

Copperton Park Master Plan



Report prepared for:

COPPERTON METRO TOWNSHIP

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I. Park Inventory

Overview

Copperton Community Park ("the Park") is located at 8700 W. Park Street in the center of Copperton Metro Township, Salt Lake County, Utah, USA. At 9.93 Acres the Park is a Class Two Regional Park under management of Salt Lake County Parks & Recreation Department. "This shaded park includes walkways and jogging paths as well as a basketball court, a concrete volleyball court, tennis courts and a roller hockey court. The most popular amenity is a playground area which features climbing structures and large tires modeled after the nearby Kennecott Copper Mine" (slco.org/parks/copperton-park). The park was established in 1927, and it can safely be assumed that many of the mature trees therein have been standing since approximately that time.

The Park is a valuable asset to both the Copperton Community and Salt Lake County, especially considering the multitudinous benefits of green space and the rapid urbanization of the valley. Various stakeholders that must be considered include, in loosely presumed order of vested use/interest: Copperton residents, community council members & staff, Salt Lake County Parks & Recreation, tourists, birds and other wildlife, and the greater Utah community/government at large.

Soil at Copperton Park (and the entire town) are considered part of the Dry Creek series which consists of very deep, well drained, nearly neutral pH, cobbly loam soils formed from sedimentary rocks. Dry Creek soils are on pre-Bonneville fans and lower mountainsides. Slopes are 3 to 15 percent. These soils occur at elevations of 5,200 to 6,200 feet on pre-Bonneville fans and low mountainsides with gradients ranging from 3 to as much as 60 percent. They formed in alluvium and colluvium derived from sedimentary parent rocks. The climate is dry subhumid. Mean annual temperature is 45 to 53 degrees F. mean summer temperature is 68 to 70 degrees F. and average annual precipitation ranges from 14 to 18 inches. The freeze-free period is 100 to 150 days. These soils used principally as rangeland. Potential vegetation is big sagebrush, bluebunch wheatgrass, Indian ricegrass, and antelope bitterbrush. Depth to water table is greater than 80 inches, which means all non-xeric vegetation relies on irrigation (websoilsurvey.sc.egov.usda.gov). Although this soil is not considered prime farmland due to its low organic matter content and high cobble/drainage, it is fairly average in overall characteristics with no significant limitations for landscape plants other than the need for irrigation and modest fertilization.

A comprehensive tree inventory was completed on January 19-21, 2021 which focused primarily on the size, species, condition, and maintenance needs of all 239 park trees. The general condition of turfgrass was also observed. It should be noted here that this inventory/report does not take into consideration any non-living structures or infrastructure. The overall (average) condition of the Park's vegetation is good, but there are a number of issues which need to be addressed in order to ensure Copperton Park retains its longstanding heritage of an exceptional public green space.

The scope of this masterplan is limited to existing trees and turf at the Park as of the most recent revision date of this report. No express or implied guarantee of the safety or vitality of any plant is contained herein. This report represents the best judgement and opinion of a qualified industry professional. Ongoing guidance/interpretation/consultation of/on this report is encouraged and will be provided to the extent reasonably possible, but is not guaranteed.

Tree Inventory Findings

Tree Condition

Tree condition is broadly categorized into six classifications: dead, missing, poor, fair, good, and excellent. Dead and missing are essentially self-explanatory. They indicate the failure of a tree to survive. Poor may be best understood by a familiar term from the 1987 film *The Princess Bride*; that is, trees in poor condition are “mostly dead”. This means they have an accumulation of issues that threaten them with declining health and possible mortality. Fair trees are trees of moderate concern with more health issues and less vigor than good trees. Although trees in fair condition have a number of issues, these are not as many nor as severe as what we find in poor condition trees. A tree in fair condition can be seen as being on the brink; with attention and maintenance, its health will likely improve, but with neglect it will likely decline. Trees in good condition are, as expected, doing well. They have minimal issues and normal vigor. Excellent trees are exceptional Trees for health/vigor, And they also highlight one element of tree condition that has not yet been discussed, that of contribution to the landscape.

A tree is seen as significantly contributing to the landscape when it reaches specimen status for health, size, structure, quality, or diversity. A good example of excellent landscape contribution is the large horse chestnut tree (*Aesculus hippocastanum*) in the north central area of the park. It is in great condition, has good structure with no major problems, and adds considerably to park diversity and tree quality (only two of these trees in the entire park). Further, in the case of trees, size is an important factor. The general consensus in contemporary

scientific literature is that large/mature trees contribute disproportionately more of the many benefits trees are proven to impart than do smaller trees. However, size is not everything when it comes to the contribution of a tree. For example, the park has a number of large Siberian Elms (*Ulmus pumila*) that are considered to be in fair condition, this in no small part because of the inherent weedy/low-quality character of the species. This means they contribute less to the overall landscape and are more liability than asset. To further illustrate the point, low-quality/weedy trees tend to be disease prone, aggressive growers/consumers of resources, short lived, and lacking in structural integrity (wood strength/branching structure).

As already noted, the overall condition of Copperton Park's trees is, on the whole, good. However, the majority is slight at best. For example, consider figure 3, The percentage of good trees is 42%, while the percentage of fair Trees is 38%. Though, if we consider another angle combining dead/missing and poor quality trees with fair, the picture becomes somewhat bleak, with 55% of the trees (127 count) in marginal or even critical condition. Here we must acknowledge that a considerable number of the trees in fair condition are designated such because they are Siberian Elm, which, as we've discussed, are of a somewhat weedy/low quality.

Species Diversity

Closely related to the discussion of tree condition is the issue of diversity. Diversity is important in the urban forest because it makes for a more resilient forest. An extreme example to illustrate: If the majority of landscape trees in the Salt Lake Valley were Ash, we would be threatened with eradication of nearly every landscape tree due to an exotic pest known as Emerald Ash Borer (EAB) which has made it to neighboring Colorado and could arrive here in Utah at any point. Notice that we didn't designate the precise species of Ash, this is because EAB threatens all species of cultivated Ash. In other words, this threat is genus-wide. Generally speaking, taxonomy is the science which groups plants by their commonality/relationship, with family, genus, and species being, for most practical purposes, the final three steps in narrowing down a given plant's characteristics to unique individuals.

Current best practices for Urban Forestry is to create diversity at the genus level, with no more than 5% of species in one genus. This is because many pests/diseases, especially exotic ones for which a plant will have little to no defense, are host-specific; limited to the genus level. Emerald ash borer may kill both white ash and green ash, but it has no effect on maples whatsoever. History shows several instances of exotic pests/diseases eliminating significant percentages of existing mature trees in the Urban Forest because diversity was not given

proper attention (e.g. Dutch elm disease, chestnut blight, thousand canker disease, spotted lantern fly, and so forth). When viewed by the 5% standard, six genera, comprising 79.1% of trees at Copperton Park, violate the standard and are at risk of diversity related problems (see figure 6). In all, a mere 7 *species* make up over 75% of park trees. This is a considerable red flag as we're looking at the long-term health of Park Trees.

Age-class Diversity and Lifespan

Here we will turn our discussion to tree age classification and lifespan (figures 7&8). In doing so, we will only consider species that comprise more than 3% of the park's trees. We do so because the handful of species that are fewer than 3% have no real management implications pertaining to age structure.

It follows that this 'greater than 3% list' is relatively short: Norway Maple (*Acer platanoides*), Sycamore Maple (*Acer pseudoplatanus*), Siberian Elm (*Ulmus pumila*), Honeylocust (*Gleditsia triacanthos*), Austrian Pine (*Pinus nigra*), Douglas Fir (*Pseudotsuga menziesii*), Blue Spruce (*Picea pungens*), Littleleaf Linden (*Tilia cordata*), Japanese Zelkova (*Zelkova serrata*), and Utah Juniper (*Juniperus osteosperma*).

We can further limit our discussion because all of the evergreen/conifers plus the sycamore maple and Littleleaf Linden commonly live 200 or more years, which is double the current age of the park itself.

The species of concern, then, are Norway Maple, Siberian Elm, Honeylocust, and Japanese Zelkova; for these trees all have a maximum life expectancy of 150 years. This means that we can expect the senescence and eventual death of many of these trees within the next 50 years or so.

Further, when considering the estimated age class/cohort for park trees (figure 7) Siberian Elm again appears to be the most concerning because it is the only species to make the 'overmature' list, and it does so with regularity. All of the others fall into the mature category, which means that plans should be made for their eventual retirement, but they can be expected to remain vigorous/healthy for several decades.

Another matter of concern is the disproportionately small number of trees in the young/establishing category. These represent only about 10% of Park trees, when, if replacement was keeping pace with expected mortality, they would ideally represent approximately 25-33%. On a positive note, the majority of the park's trees are considered mature for their size/age/species, and there is ample research to demonstrate that for all tree benefits (e.g. cleaning/cooling the air, providing shade, reducing stormwater runoff, generating

oxygen and sequestering carbon, increasing property values, plus public/social health benefits and more), mature trees provide them in a disproportionate abundance.

Maintenance Concerns

Although there are a variety of maintenance needs, which is normal, we will again attempt to summarize by focusing on the more salient needs (figure 9). Maintenance needs typically arise directly from a tree condition/comment. Taken together, four maintenance needs add up to 66.2% of perceived need and, namely, are structural pruning, safety pruning, crown cleaning, and mulch ring creation. Over 25% of tree maintenance needs were recorded as needing a mulch ring, while 18% of tree maintenance is general crown cleaning. The other listed values comprise roughly 10% each. Additionally worth noting is that re-inspection and “none” each comprise about 8% of the reported maintenance needs.

Five trees were found with a maintenance priority listed as “critical public safety”; three are hazard trees that are recommended for removal, while two contain a hanging/hazard limb (figure 9). Approximately 23% of trees are listed as needing immediate maintenance, which indicates that regular maintenance has been deferred (figure 4). Prevalent tree comments include broken/hanging/hazard limb, codominant stems, dead limb, mower damage, and insect/disease/decline (figure 10).

This is in line with expectation, because these comments will be directly addressed by top maintenance needs. For example, if mulch rings are created/maintained for trees, mower damage (a potentially fatal wounding &/or disease vector of vascular tissue, especially on younger trees) will be ameliorated. Besides protection of the tree, organic wood-chip mulch acts as a slow-release fertilizer which feeds the soil/tree, it also moderates soil temperature and moisture; and it is better looking and lower maintenance than turf extending fully to the trunk.

