Commelinaceae | *Tradescantia gigantea* | giant spiderwort | N | FP | Frequent in woodlands |
| Convolvulaceae | *Dichondra carolinensis* | Carolina ponyfoot | N | FP | Oddly rare in lawns |
| Convolvulaceae | *Ipomoea sp. (I. cordatotriloba?)* | morning-glory | N | FPV | Rare along woodland margin |
| Convolvulaceae | *Merremia dissecta* | alamo-vine | E | FPV | Rare along woodland margin |
| Cornaceae | *Cornus drummondii* | roughleaf dogwood | N | S | Occasional along creek |
| Cornaceae | *Cornus florida* | flowering dogwood | N-I | T | Planted along margin or riparian woodland |
| Cupressaceae | *Juniperus sp.* | juniper | N | T | One huge tree on east bank; tree tag 1400 |
| Cyperaceae | *Carex “cephalophora” of C & J* | sedge | N | GP | Rare along margin of woodland |
| Cyperaceae | *Carex blanda* | white sedge | N | GP | Occasional on wooded floodplain |
| Cyperaceae | *Carex bulbostylis* | sedge | N | GP | Occasional on wooded slope and floodplain |
| Cyperaceae | *Carex planostachys* | cedar sedge | N | GP | Rare on limestone slope |
| Dryopteridaceae | *Cyrtomium falcatum* | holly fern | E | PP | Common on limestone bluffs along W side of creek near Alumni Center |
| Ebenaceae | *Diospyros kaki* | Japanese persimmon | E | T | Commonly planted along stretch, only rarely escaping at present. |
| Ebenaceae | *Diospyros texana* | Texas persimmon | N-I | S | Planted on high bank, above riparian zone |
| Equisetaceae | *Equisetum sp.* | horsetail | N-I | PP | Planted on slope in one spot |
| Euphorbiaceae | *Acalypha phleoides* | Lindheimer’s copperleaf | N | FP | Mostly on drier slopes |
| Euphorbiaceae | *Triadica sebifera* | Chinese tallow | E | T | Occasional in woodlands |
| Fabaceae | *Albizia julibrissin* | Asian mimosa | E | S | One tree observed in area were it couldn’t have been planted |
| Fabaceae | *Cercis canadensis var. ?* | redbud | N | T | Rare, perhaps introduced |
| Fabaceae | *Dermatophyllum secundiflorum* | mountain-laurel | N-I | S | Planted on high bank, above riparian zone |
| Fabaceae | *Eysenhardtia texana* | Texas kidneywood | N-I | S | Planted on high bank, above riparian zone |
| Fabaceae | *Medicago minima* | least burclover | E | FA | Rare in lawns |
| Fabaceae | *Medicago polymorpha* | burclover | E | FA | Common in lawns |
| Fabaceae | *Melilotus indicus* | yellow sweetclover | E | FA | Rare in lawns |
| Fabaceae | *Styphnolobium affine* | Eve’s necklace | N-I | S | Planted on high bank, above riparian zone |
| Fabaceae | *Trifolium repens* | white clover | E | FA | Occasional on lawn |
| Fabaceae | *Vachellia farnesiana* | huisache | N | T/S | A few trees along upper edge of woodland |
| Fagaceae | *Quercus sp.* | red oak | N | T | Rare; could be native or exotic |
| Fagaceae | *Quercus sp. (Q. fusiformis?)* | live oak | N | T | Occasional; could be *Q. virginiana* |
| Geraniaceae | *Erodium cicutarium* | pinclover | E | FA | Common on lawns |
| Geraniaceae | *Geranium texanum* | Texas wild-geranium | N | FA | Common on lawns |
| Hydrophyllaceae | *Nemophila phacelioides* | blue eyes | N | FA | Rare in open bottom |
| Juglandaceae | *Carya illinoinensis* | pecan | N | T | Occasional in woodlands |
| Lamiaceae | *Lamium amplexicaule* | henbit | E | FA | Rare in open areas |
| Liliaceae | *Allium neopolitanum* | Naples onion | E | FP | Occasional to frequent in woodlands |
| Liliaceae | *Aspidastra sp.* | cast-iron plant | E-I | FP | Planted in woodland |
| Liliaceae | *Cooperia drummondii* | Drummond rainlily | N | FP | Rare in open areas in fall |
| Liliaceae | *Cooperia pedunculata* | broadleaf rainlily | N | FP | Rare in lawns |
| Liliaceae | *Nothoscordum bivalve* | crow poison | N | FP | Rare in lawns |
| Malvaceae | *Malvastrum coromandelianum* | threelobe falsemallow | N | FP | Oddly rare |
| Malvaceae | *Malvaviscus arboreus var. drummondii* | Turk’s cap | N | FP | Planted and feral plants noticed |
| Meliaceae | *Melia azedarach* | Chinaberry | E | T | Occasional, or at least not common |
| Menispermaceae | *Cocculus carolinus* | Carolina snailseed | N | FPV | Rare in woodlands |
| Moraceae | *Ficus carica* | common fig | E | S | Rare in woodlands |
| Moraceae | *Morus alba* | white mulberry | E | T | Frequent, mostly as young stems |
| Oleaceae | *Fraxinus pennsylvanica* | green ash | N | T | One of the most common trees in woodland along this stretch |
| Oleaceae | *Jasmimum mesnyi* | primrose jasmine | E-I | S | Not feral; planted long ago in areas that perhaps have since become overtopped by woodland |
| Oleaceae | *Ligustrum sp. (L. lucidum or L. japonicum)* | broadleaf ligustrum | E | S | Probably the most common shrub along this stretch. |
