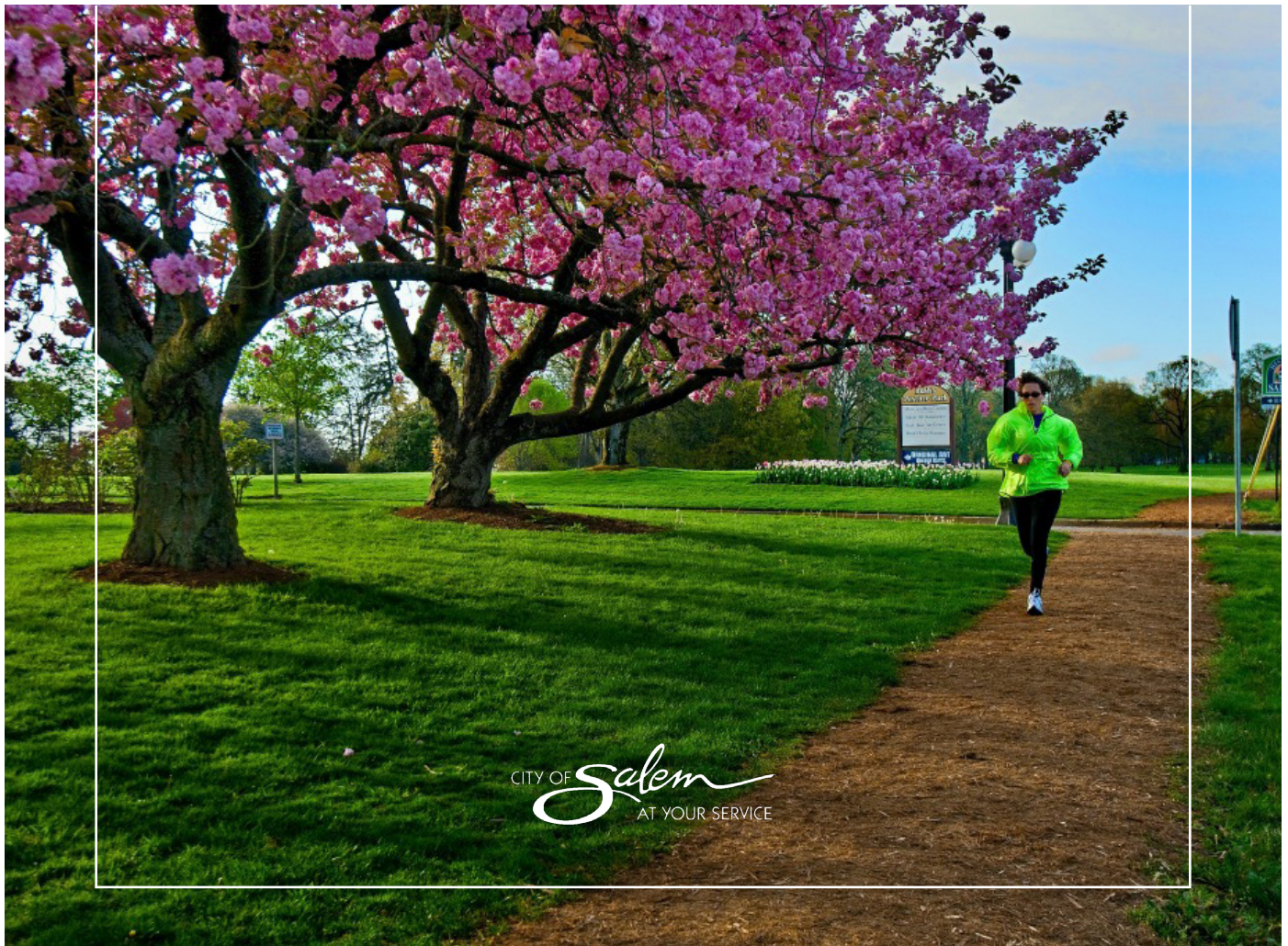


BUSH'S PASTURE PARK
and
DEEPWOOD ESTATE GARDENS

CULTURAL LANDSCAPE MANAGEMENT PLAN

APPENDIX I

Park Vegetation and Biodiversity Memorandum and Field Observations
(Salix Associates)



Bush's Pasture Park

Bruce Newhouse (Salix Associates), 9:30 - 4:30 (with Dean Apostol, MIG Inc., 11:50 – 3:00)

Date: 5 June 2020 (date of field visit)

Habitats visited (as requested): Oak woodlands (and some prairie and savanna) east of sports complex and Pringle Creek riparian; quick visit to oak slope near center of park

OAK WOODLANDS EAST of SPORTS COMPLEX

Trees

- Most are Oregon White Oak (*Quercus garryana* var. *garryana*): a few of these are open grown legacy trees, from historic oak savanna; no noticeable declines or dead branches.
- Most are woodland form: smaller and somewhat closely spaced.
- Some trees in northeast portion (especially) are Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*).
- Some oaks and Doug-firs have CA Ground Squirrel tunneling at base.
- In summary, the tree layer is in good shape, and possibly could be returned to savanna or prairie densities in some areas (see GLO mapping and oldest aerial photos available).