It should be mentioned here that insect/disease/decline is a somewhat amorphous comment. In most cases, this just means that tree health/vigor appears to be impacted by something, usually nondescript. In the case of Copperton park, this comment rarely if ever denoted a serious pest or disease issue. One of the more unsightly endemic pests discovered in the park is Juniper mistletoe, a parasitic plant affecting Junipers. This pest is mainly considered a cosmetic issue unless the host tree is heavily infested, at which point, effective management can be achieved by pruning out diseased limbs.

Tree Inventory Summary

In summary, our main concerns for the trees of Copperton park include weak species and age diversification, sub-optimal tree health/condition, and deferred maintenance. Interestingly, the sub optimal tree health/condition is in large part driven by weak diversity in both age class and tree Species. In short, tree concerns at Copperton Park have mainly been caused by neglect and poor species selection, as opposed to any type of active pest/disease.

Turfgrass

The first thing to discuss about the turf Copperton Park is that this report does not represent the opinion of a turf expert. However, we do possess a sufficient understanding of the principles of ecology, soil, and plant biology to provide basic input. What's more, to expand upon this limited insight, a leading Utah turf expert, Dan Farnes, turf manager for Real Salt Lake at Rio Tinto Stadium, was consulted.

Overall, the turf grass at Copperton Park is in about the same condition as the trees, it's somewhere between good and fair. Considering turf health and coverage across all open space, the park would receive a grade of over 80% healthy/vigorous/good condition turf, with less than 20% falling into fair or poor condition.

The main concern or issue with Copperton Park turf is a number of bare/sparsely vegetated spots. The most likely cause of the spots is soil compaction, lack of adequate irrigation coverage, or perhaps, in some limited cases, shading out by trees. The only places where weeds appeared to be a significant issue in the turf were in spots where turf had been removed/replaced (e.g. tree stump removal).

Other Vegetation

This report does not take into consideration any other park vegetation other than trees and turfgrass. It is advised that the USU Salt Lake Extension office be consulted on a case-by-case basis as significant problems arise in these. Many of the same basic principles of management apply to shrubs and other herbaceous vegetation as to trees (e.g. proper watering/mulching/pruning).

II. Park Goals

Overview

This section will primarily describe the attributes of an ideal future condition pertaining to Copperton Park. Here is where we get to visualize the potential Copperton Park holds. What's more, this section will include specific recommended future goals, which have their primary basis in the results/findings of the park inventory.

We all know the feeling we get when we visit one of the several iconic and pristine parks in this country. Whether it be a National Park like Zion, Coast Redwoods, or Great Smoky Mountains or even a more urban experience like Central Park (New York City), Lincoln Park (Chicago), or Balboa Park (San Diego); great parks with vibrant greenspace leave a lasting impression on us. They seem to somehow connect us to the vast world of living things and revive our spirits.

Advocates of Copperton Park desire to capture and enhance this feeling, and although it is already somewhat present, action is needed to preserve and amplify this feeling. This connection is the core reason why this report matters. Because there is a massive and ever-growing body of research which confirms greenspace is vital to human wellbeing and community identity.

"A healthy tree doesn't get pests or diseases..." -Dr. Fred Baker, USU. This quote highlights a strong analogy between tree and human epidemiology; namely, it would appear to be very rare for an individual who eats right, stays hydrated, gets plenty of exercise and ample sleep, and who also avoids harmful substances or excessive stress to be overcome by disease. Our current science seems clear on this issue, if a person is an overweight smoker who is chronically sleep deprived and stressed, gets little exercise, and eats a poor diet, that person is far more likely to be the victim of any number of diseases.

On the other hand, these optimally healthy individuals can reasonably be expected to avoid contracting a significant quantity of encountered illnesses in the first place, and to be far better equipped to overcome the few that are actually contracted. The same principle is true for trees and turf. If we do our job to match the tree to the climate/site in the planning phase, then install it correctly and maintain it regularly; in other words, if we optimize tree/plant health, a considerable majority of potential pathogens are avoided. Thus, the goals /recommendations outlined below mainly focus on promoting general tree/plant health. Acute tree problems are to be dealt with on a case-by-case basis.

Goals

Tree Condition >75% Good or Excellent

Our first goal is to take intervention steps with the 38% (94 individuals) of park trees designated as fair condition. As already mentioned, these are trees that could go either way; declining to poor condition, or improving to good condition. As a solid 1/3 of fair condition trees are Siberian Elm, the major issue here will be discussed in the *next section, that is, improving diversity/quality of tree species. Further, only a handful of the fair trees need to be treated for any kind of insect/disease/decline. The remainder mainly need maintenance pruning, adequate irrigation, and mulch rings. Thus, to reach the goal of forestalling and even reversing the decline of fair condition trees, general maintenance (e.g. pruning & irrigation) will suffice.

Another factor that will improve the park's tree condition ratios will be to remove and replace the quotient of trees that are listed in poor condition. If we suppose that the majority of recently planted trees will be in good condition, removal/replacement would automatically boost this metric by 10% or more.

Species Diversity Approaching 5% per Genus

The benefits of a diverse tree population extend beyond resilience in the face of exotic pests and disease, which usually threaten entire populations of trees and have been increasingly common in recent decades. Indeed, diversity in the urban forest can also enhance songbird habitat, and significantly increase green space aesthetics and interest, thereby adding to public approval and enjoyment. Thus, reaching this goal will have the added benefit of making the park look and feel more like an arboretum or botanical garden.

In our discussion of diversity, recall that only 6 genera comprise roughly 80% of Copperton Park's trees (figure 6), and it will be immediately apparent that, with regards to diversity, 'our work is cut out for us.' Methods for achieving diversity include selective removal of sub-optimal individual trees within abundant tree species genera, and planting of a more varied tree palette. The park inventory will be an especially useful tool in this process, as it makes possible the identification and prioritization of less-desirable trees. *Working towards greater species diversity will have the added benefit of assisting the goal of improved overall tree condition (e.g. as Siberian Elm are replaced).

One particular focus of this goal should be to select slower growing, higher quality tree species that are also somewhat drought tolerant and hardy. This is what arborists refer to as

“right tree, right place,” in other words using selective processes for creating a good match between tree and site. This is fundamental to long-term success of new plantings. As this principle is applied in combination with the principles of sourcing high-quality stock and the principles of proper planting, we can expect a very high establishment/success rate. Fortunately for these efforts, in recent decades the green industry has responded to the need for diversity and the challenge of an uncertain climate by expanding into heretofore uncultivated species, thus improving the diversity and robustness in the plant/tree palette. For reference, our list of recommended species has been included in this report (see Appendix 1)

Evenly Distributed Age Structure

The main benefit to more evenly distributed age classes is that it recognizes and prepares for the inevitable senescence and mortality of all trees, so the park will not be at risk of losing many/most of its mature trees at once. This will also create canopy layering which will further improve aesthetics, wind-breaking effects, wildlife habitat, and shading/cooling in this greenspace. Currently, the age-class breakdown is approximately 6% Overmature, 50% Mature, 31% Established, and 11% Young/Establishing (figure 8). Our goal is to eliminate the Overmature, and even out the other percentages to approximately 33% each, which will mainly involve reducing the number of (problematic) mature trees in favor of newly planted trees. Fortunately, methods for achieving age-class diversity are identical to creating diversity on the genus level, that is, systematic replacement of trees at regular intervals.

Proactive Maintenance Cycle

As already noted, many of the issues with park trees arise from neglect. One of the primary goals of this master plan is to reverse that trend. Tree care is not rocket science, nor is it prohibitively expensive, this is true especially when maintenance is kept up on throughout the life of the tree. Indeed, a few basic changes and a small degree of strategic planning can get Copperton Park on a successful, regular, and sustainable maintenance cycle.

These changes will essentially be the inclusion of regular planting/pruning/removal of a specific quantity of the park's trees, and, importantly, regular pruning cycles for young trees (see below). There are any number of ways to go about this maintenance. Variations in the execution will mainly depend on available resources, but the recommendation here is to prune, or remove and replace, 20% of 'problematic' trees each 5-year cycle. This schedule will allow for the most problematic trees to be dealt with within the first five years. Afterwards, prioritized

proactive maintenance of the 'non-problem' trees in succeeding 5-year increments can become the focus.

It is important to underscore that maintenance pruning be done by an **ISA Certified Arborist** with sufficient experience to accurately apply the principles of **structural pruning**. Structural pruning is critical because trees are a collection of semi-autonomous organelles. This means trees will actually begin to compete with themselves unless properly pruned because the artificial landscape we place trees in lacks the competition trees are genetically programmed for in their native forest home. Neglecting this critical need leads to weak branch attachment, overextended (weakened) limbs, codominance, and even included bark (dangerously weak unions). This is in accordance with nationally recognized standards for tree care (ANSI A300 - Part 1).

Mulch Rings

Because so many of the park trees suffer from mower damage, some form of turf elimination around the base of each trunk is warranted. Ideally, this would involve removal of the top 3 inches of turf/soil in an 18 inch radius out from the trunk of each tree and replacement with wood chip mulch. But, this approach has potential drawbacks such as some scattering/blowing of mulch, and the continuing need to control grass/weeds that work their way into the mulch. Another option is creation and maintenance of a vegetation-free ring via herbicide. Still more options exist, and the costs/benefits of each can be weighed and decided on per the objectives of Copperton Township. The point is that trees, especially young/establishing ones, need their trunks protected. One alternative is to instal trunk protection sleeves, but this would not have the several added benefits of mulch.

Low tree risk

Any given Community has a vested interest in mitigating potential risk in their public spaces. Copperton is no exception. Thus, another goal for this master plan is to manage tree risk at a low level. A limited assessment of tree risk was included as part of the park inventory. This found that a small number of trees contain hazards in need of immediate attention. Upon performing this mitigation, and in the process of each maintenance cycle, current risks or those which may arise will be addressed. Contemplation of tree risk again underscores the need to ensure experienced ISA certified arborists are the personnel directly involved in all tree pruning/maintenance because the certification process includes learning to recognize and mitigate risk. Note: if tree risk is a primary concern of the Copperton community council, it is

definitively advisable to identify potentially higher risk trees and conduct formal tree risk assessments on each one.

Healthy Turf

Regular maintenance is also the main requirement for healthy turf grass. In practice, this maintenance takes the form of annual aeration, fertilization, and irrigation audits, plus regular/routine mulch mowing (not bagging/removing clippings). Here again, if these basic steps are followed, the majority of issues will resolve themselves. This is actually a common theme among (landscape) plants because they are living organisms whose best interest is to grow, thrive, and propagate themselves.