| Oleaceae | *Ligustrum sinense* | Chinese ligustrum | E | S | Rare in woodlands |
| Onagraceae | *Oenothera curtiflora* | lizardtail gaura | N | FA | Rare in lawns |
| Oxalidaceae | *Oxalis articulata* | pink sorrel | E | FP | Naturalized in woodlands in several areas; also planted |
| Oxalidaceae | *Oxalis dillenii* | yellow sour-clover | N | FP | Occasional in lawns |
| Passifloraceae | *Passiflora lutea* | yellow passionflower | N | FPV | Rare in woodlands |
| Platanaceae | *Platanus occidentalis var. occidentalis* | eastern sycamore | N | T | Occasional but conspicuous along creek |
| Poaceae | *Bromus catharticus* | rescuegrass | E | GA | Common in lawns and woodlands |
| Poaceae | *Chasmanthium latifolium* | creek oats | N | GP | Rare in woodlands |
| Poaceae | *Cynodon dactylon* | Bermudagrass | E | GP | Common in lawns |
| Poaceae | *Elymus virginicus* | Virginia wildrye | N | GP | Occasional in woodlands |
| Poaceae | *Hordeum pusillum* | caterpillar barley | N | GA | Rare on open slope |
| Poaceae | *Lolium multiflorum* | English rye | E | GP | Rare in lawns |
| Poaceae | *Panicum sp.* | panicum | E | GP | Rare in woodlands |
| Poaceae | *Paspalum langei* | rustyseed paspalum | N | GP | Frequent in woodlands |
| Poaceae | *Paspalum pubiflorum* | hairyseed paspalum | N | GP | Rare in woodlands |
| Poaceae | *Phyllostachys sp.* | bamboo | E | GP | *Phyllostachya aurea* or a bamboo of some other genus; a few colonies on slopes |
| Poaceae | *Poa annua* | annual bluegrass | E | GA | Common in lawns |
| Poaceae | *Sorghum halepense* | Johnsongrass | E | GP | Rare in woodlands |
| Poaceae | *Stenotaphrum secundatum* | St. Augustine | E | GP | Spreading from lawns into woodlands |
| Ranunculaceae | *Anemone berlandieri* | tenpetal anemone | N | FP | Occasional in lawns |
| Ranunculaceae | *Clematis drummondii* | barba de chivato | N | FPV | Rare along woodland margins |
| Ranunculaceae | *Clematis terniflora* | sweet autumn clematis | E | FPV | Occasional in woodlands |
| Ranunculaceae | *Ranunculus sp.* | buttercup | N | FA | Rare, one plant in lawn |
| Rosaceae | *Eriobotyra japonica* | loquat | E | S | Feral in one area |
| Rosaceae | *Prunus caroliniana* | Carolina cherry | N | T | Oddly rare in woodlands |
| Rosaceae | *Pyracantha sp.* | pyracantha | E-I | S | Probably planted |
| Rubiaceae | *Galium aparine* | common cleavers | N | FA | Common in lawns and woodlands |
| Rubiaceae | *Sherardia arvensis* | blue field-madder | E | FA | Common in lawns |
| Rutaceae | *Zanthoxylum clava-herculis* | Hercules’ club | N | T | Rare in woodland on upper slope |
| Salicaceae | *Salix nigra* | black willow | N | T | Common in and along stream |
| Sapindaceae | *Sapindus saponaria var. drummondii* | western soapberry | N | T | Occasional in woodlands |
| Sapotaceae | *Sideroxylon lanuginosum* | gum bumelia | N | T | Occasional in woodlands |
| Scrophulariaceae | *Leucophyllum frutescens* | cenizo | N-I | S | Rare, planted only |
| Scrophulariaceae | *Veronica arvensis* | slender speedwell | E | FA | Occasional in lawns |
| Scrophulariaceae | *Veronica persica* | largeflower speedwell | E | FA | Common in lawns |
| Smilacaceae | *Smilax bona-nox* | saw greenbriar | N | WV | Rare in woodlands |
| Solanaceae | *Physalis sp.* | ground-cherry | N | FP | Rare in woodlands |
| Solanaceae | *Solanum sp. (S. ptycanthum?)* |  | N? | FP | Rare on open slope |
| Sterculiaceae | *Firmiana simplex* | Chinese parasol tree | E | T | Rare in woodlands |
| Taxodiaceae | *Taxodium distichum* | baldcypress | N | T | Common throughout; knees well developed. |
| Ulmaceae | *Celtis laevigata* | sugar hackberry | N | T | Common in woodlands |
| Ulmaceae | *Ulmus crassifolia* | cedar elm | N | T | Frequent in woodlands |
| Verbenaceae | *Lantana urticoides* | lantana | N-I | S | Planted along woodland margins |
| Violaceae | *Viola missouriensis* | Missouri violet | N | FP | Locally common in one patch of woodland |
| Viscaceae | *Phoradendron tomentosum* | mistletoe | N | S | Noticed in trees |
| Vitaceae | *Ampelopsis arborea* | peppervine | N | WV | Occasional in woodlands |
| Vitaceae | *Parthenocissus quinquefolia* | Virginia creeper | N | WV | Frequent in woodlands |
| Vitaceae | *Vitis cinerea var. helleri* | Heller’s grape | N | WV | Rare in woodlands |
| Vitaceae | *Vitis mustangensis* | Mustang grape | N | WV | Occasional woodlands |

Summary

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| Nativity | No. of Taxa |
| Native feral | 73 |
| Native planted (only) | 9 |
| Exotic feral | 50 |
| Exotic planted (only) | 6 |
|  | 138 |