Shrubs

- Few shrubs are present.
- Snowberry (*Symphoricarpos albus*) is around the base of a few oaks; Poison-oak (*Toxicodendron diversilobum*) is around a very few.

Herbaceous plants

- Phenological change is extreme: area is well-known for mass flowering of native camas (mostly *C. leichtlinii* var. *suksdorfii*) under and near the oaks in early spring.
- Little evidence now of that camas flowering: some erect seed stalks, some areas where camas is dense and the senescent leaves now are flat on ground forming some flat areas; some perhaps dozens of square feet in size.
- In many areas where camas dominated in spring, most are now dominated by non-natives: somewhat invasive to very invasive.
- Perhaps a study could be undertaken (Willamette University?) to determine if the camas is able to reproduce coexisting with Tall Oatgrass and Shiny Geranium; and how long-lived individual plants are.
- In summary, herbaceous layer is in poor to extremely poor condition for most of the year and is continuing to decline. The area has much higher potential and could be managed for native plant and native pollinator habitat, but management to achieve those objectives would require a higher commitment and would be much more costly.

Significant habitats and species

- Only a portion of one day was spent in the eastern portion of the park, and a portion of that was spent circling the oak woodland slope west of the baseball diamond; rare species surveys were not conducted as a part of this project.

- The oak trees and some oak and prairie habitats (at least in their structure; and in the tree layer, their composition) are significant as legacies from once-widespread habitats in the Willamette Valley that now are rare
- Exceptions: more trees are present (see GLO mapping and historic photos) in the park and the understory now is dominated overwhelmingly (and increasingly) by non-native species.
- Several wildlife species associated with oak/prairie habitats are considered significant, and one was observed at the Park: White-breasted (Slender-billed) Nuthatch.
- One area of oak woodland has an understory with many native Fernleaf Lomatium (*Lomatium dissectum*) present as one of the dominants; this is rare in the Willamette Valley.
- Fernleaf Lomatium is a host plant for Anise Swallowtail butterfly and a nectar plant for many pollinator species; flowering appears to be rare, possibly because of increasing shade.
- One open area has small, remnant populations of native prairie species: a few clumps of Slender Wheatgrass (*Elymus trachycaulus* subsp. *trachycaulus*) were present, as well some California Oat Grass (*Danthonia californica*), (a somewhat common remnant, tolerant of some disturbance), and Bicolored Linanthus (*Leptosiphon bicolor*). Traces of other, somewhat tolerant, native prairie plants were noted. English Plantain (*Plantago lanceolata*), a moderately invasive non-native, dominates portions of this area.
- From a broader botanical perspective, these traces and habitat have low significance; for the park, however, and possibly for miles surrounding, it appears to be the area with the significant remnant prairie species. It could be greatly improved.
- Just south of the paved trail paralleling Mission St., just west of Pringle Creek, is a small population of Thin-leaved Peavine (*Lathyrus holochlorus*); the plant in the park with the highest rare status (Federal Species of Concern; Oregon Natural Heritage Program List 1). This population was previously known, and surveys could result in detection of more in the park.

THREATS

- The oak woodland, mixed woodland, and savanna understories currently are dominated by highly invasive non-native plants.
- The most widespread invasives in these areas are Tall Oatgrass (*Arrhenatherum elatius*), Orchardgrass (*Dactylis glomerata*) and Shiny (or Shining) Geranium (*Geranium lucidum*).
- Tall Oatgrass is extremely successful at competing and invading at least partially because it is rhizomatous and very vigorous. It will continue to spread. Control efforts have been attempted (successfully?) at Baskett Slough National Wildlife Refuge, where staff may have some valuable insights. One method used there is a mechanized process: a tractor mower cuts off tall grass stems high, and an herbicide wiper on the same piece of equipment immediately touches the top of each cut stem. Of course, this method cannot be used where herbicides are prohibited.
- Orchardgrass is a successful invader, but reasons for its success are less clear. It forms cespitose clumps. Some are infected with a fungal parasite (*Epichloe* sp.) that likely decreases reproduction but increases vigor of the infected clump.
- Shiny Geranium is successful because it is a good competitor, and may be allelopathic. (Meaning it releases chemicals into the soil which favor it over other plants.) It is an annual, and some seeds may germinate year-round during any wet period when it is not freezing, but mostly in late winter and spring. Pulling or hand flaming (carefully following safety regulations) may kill existing plants, but new ones will germinate, leaving more ungerminated seed in the ground. Some land managers simply have given up on trying to control it, hoping a biocontrol agent someday will be found.