In addition to the routine maintenance outlined, there may be a need to re-seed some portions of the lawn with more shade/traffic compatible species, or to spot treat for aggressive weeds. If followed, it can be expected that these simple steps will gradually improve the density, health, and vigor of the turf at Copperton Park.

Goals Summary

The goal of Copperton Park is to realize a healthy, low risk, and diverse urban forest stand with appropriate maintenance and tree life-cycling. In other words, our goal is to preserve and even enhance the aesthetic, while reversing the trend of deferred maintenance. Thankfully, trees are quite slow moving organisms, so this report/plan is well timed to nip this problem in the bud (pun intended), and move into a more proactive management regime. If we are successful in the execution of this plan (following section), Copperton Park can retain its beauty, health, and appeal in perpetuity.

III. Action Plan

Overview

The action plan section of this master plan will outline specific projects along a 20-year timeline that will lead to achievement of the goals described in the previous section. It is intended to serve as a guide to that end. In general, Trees over 12 inches diameter at breast height (DBH) will require a contractor with ISA Certification and specialized equipment to safely

prune, remove, or otherwise maintain. This action plan assumes that, for trees larger than this, work specifications will be accomplished using contract work. For trees smaller than 12"DBH, park personnel may be able to successfully complete the necessary maintenance, but may require some education/consultation to ensure that all tree care is done in accordance with ANSI A300 (Part 1)- 2017. Another generally applicable aspect of this plan is that acute insect/disease issues (biotic or abiotic) will be dealt with on a case-by-case basis because there were no acute issues observed at the time of inventory, and these are somewhat rare.

Worth noting is that this action plan anticipates a relatively stable state of affairs with regards to policies, budget, population, climate, topography, land-ownership, and so forth. Understandably, major large-scale shifts to the physical or social environment, or natural disasters, will change the execution of this plan and necessitate re-evaluation. Thankfully, if the last 94 years is anything to base our assumptions on, there should be little concern for this contingency.

Action Plan Timeline

Immediate (Year 0) - Bring park up to speed & establish baseline

Our most pressing and immediate concern is to curtail the risks that are the result of deferred maintenance. Broken/hanging/damaged limbs, dead trees, oversized/overextended trees/limbs, and the like are examples of the hazards that must be addressed as soon as possible. Using the tree inventory data/map, all hazardous trees will be identified and scheduled for mitigation work in this cycle.

In year 0 (zero), our plan is to either prune, remove/replace, or otherwise maintain 20% of park trees, or roughly 50 trees. The focus in this cycle will mainly be on larger/mature problem trees. A problem tree is defined as being in fair, poor, or dead condition, or otherwise containing a hazard, significant pest, or safety conflict. As previously noted, 'problem trees' comprise approximately ½ of the trees in the Park, so most of our 50 trees will be those with more acute issues. These trees are discussed in greater detail below in the "July 2021 Addendum" section.

As part of the inaugural maintenance cycle, installation of mulch rings is recommended on all 82 trees that are 12"DBH or less (with the exception of trees slated for removal). To reiterate, these rings will, at a minimum, be created by careful application of herbicide to at least an 18" radius from the tree. Ideally, however, sod will actually be carefully removed with a sod cutter, and wood chip or bark mulch will be applied and maintained in these rings.

Another important piece of establishing a baseline is to formally adopt/implement maintenance protocol for town trees. This maintenance protocol can be a standalone document guiding parks maintenance workers, or it could be part of a formal town tree management plan. At the least, maintenance protocol should include:

- Pruning Interval - structural pruning every 2 years for young/establishing trees, every 5 years thereafter (as part of ongoing action plan maintenance).
- Planned and prioritized removal/replacement (regeneration) of trees for age and species diversity.
- Provision for deep-watering of trees - an irrigation schedule which includes 1-2 times per month a slow/long-duration soaking of water deep into the soil.
- Annual aeration, fertilization, and irrigation audits, plus regular mulch mowing for turf
- Specific intervention (plant health care) on an as needed basis for both trees & turf if acute pest/disease problems arise.
- Hazard pruning/removal of trees on an as needed basis

An irrigation audit should be performed as part of this immediate step of the action plan. Irrigation audits consist of an annual inspection of the entire irrigation system, they include running/adjusting each sprinkler head in each zone, replacing as necessary, and checking for proper function of valves and controllers. They may also include changing/cleaning filters and checking water pressure. Proper irrigation scheduling and computer function should be checked at this time, as well as any other manufacturer recommended maintenance or repair of the system. This audit may uncover issues or problems that exceed the ability of routine maintenance or troubleshooting to address. In this case, a comprehensive overhaul to the system may be considered, and a licensed irrigation contractor should be enlisted to provide this service.

It should here be noted that irrigation for turf should be as deep and infrequent as the turf will allow. This will encourage turf roots to grow deeper to find the water they need and will make them more drought resilient. Annual fertilization should include at least a spring and summer application of NPK fertilizer (liquid or granular) in a roughly 25-5-10 ratio. Weed & feed is optional, but not considered necessary.

One potentially important, though optional, component to establishing a baseline for the park is to consider Tree City USA status. Tree City USA (TCUSA) is a designation given by the Arbor Day Foundation to communities who, on a community level, commit to proactively care for their trees by meeting 4 fundamental standards; e.g. 1) a tree board, 2) a tree care ordinance,

3) annual budget of \$2.00 per capita allocated towards trees, 4) arbor day proclamation/observance. There are a number of benefits to TCUSA status, including citizen pride/awareness/involvement, grant money eligibility, a deliberate framework for tree care in the entire community, and more. A wealth of resources are available to communities seeking this designation through both the Arbor Day Foundation and the Utah Division of Forestry, Fire, and State Lands.

Year 5

In year 5 (five), we will again target 20% of park trees, or roughly 50 trees. The focus in this cycle will still mainly involve larger problematic trees (e.g. Siberian Elm), with a considerable amount of removal/replacement. If a provision has not been made for keeping the tree inventory up to date, the park trees should be re-inventoried beginning in year 5 and continuing on every 5 years thereafter. In this maintenance interval, we can expect to see our original efforts paying off as the first flush of replacement trees have begun to establish and the turf is noticeably healthier. As our efforts to maintain the turf keep it in a state of optimal health, we do not foresee any major investments from this point forward.

Year 10

By year 10 (ten), we will be shifting our focus some to more proactive management of larger shade trees which we expect to keep around for 100 years or more. Again, our target in this interval is the most pressing needs in 20% of the population, but these needs will probably not be all that pressing. There will likely still be some removal/replacement, but in this interval, we will probably notice a shift to more pruning and less replacement. By now, our original replacement trees will be approaching maturity, and will have enjoyed regular pruning intervals and little to no trunk wounding, storm damage, or insects/disease.

Year 15

In this maintenance interval, we will be addressing our 200th (large) tree as we again seek to visit/maintain 20% of original trees. By this point, our efforts will be almost exclusively dealing with proactive pruning maintenance of larger shade trees to be retained, but some replacement or supplemental planting will still occur.

Year 20

By year 20 (twenty), we can really expect to see the fruits of our labors. We now can see our goal of a diverse and robust urban (park) forest taking shape. Of course, we will again use the current inventory data to identify the 20% of large trees that most need care (some of our best original trees, plus some overlap of trees that were already visited or 'newly' added trees), and we will provide this care mainly in the form of pruning. Proper maintenance of trees is quite similar to long term investments, and by year 20 we will notice the dividends. By this point in our maintenance schedule, we may be able to space our major replacement plantings to every 10 or more years to allow space and time for the pioneer trees to live out their intended roles. When this cycle of maintenance has been completed, including an inventory update, it will be time to completely renew the park's masterplan.

IV. Capital Improvement Schedule

In conjunction with the goals and action plan of this report, and according to the opinion of the author, there are relatively few direct capital improvements to be made at Copperton park in terms of equipment or other hard assets. The main use of community funds to enact this plan will be in the form of hiring contract labor and purchasing nursery trees to improve green infrastructure.

That said, a basic set of tree care equipment to be used by parks staff in maintaining small-medium trees (<12"DBH) from the ground should be considered. This basic setup has an estimated cost of \$1,750.00 and includes:

- A mid-sized (18") professional grade chainsaw (e.g. Husqvarna 550XP) w/approved safety helmet, eye protection, ear protection, and chainsaw protective chaps. Also an extra chain and basic maintenance tools (e.g. files).
- An electric pole pruner (e.g. Husqvarna 530iPT5) w/approved safety helmet, eye and ear protection.
- A manual polesaw/pole-pruner combo (e.g. Marvin Bull Pruner w/2-8ft fiberglass poles & polesaw headset)
- Two or three pruning handsaws (e.g. Silky Gomtaro)

Preferential expenditure of community funds should be allocated to risk/hazard mitigation, followed by preventative maintenance, followed by removal/replacement. Each of

the five major maintenance intervals (at 5-year increments), if undertaken in full, are expected to cost approximately \$50,000.00-\$100,000.00 in 2021 U.S. dollars (or \$10-20K/yr.), but prioritization can help to curtail this expense if budget constraints are encountered. Another potentially cost-saving method is to utilize trained volunteers for replacement planting, but this strategy must be employed with caution as poor nursery stock and incorrect planting can lead to poor establishment. Funding for these capital improvements will likely come in large part from the town budget, but a number of grants may be available and are encouraged as a supplemental form of financing.

There may be stakeholders who consider this allocation of resources to be excessive or nonessential, and this is a somewhat understandable point of view. But when the body of research is considered, we come to understand that maintaining green infrastructure (greenspace) is similar to exercise or eating vegetables; it's easy to neglect but vitally important to holistic health/wellbeing of individuals and communities. Scientifically proven benefits of trees/greenspace include: increased birth weight, stress alleviation, quicker recovery from surgery/illness, reduced mortality rate, reduction in crime rates, increased property values (up to 15%), energy costs reduction, stormwater mitigation, boosting retail sales, air production/pollutant reduction, pedestrian safety, and more. Furthermore, the rich cultural heritage of this park as a central feature in the community of Copperton is hard to overstate. We would be undermining the value of future generations if we were to not maintain and improve upon the legacy inaugurated by our forebears. These reasons are but the 'tip of the iceberg' as to why capital improvement of Copperton Park is fully warranted. Without a doubt the subject of why preserving this park is important could fill an entire report, or even an entire volume.

Summary

Although this is a somewhat technical report, the essence of this master plan is really quite simple:

The community of Copperton has been endowed with a superlative gift in the form of Copperton park. Although this metro township is a tiny fraction of the population of Salt Lake City, its park rivals Liberty Park for (relative) size and greenspace quality. We are grateful for the foresight and vision of our forebears who had the courage and energy to make this significant investment.

Unfortunately, in recent years, much of the necessary maintenance of this vital investment has been overlooked. As a result, we are beginning to reap some of the fruits of the deterioration. We now stand at an important crossroads in the history of this park. Will we take action to preserve and enhance the legacy, or will we accept the trajectory of decline?

The good news is that, as with other vital infrastructure, routine maintenance is not overly complex or beyond our reach, it just needs to be done. This masterplan identifies the simple steps that must be taken in order to preserve and enhance the special place that is Copperton park; thus honoring past generations and paying it forward to those yet to come.

July 2021 Addendum

One unfortunate consequence resulting from the inventory portion of this master plan being conducted in January is that a small subset of park trees were misidentified as being in good condition, when in reality they were in either poor or dead condition. The main reason for the misidentification was that the trees were not in leaf during January and this particular issue was not expressly manifest. In almost every case, the tree in question was a Sycamore Maple (*Acer pseudoplatanus*), and the destructive agent is Sooty-Bark Disease of Maple.

Sooty-Bark disease is caused by a fungal pathogen known as *Cryptostroma corticale*. In hot and dry weather, trees infected with *C. corticale* become stressed and the fungus rapidly spreads from deep inside the tree to the vascular cambium just beneath the bark where it entirely destroys this vital circulatory system and generates an extreme profusion of black spores (giving it a 'sooty' appearance). When the damage is done, the tree dries out, the bark splits, and these spores are released into the local airshed to spread to the next host through young shoots (exact mode unknown).

The only known management at this time is to quickly remove and destroy infected trees, reduce/remove existing (healthy) hosts (&/or promote general health), and restrict further planting of the same. ***When working with infected trees, extreme caution should be taken*** as "the spores are hyper-allergenic; they can cause severe asthma [15] and hypersensitivity pneumonitis [5]. Maple bark disease, or maple bark stripper's disease, is an uncommon condition caused by exposure to the spores of *C. corticale*. The disease has been found among workers in the paper industry employed to debark, cut and chip maple logs. The symptoms include breathlessness, fever, night sweats, chills and weight loss [13]... where it is a pathogen, large numbers of spores can be released even before the tree dies, and removing or

harvesting dead standing trees can endanger workers. Forest workers must wear personal protective equipment when working around dead and diseased maples [1]. It is recommended to keep the public away while working on trees, and preferably to use machine felling rather than chainsaws. It is also advised to work during wet weather to reduce the number of airborne spores. Wood should not be used for firewood. It should be covered during transport and burned.” (<https://forestpathology.org/canker/sooty-bark-maple/>)

“Personal protective equipment includes:

- Goggles
- Respirator
- Protective suit with hood
- Protective gloves
- Closed shoes or boots that are easy to clean
- Disinfection should not be needed, since it doesn’t infect humans. The goal is to avoid inhaling large numbers of spores.” (ibid)

As part of the Immediate (Year 0) management of Copperton park, it is advisable to address all trees listed as “critical public safety” maintenance priority. This list, which includes all currently (July 2021) dead Sycamore Maples and can be found in the table below. It is further advisable to remove all Sycamore Maple that appear to be in any way stressed/declining. This recommendation entails the most critical management needs for the park right now and is based on newly observed data acquired during the growing season. If time/budget allows during this initial maintenance cycle, other trees may be identified and prioritized using the existing (still relevant) data.

(continued on next page)

Figures & Photos

Copperton Tree Inventory



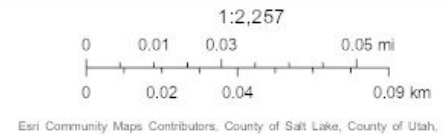
Esri Community Maps Contributors, County of Salt Lake, County of Utah, Utah AGRC, BuildingFootprintUSA, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA

Copperton Tree Inventory Map - Condition/Size (DBH)



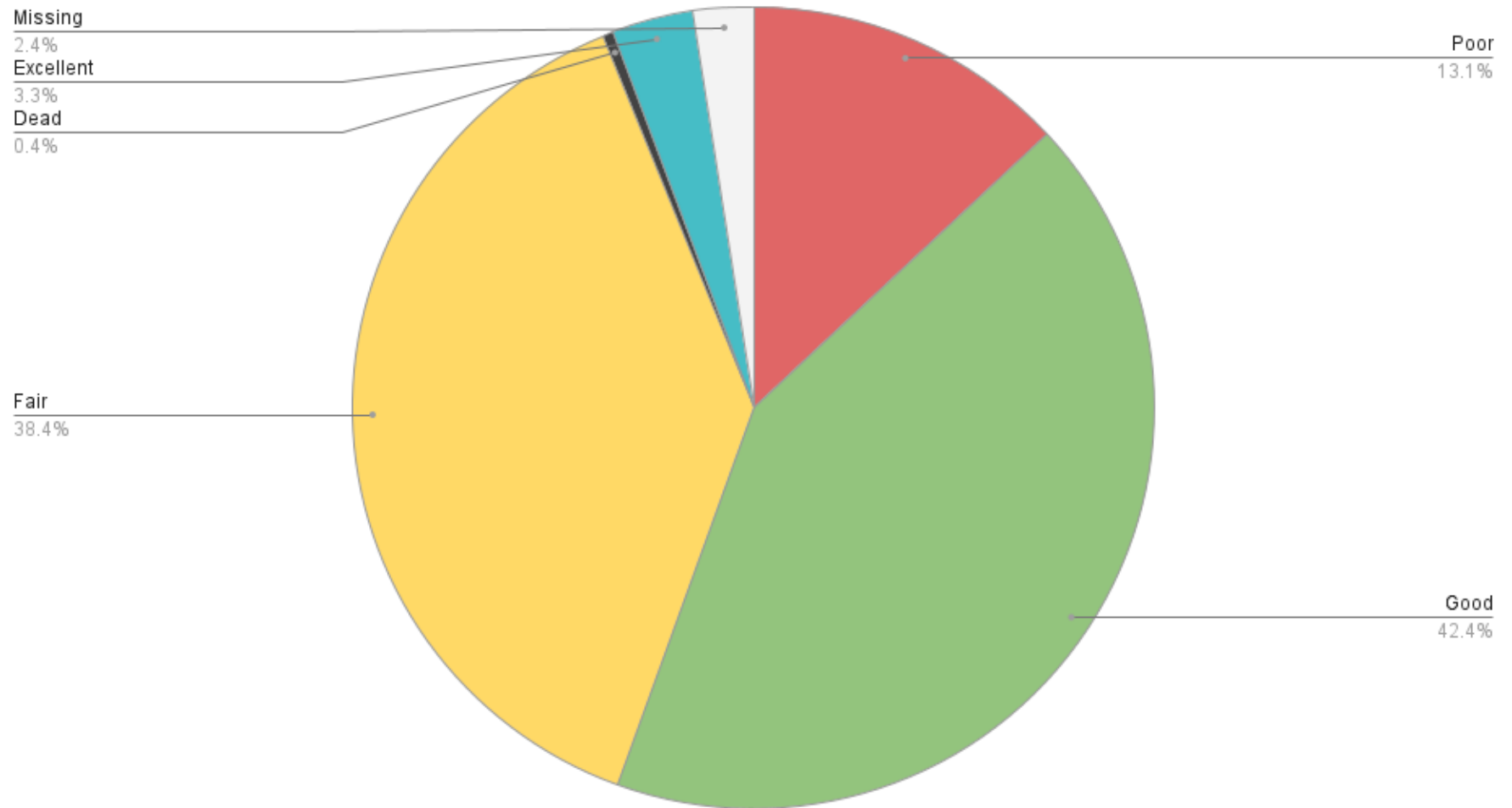
2/16/2021

Copperton Tree Inventory



Tree Condition, Percent of Total

Figure 3



Copperton Tree Inventory Map - Maintenance Priority



2/16/2021

Copperton Tree Inventory

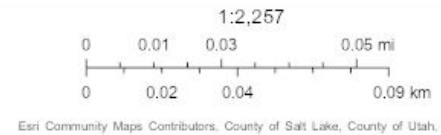
● Routine Small Tree

● Routine Large Tree

● Immediate Small Tree

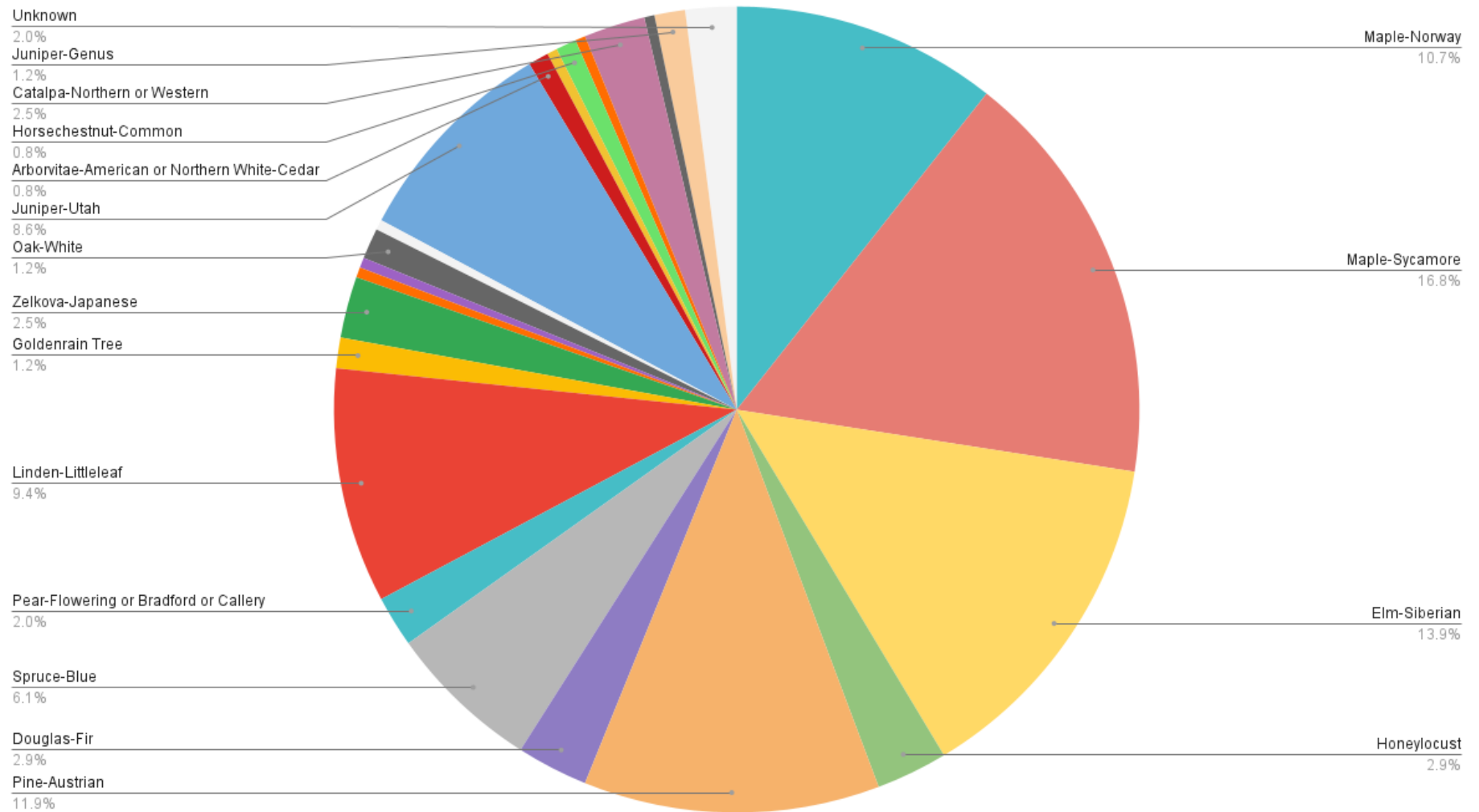
● Immediate Large Tree

● Critical Public Safety



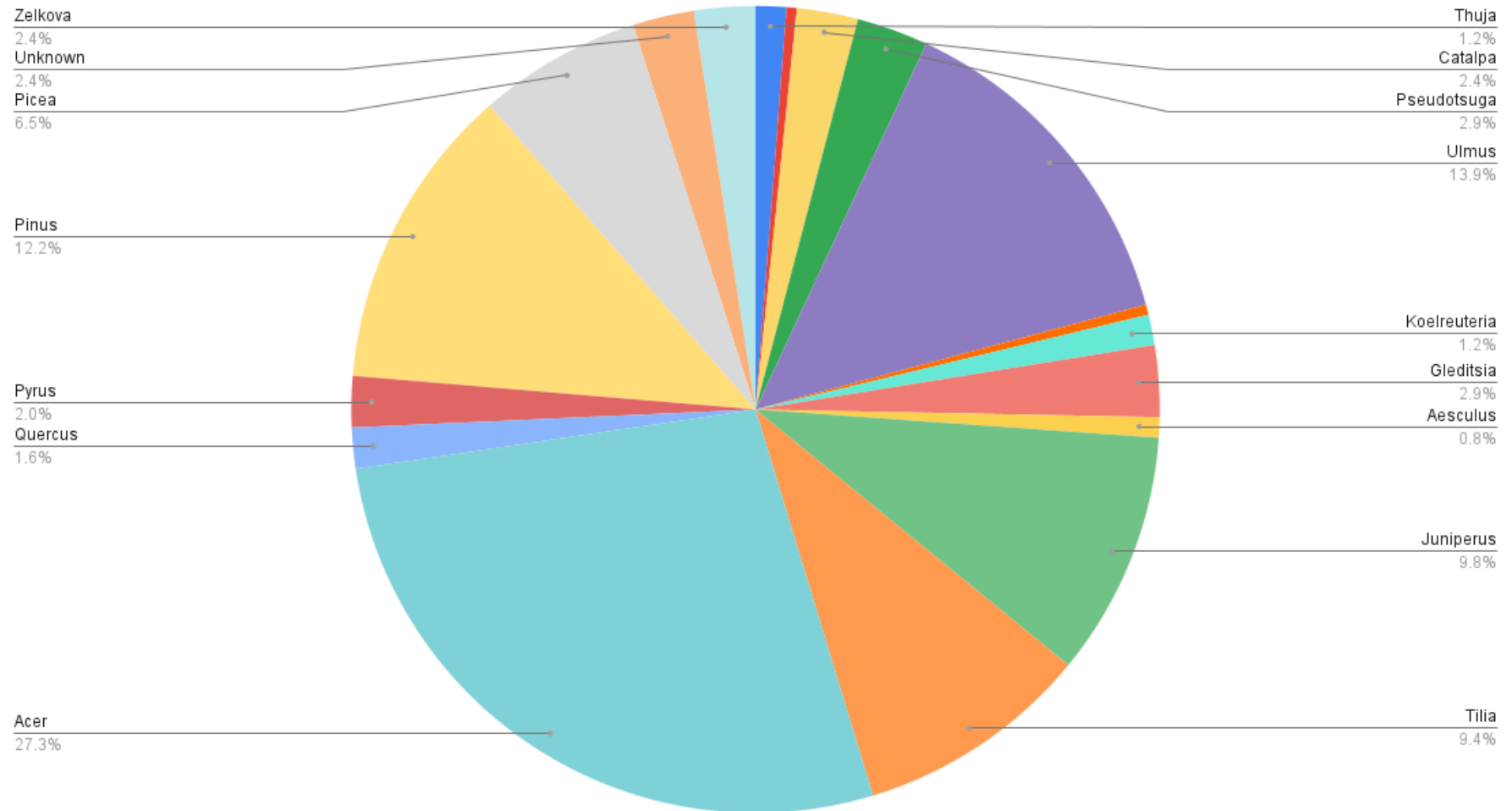
Tree Diversity by Species (% Tot.)

Figure 5



Tree Diversity by Genus (%Total)

Figure 6



Count of Age Class

Figure 7

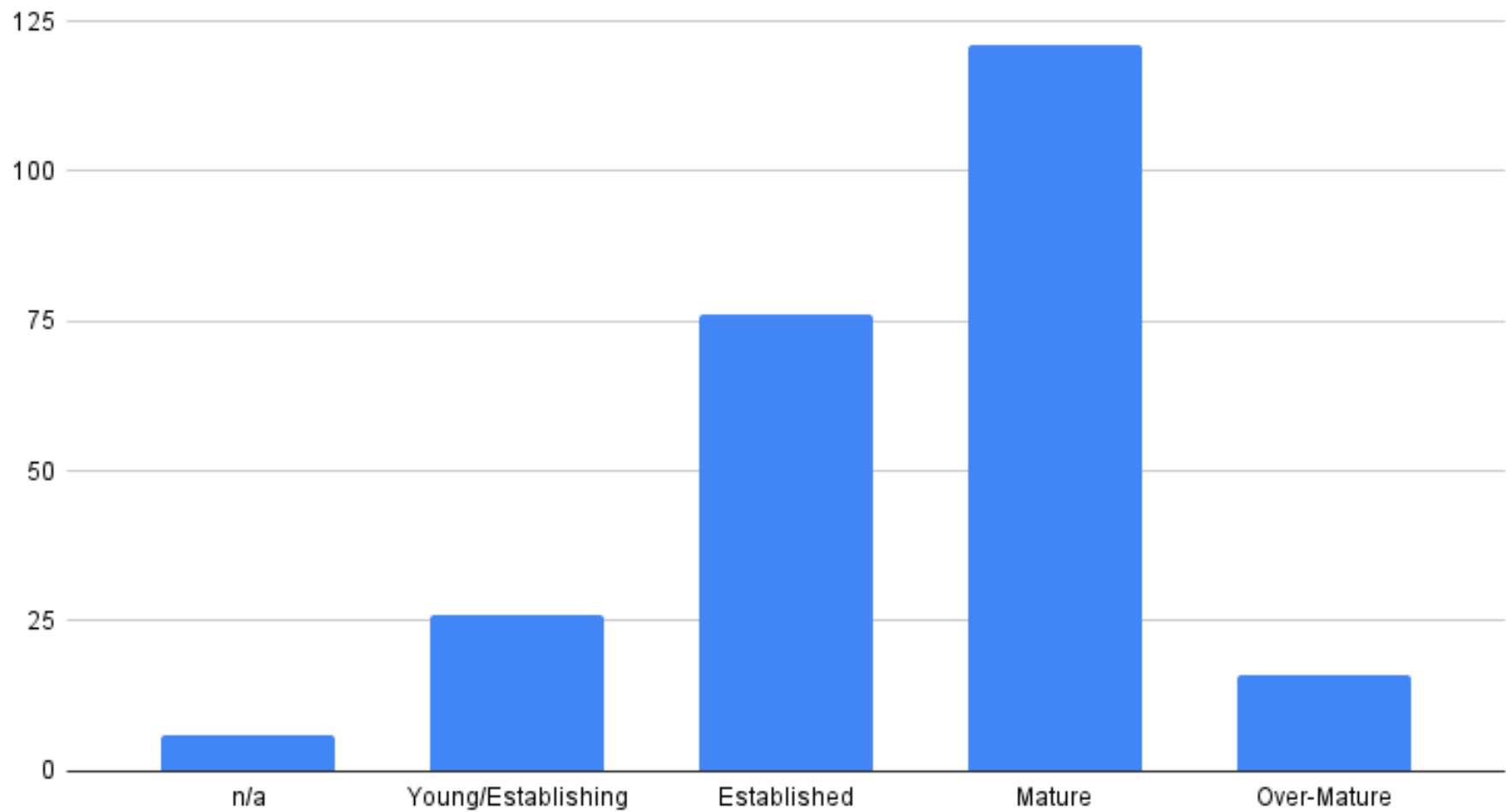
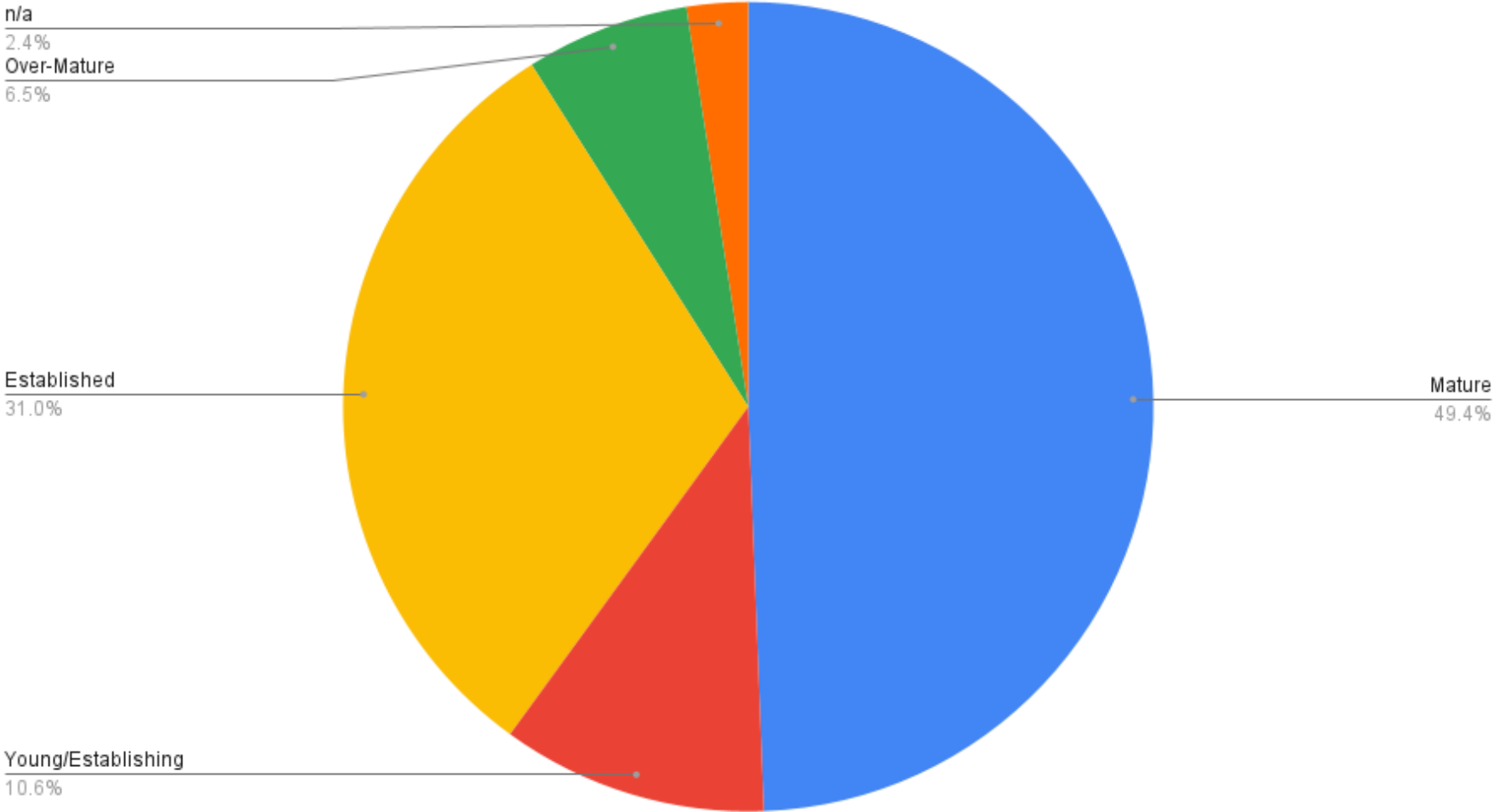


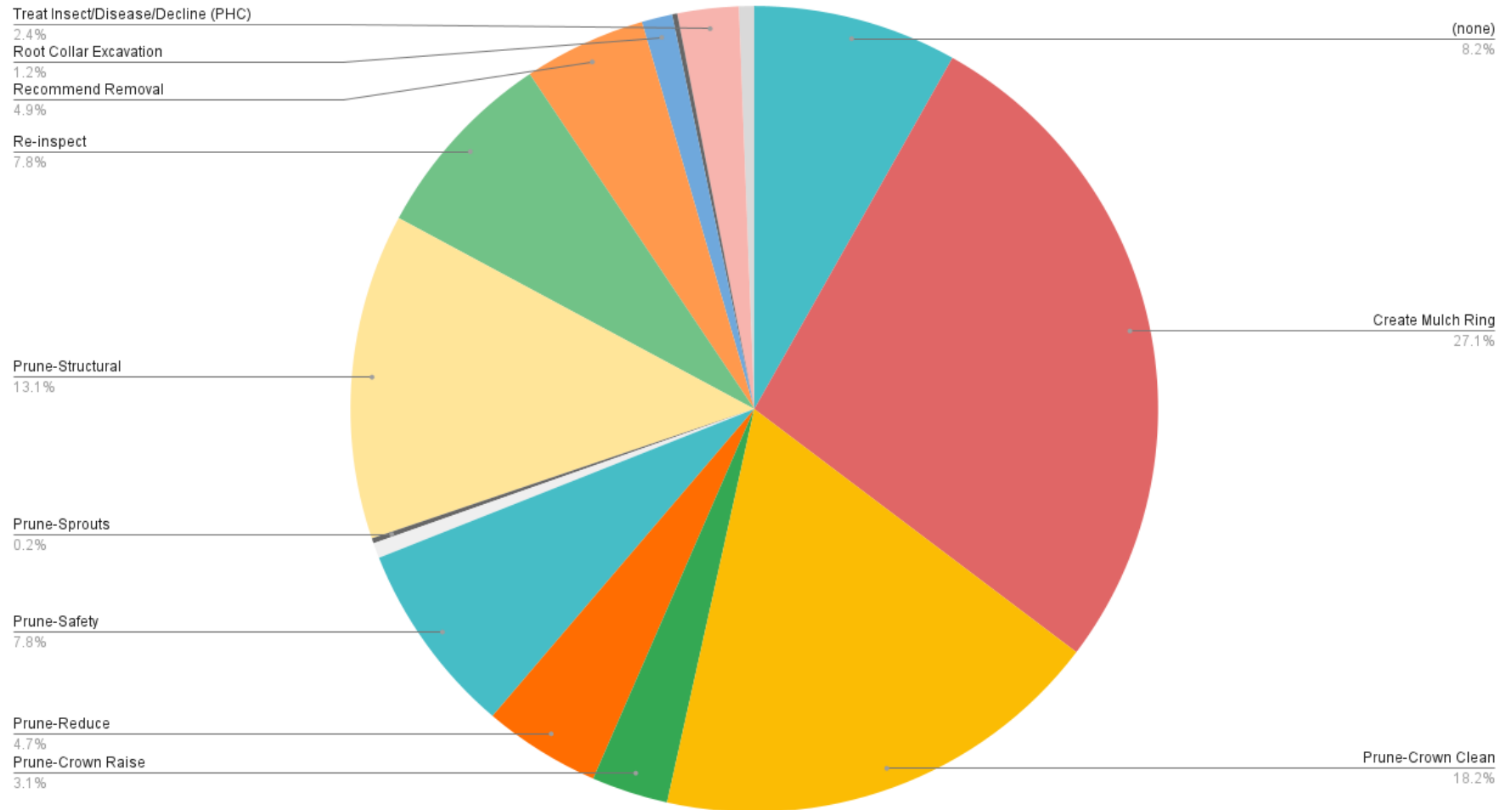
Figure 8

Age Class by Percent%



Maintenance Needs

Figure 9



Tree Comments - All Records

Figure 10

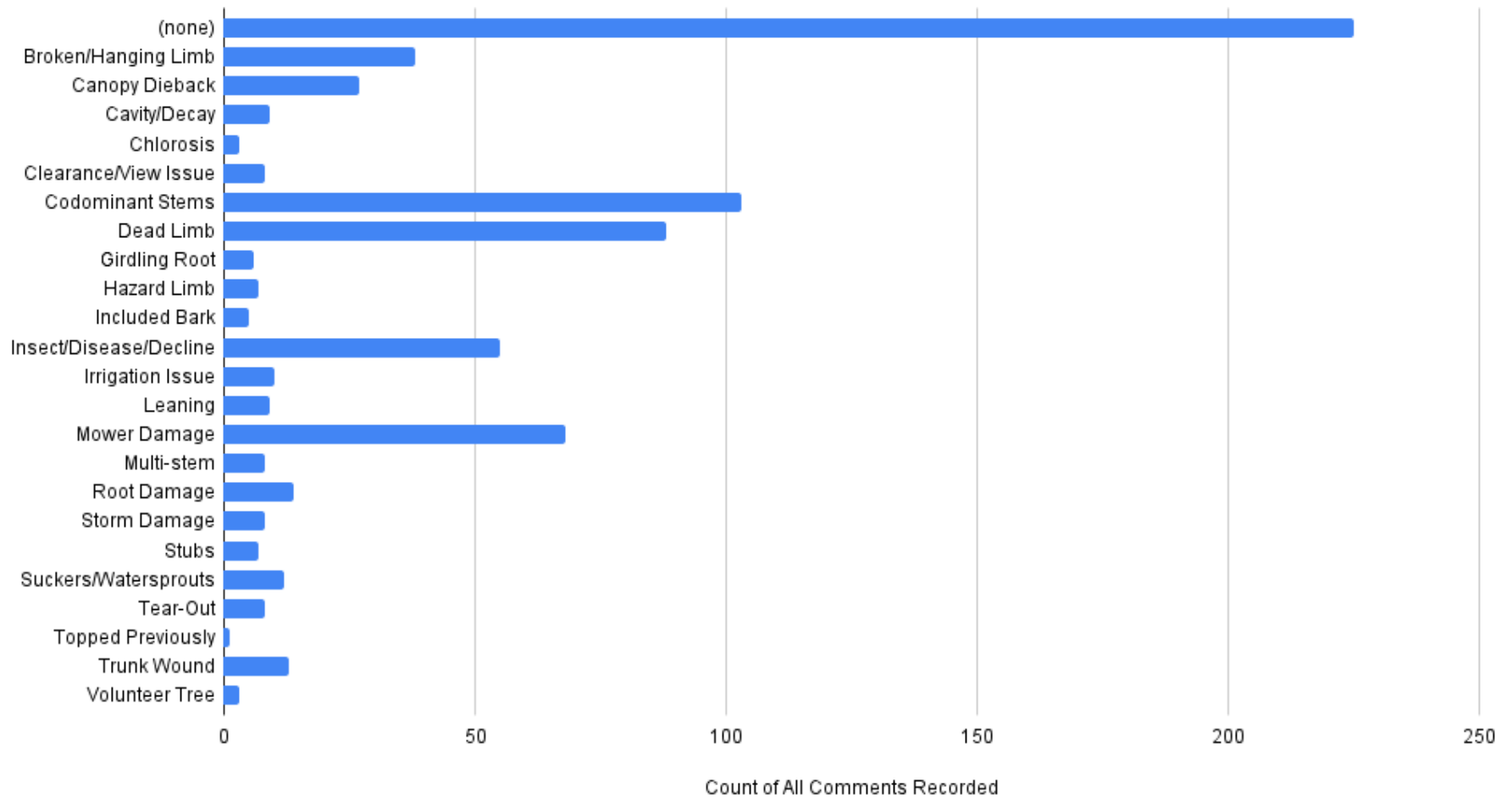




Photo 1 - Overmature Siberian Elm



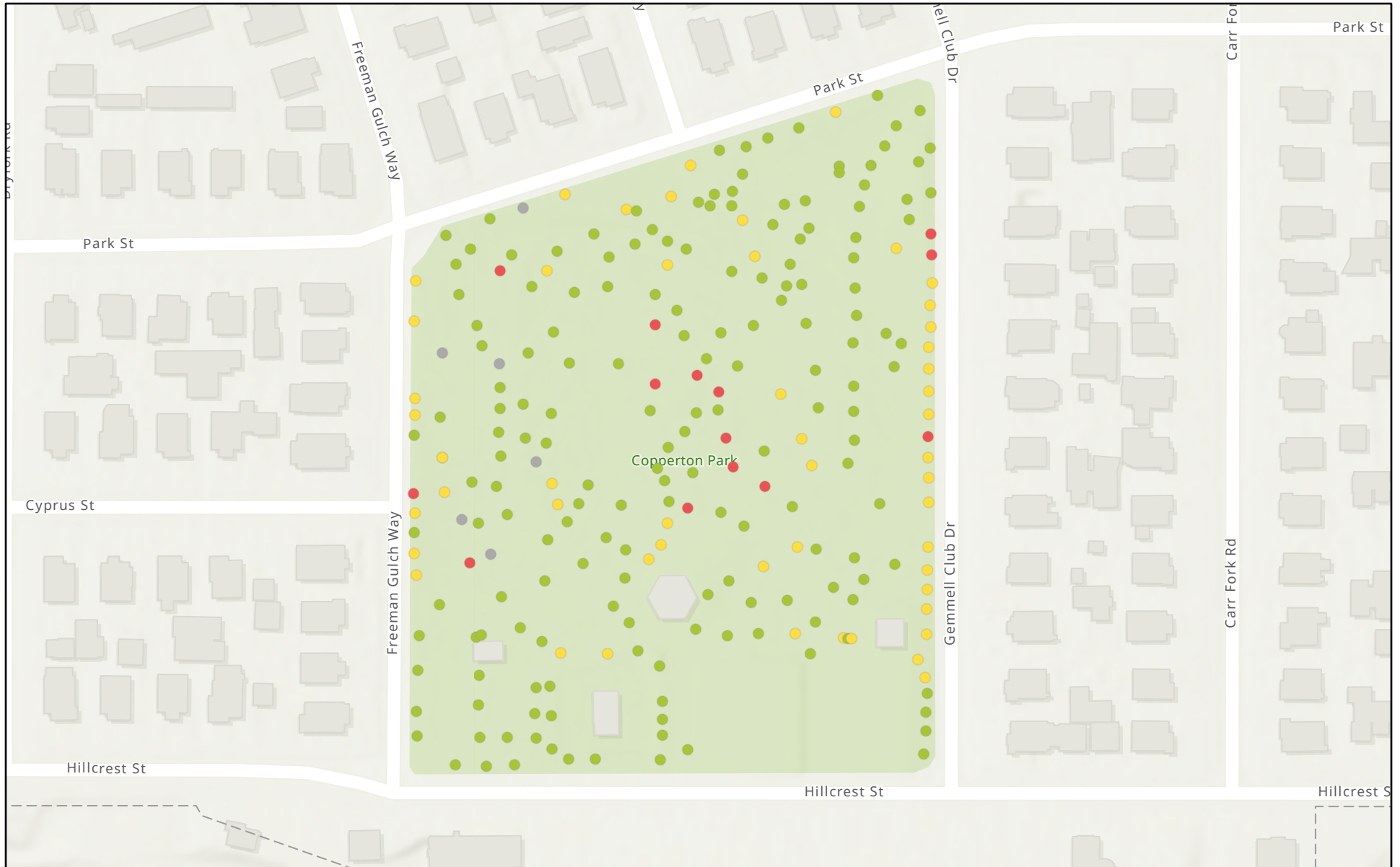
Photo 2 - Trunk wounding by mowing/trimming equipment



Photo 3 - Typical dead/hazard limbs

Figure 11 - Critical Maintenance Priority

Latitude	Longitude	Species-Common	DBH	Tree Condition	Maintenance Priority	Maintenance 1	Comment 1	Comment 2	Comment 3
40.56339337	-112.0990157	Maple-Sycamore	26	Dead	Critical Public Safety	Prune-Safety	Dead Limb	Canopy Dieback	Insect/Disease/Decline
40.56374987	-112.0973133	Elm-Siberian	24	Fair	Critical Public Safety	Prune-Safety	Codominant Stems	Broken/Hanging Limb	Hazard Limb
40.5642623	-112.0972984	Elm-Siberian	24	Fair	Critical Public Safety	Prune-Safety	Codominant Stems	Broken/Hanging Limb	Hazard Limb
40.56432209	-112.0973017	Elm-Siberian	20	Fair	Critical Public Safety	Prune-Reduce	Codominant Stems	Broken/Hanging Limb	Insect/Disease/Decline
40.56387501	-112.0980919	Maple-Sycamore	16	Dead	Critical Public Safety	Create Mulch Ring	Codominant Stems		
40.56392235	-112.098171	Maple-Sycamore	23	Dead	Critical Public Safety	Prune-Safety	Codominant Stems	Dead Limb	Broken/Hanging Limb
40.5636077	-112.0979201	Maple-Sycamore	25	Dead	Critical Public Safety	Prune-Safety	Broken/Hanging Limb	Dead Limb	Codominant Stems
40.5636638	-112.0980365	Maple-Sycamore	17	Dead	Critical Public Safety	Recommend Removal	Canopy Dieback	Insect/Disease/Decline	Trunk Wound
40.56374474	-112.0980637	Maple-Sycamore	21	Dead	Critical Public Safety	Create Mulch Ring	Dead Limb		
40.56354694	-112.0982069	Spruce-Blue	19	Dead	Critical Public Safety	Recommend Removal	Insect/Disease/Decline	Canopy Dieback	
40.56389871	-112.0983274	Maple-Sycamore	23	Dead	Critical Public Safety	Create Mulch Ring	Tear-Out	Dead Limb	
40.5640644	-112.0983278	Catalpa-Northern or Western	20	Dead	Critical Public Safety	Recommend Removal			
40.56421717	-112.0989047	Honeylocust	41	Poor	Critical Public Safety	Recommend Removal	Canopy Dieback	Insect/Disease/Decline	Cavity/Decay
40.56358823	-112.0992244	Maple-Sycamore	15	Dead	Critical Public Safety	Recommend Removal	Cavity/Decay	Tear-Out	Topped Previously



7/26/2021

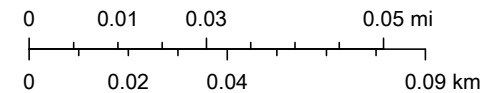
Copperton Tree Inventory - Point layer

- 1
- 2

- Immediate Small Tree
- 3
- 4

- Critical Public Safety
- 5

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Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS,

Recommended Species for Utah

Common Name	Scientific Name	Recommend	Type	USDA Zone	Growth Rate	Mature Size	Shade Tolerance	Salt Tolerance	Drought Tolerance	Poor Drainage Tolerance	Alkalinity Tolerance	Purchase Available	Good For	Notes
Baldcypress	<i>Taxodium distichum</i>	Highly	Deciduous	4-9	Medium	Large	Low	High	Medium	High	Medium	???	Parks & Residential	fall color , a deciduous evergreen
Coffeetree, Kentucky	<i>Gymnocladus dioicus</i>	Highly	Deciduous	3-8	Medium	Large	Medium	Medium	High	Medium	High	Yes	Parks & Residential	fall color ; fruit can be messy, seek fruitless variety
Elm, American	<i>Ulmus americana</i>	Highly	Deciduous	2-9	Fast	Large	Medium	Medium	High	High	High	Yes	Parks & Residential	tough & stately, relatively few problems, little reason to fear Dutch Elm disease in UT, not problematic like U. pumilla
Elm, Lacebark	<i>Ulmus parvifolia</i>	Highly	Deciduous	4-9	Medium	Large	Medium	Medium	High	Medium	High	Yes	Commercial	aesthetic bark, tough, not problematic like U. pumilla
European Beech	<i>Fagus sylvatica</i>	Highly	Deciduous	4-7	Slow	Large	High	Low	Medium	Low	Medium	Yes	Parks & Residential	majestic tree, well worth the wait, may need some protection
Filbert, Turkish	<i>Corylus colurna</i>	Highly	Deciduous	4-8	Medium	Medium	Low	Low	Medium	Medium	High	Yes	Parks & Residential	stately tree w/attractive form/bark
Ginkgo	<i>Ginkgo biloba</i>	Highly	Deciduous	3-9	Medium	Large	Low	Medium	High	Medium	High	Yes	Parks & Residential	tough & elegant, practically no problems, fall color
Japanese Tree Lilac	<i>Syringia reticulata</i>	Highly	Deciduous	3-8	Medium	Small	Low	High	Medium	Medium	High	Yes	Commercial	flowers
Japanese Zelkova	<i>Zelkova serrata</i>	Highly	Deciduous	5-8	Fast	Large	Medium	Medium	High	Low	Medium	Yes	Commercial	tough, vase-shaped tree, requires regular pruning when young
Jujube	<i>Ziziphus jujuba</i>	Highly	Deciduous	5-9	Fast	Small	Low	Medium	High	Low	High	???	Fruit	tough tree w/fruit called 'Chinese date'
Linden, American	<i>Tilia americana</i>	Highly	Deciduous	2-8	Medium	Large	Medium	Medium	Medium	Medium	High	Yes	Parks & Residential	stately tree w/fragrant flowers
Maple, Hedge	<i>Acer campestre</i>	Highly	Deciduous	4-8	Medium	Small	Medium	High	Medium	Medium	High	Yes	Commercial	tough tree, fall color
Maple, Paperbark	<i>Acer griseum</i>	Highly	Deciduous	4-8	Slow	Medium	Medium	Medium	Medium	Low	Medium	Yes	Ornamental	attractive bark
Oak, Bur	<i>Quercus macrocarpa</i>	Highly	Deciduous	2-8	Medium	Large	Medium	Medium	High	Medium	High	Yes	Parks & Residential	relatively pest/disease free
Oak, Chinkapin	<i>Quercus muehlenbergii</i>	Highly	Deciduous	4-7	Medium	Large	Medium	Medium	High	Medium	High	Yes	Parks & Residential	fall color
Oak, Swamp White	<i>Quercus bicolor</i>	Highly	Deciduous	3-8	Medium	Large	Medium	Medium	High	High	Medium	???	Parks & Residential	stately tree, doing well here
Oak, Turkey	<i>Quercus cerris</i>	Highly	Deciduous	5-7	Medium	Large	Medium	Medium	High	Medium	High	Yes	Parks & Residential	quite tolerant of UT conditions, interesting foliage
Oak, White	<i>Quercus alba</i>	Highly	Deciduous	3-9	Medium	Large	Medium	High	Medium	Low	Low	Yes	Parks & Residential	stately tree w/ fall color
Planetree (sycamore), London	<i>Platanus x acerifolia</i>	Highly	Deciduous	4-9	Fast	Large	Medium	Medium	High	Medium	Medium	Yes	Parks & Residential	stately shade tree w/ attractive bark , avoid fall planting
Redbud, Eastern	<i>Cercis canadensis</i>	Highly	Deciduous	3-9	Medium	Small	High	Low	High	Low	High	Yes	Commercial	flowers
Serviceberry, Apple	<i>Amelanchier grandiflora</i>	Highly	Deciduous	4-9	Slow	Small	Medium	Medium	High	Low	High	Yes	Ornamental	flowers, fall color
Sycamore, American	<i>Platanus occidentalis</i>	Highly	Deciduous	4-9	Fast	Large	Medium	Medium	High	High	High	Yes	Parks & Residential	stately shade tree w/ attractive bark , avoid fall planting
Alder, European	<i>Alnus glutinosa</i>	Yes	Deciduous	3-7	Fast	Medium	Medium	Low	Medium	High	Medium	Yes	Parks & Residential	will require moderate amount of water
Alder, Italian	<i>Alnus cordata</i>	Yes	Deciduous	5-7	Fast	Medium	Medium	Medium	Medium	High	High	???	Parks & Residential	unique among alders for not requiring lots of water
Birch, Water or River	<i>Betula occidentalis</i>	Yes	Deciduous	3-7	Slow	Small	Medium	Medium	Low	High	Medium	Yes	Parks & Residential	multi-trunked tree w/ attractive bark & fall color , does require ample water
Catalpa, Northern	<i>Catalpa speciosa</i>	Yes	Deciduous	4-9	Fast	Large	Medium	Medium	High	Medium	High	Yes	Parks & Residential	fruit can be messy, seek fruitless variety
Cedar of Lebanon	<i>Cedrus libani</i>	Yes	Evergreen	5-7	Slow	Large	Low	Medium	Medium	Low	Medium	Yes	Parks & Residential	beautiful & stately evergreen, slower growth rate
Cedar, Incense	<i>Calocedrus decurrens</i>	Yes	Evergreen	5-8	Medium	Large	Medium	Medium	Medium	Medium	High	???	Parks & Residential	stately tree when mature
Chokecherry	<i>Prunus virginiana</i>	Yes	Deciduous	2-6	Medium	Medium	Low	Medium	Medium	Low	High	Yes	Commercial	interesting varieties
Crabapple	<i>Malus spp.</i>	Yes	Deciduous	3-9	Medium	Small	Low	High	Medium	Medium	High	Yes	Ornamental	hundreds of varieties, choose disease resistant one, flowers

Common Name	Scientific Name	Recommend	Type	USDA Zone	Growth Rate	Mature Size	Shade Tolerance	Salt Tolerance	Drought Tolerance	Poor Drainage Tolerance	Alkalinity Tolerance	Purchase Available	Good For	Notes
Cypress, Leyland	<i>Cupressocyparis x leylandii</i>	Yes	Evergreen	6-10	Fast	Large	Low	High	High	Low	High	Yes	Xeriscape	windbreak
Elderberry, Blue	<i>Sambucus nigra ssp. Cerulea</i>	Yes	Deciduous	5-8	Medium	Small	Medium	Medium	Medium	Medium	Medium	Yes	Ornamental	shrub which can be pruned to be tree-like
Fir, Colorado White	<i>Abies concolor</i>	Yes	Evergreen	3-7	Slow	Large	Medium	Medium	Medium	Low	Medium	Yes	Parks & Residential	beautiful conifer w/'friendly' needles, may need protected site
Fir, Douglas	<i>Pseudotsuga menziesii</i>	Yes	Evergreen	4-6	Medium	Large	Medium	Medium	Low	Medium	High	Yes	Parks & Residential	fairly tough & stately conifer, use instead of spruce
Golden Rain Tree	<i>Koelreuteria paniculata</i>	Yes	Deciduous	5-9	Medium	Medium	Low	High	High	Medium	High	Yes	Ornamental	brilliant yellow flowers , plus 'lantern' seedpods
Hackberry, Common	<i>Celtis occidentalis</i>	Yes	Deciduous	2-9	Fast	Large	Medium	Medium	High	Medium	High	Yes	Parks & Residential	requires regular pruning when young
Hawthorn, Cockspur	<i>Crataegus crus-galli</i>	Yes	Deciduous	3-8	Medium	Small	Low	Medium	High	Medium	High	Yes	Ornamental	flowers , seek thornless varieties, many other cultivars also good
Honeylocust	<i>Gleditsia triacanthos</i>	Yes	Deciduous	3-9	Fast	Large	Low	High	High	High	High	Yes	Parks & Residential	Good tree, somewhat overplanted, seek fruitless/thornless variety
Larch, European	<i>Larix decidua</i>	Yes	Deciduous	2-6	Fast	Large	Low	High	Low	Medium	Medium	Yes	Parks & Residential	unique deciduous conifer, fall color
Linden, Littleleaf	<i>Tilia cordata</i>	Yes	Deciduous	3-7	Medium	Medium	Medium	Low	Medium	Medium	High	Yes	Commercial	nice tree, tight conical crown
Linden, Silver	<i>Tilia tomentosa</i>	Yes	Deciduous	3-7	Medium	Large	Medium	Medium	Medium	Medium	High	Yes	Parks & Residential	stately tree, more drought/heat tolerant than other lindens
Maple, Bigtooth	<i>Acer grandidentatum</i>	Yes	Deciduous	4-7	Medium	Medium	Medium	Medium	Medium	Medium	High	Yes	Parks & Residential	fall color , UT native
Maple, Japanese	<i>Acer palmatum</i>	Yes	Deciduous	5-8	Slow	Small	High	Medium	Low	Low	Medium	Yes	Ornamental	very graceful tree, best to provide some protection
Maple, Norway	<i>Acer platanoides</i>	Yes	Deciduous	3-8	Medium	Large	Medium	High	Medium	Medium	High	Yes	Parks & Residential	does well in UT, a bit overplanted in some areas, fall color
Maple, Sycamore	<i>Acer pseudoplatanus</i>	Yes	Deciduous	4-7	Medium	Large	Medium	High	High	Medium	High	Yes	Parks & Residential	very attractive 'two-toned' leaves
Oak, Gambel	<i>Quercus gambelii</i>	Yes	Deciduous	4-8	Slow	Small	Low	Medium	High	Medium	High	???	Commercial	UT native, best grown in clumps
Persimmon	<i>Diospyros virginiana</i>	Yes	Deciduous	4-9	Slow	Medium	Low	Medium	High	High	High	Yes	Fruit	tough tree, great fall color, fruit can be messy
Pine, Bosnian	<i>Pinus heldreichii</i>	Yes	Evergreen	5-7	Slow	Medium	Low	High	High	Low	High	Yes	Parks & Residential	tough tree
Pine, Japanese Black	<i>Pinus thunbergiana</i>	Yes	Evergreen	5-9	Medium	Medium	Low	Low	High	Low	Medium	Yes	Ornamental	many interesting cultivars
Pine, Lacebark	<i>Pinus bungeana</i>	Yes	Evergreen	4-8	Slow	Large	Low	Medium	Medium	Low	Medium	Yes	Ornamental	fairly tough tree w/ attractive bark
Pine, Limber	<i>Pinus flexilis</i>	Yes	Evergreen	4-7	Slow	Medium	Low	Medium	High	Low	Medium	Yes	Parks & Residential	attractive pine
Pine, Pinyon	<i>Pinus edulis</i>	Yes	Evergreen	4-8	Slow	Medium	Low	Medium	High	Low	High	???	Xeriscape	tough tree
Pine, Ponderosa	<i>Pinus ponderosa</i>	Yes	Evergreen	3-7	Medium	Large	Low	Medium	High	Low	Medium	Yes	Parks & Residential	stately tree
Pine, Scotch	<i>Pinus sylvestris</i>	Yes	Evergreen	2-8	Medium	Large	Low	Low	High	Low	Medium	Yes	Parks & Residential	fairly tough tree w/ attractive bark , can develop chlorosis, do not overwater
Redcedar, Eastern	<i>Juniperus virginiana</i>	Yes	Evergreen	2-9	Medium	Medium	Low	High	High	Low	High	Yes	Parks & Residential	good windbreak
Sequoia, Giant	<i>Sequoiadendron giganteum</i>	Yes	Evergreen	6-8	Medium	Large	Medium	Low	Low	Medium	Medium	Yes	Parks & Residential	does well in UT where winter temps aren't too low
Serviceberry, Western	<i>Amelanchier alnifolia</i>	Yes	Deciduous	3-8	Slow	Small	Medium	Medium	High	Low	High	???	Xeriscape	shrubby
Smoke Tree	<i>Cotinus obovatus</i>	Yes	Deciduous	4-8	Medium	Medium	Medium	Medium	High	Low	High	Yes	Ornamental	NOT smoke bush, <i>C. coggyria</i> , but similar - aesthetic
Tuliptree	<i>Liriodendron tulipifera</i>	Yes	Deciduous	4-9	Fast	Large	Medium	Low	Medium	Medium	Medium	Yes	Parks & Residential	flowers, fall color , can be a bit messy
Yellowwood, Kentucky	<i>Cladrastis kentukea</i>	Yes	Deciduous	4-8	Medium	Large	Medium	Medium	Medium	Medium	High	Yes	Parks & Residential	fall color
Aspen, Quaking	<i>Populus tremuloides</i>	w/Reservations	Deciduous	3-7	Medium	Large	Low	Medium	Medium	Medium	Medium	Yes	Parks & Residential	make sure this has room to spread by suckering (e.g. its own landscape bed), it will eventually get stressed/diseased, but you can cut down struggling stems & train up a replacement sprout fairly quickly.