BUSH'S PASTURE PARK & DEEPWOOD ESTATE GARDENS

- The two grasses are overwhelmingly dominant, and offer no nectar resources for native pollinators, and little other wildlife value except seeds for the CA Ground Squirrels. Shiny Geranium offers little nectar value, and often exists in the focus area as the only “understory” plant beneath the two invasive grasses.
- California Ground Squirrels are abundant, and apparently have few predators in the Park; they are a native species that appears, here, to be out of balance with natural population numbers.
- CG Squirrel burrows are abundant in some places and impacts on soils (disturbance) from excavation and use of holes appears to be significant in many areas.
- CG Squirrels likely consume all or nearly all acorns that fall to the ground in late autumn, making these unavailable for other species such as Western Gray Squirrels and Acorn Woodpeckers. They also likely eat fungi and may keep fungal sporophyte diversity low because of their artificially high population. They may impact butterflies and moths by eating larvae and ground nesting birds by eating nestlings. Research into and more observation of eating habits is needed.
- Eastern Gray Squirrels are common in the oaks in the Park and have a relatively high tolerance of humans; they may outcompete Western Gray Squirrels; if they occupy cavities, these may be cavities that otherwise would be suitable for Western Gray Squirrels, owls, bluebirds, or other bird species. Similarly, their impacts on WG squirrels and cavity nesting birds needs research in the park.
- No Western Gray Squirrels were seen (they can be elusive), but this habitat is suitable – especially the mixed Douglas-fir – Oregon White Oak area; they are listed sensitive by the Oregon Department of Fish and Wildlife, and are considered a Strategy Species in the Oregon Conservation Strategy.
- While visiting, a Red-tailed Hawk was noted circling over the Park with what appeared to be a squirrel in its talons; the oaks likely provide effective (and secretive) hunting perches, but high numbers of people using the park may prohibit regular use by raptors.
- Secondary impacts from humans were noted in the form of dogs and creation and use of unsanctioned trails .
- Noise from humans was noted mostly from the tennis courts and yelling and playing by walkers and playground users (usual park noises).
- Human presence itself can impact wildlife; some wildlife species are more sensitive, but others are less so.
- Feeding of squirrels by humans likely contributes to or causes the increased squirrel population and exacerbates their effects on the habitats (soil disturbance, acorn consumption, cavity use, etc.).
- Potential disease impacts to humans from the squirrel population could be researched (e.g., plague, see Verts and Callaway 1998, “Land Mammals of Oregon”).

PRINGLE CREEK RIPARIAN

- Some garbage and human waste were noted along the creek.
- Irish Ivy (*Hedera hibernica*) is common in the riparian area; regionally, it likely is as equally common or more so than English Ivy (*Hedera helix*). Practically, they have the same effects and are treated the same.
- Ivy preponderance reduces native diversity. Ivy (and many other invasive, non-natives) forms near-monocultures, replacing native plant diversity and the invertebrates that depend on those natives.
- Some areas of non-native, invasive Armenian Blackberry (*Rubus cf. armeniacus*) also decrease native diversity.
- Lesser Celandine (*Ranunculus ficaria* aka *Ficaria verna*) has been reported invading along the creek, and pulled by at least one volunteer; this infestation should be eradicated as soon as possible, as it is another

major threat to native plant diversity in the area of the Creek; it produces attractive, bright yellow flowers and goes dormant early in the growing season.

OAK WOODLAND NORTH OF RHODODENDRON GARDEN, WEST OF BASEBALL DIAMOND

- This area is different from oak areas to east of sports complex: sloping, with a shrub-dominated understory.
- Primary need at present is to keep invasive blackberry control measures proceeding, and otherwise keep native, herbaceous species from being overrun by woody species.
- Rhododendrons (originally from the Himalayas) were planted under oaks to south of here, even though they have different moisture requirements. After many years of a similar situation at Hendricks Park in Eugene, when a decline in oak health was noted, a watering regime was created for the benefit of both the native oaks and the planted rhododendrons. In general, watering is done frequently at low levels. Hendricks Park staff at the City of Eugene could be consulted for details.

RESTORATION OF NATIVE HABITATS

- This section primarily addresses the area to east of the sports complex.
- Invasive plant species have not stopped invading: each observance, including this one-day field visit, is a “snapshot” in time; succession will continue; without intervention and management, the Tall Oatgrass – Orchardgrass – Shiny Geranium likely will expand invasion, with a likely decrease in camas and increase in invasives over time. New infestations likely will appear.
- Late summer mowing will at least keep invasive blackberries at bay. Consider testing an earlier mowing in one grass-dominated area to see if it will result in maintaining camas, and a decline in the unwanted tall invasive grasses. (Perhaps Willamette University classes could monitor?) Communication with WU biology staff indicates recruitment of camas is not an issue, so mowing could be done some years before camas finishes setting seed. Mid-May to mid-June might be optimal. A second mowing to get the sprouts of the grasses might be needed.
- Seasonally smothering a test area after camas blooming also might be tested. Smother vegetation with heavy, pinned-down landscape cloth until nearby (unsmothered) camas begins emerging, then uncover to allow flowering.
- A good bottom line for pollinator health in the park is: provide a variety of locally native, site-appropriate plants in assemblages that are useful. The wider the variety of locally native plants provided in useful quantities in appropriate locations, the wider the diversity of invertebrates that can potentially be supported.
- In addition to nectar for the usually short adult stage, pollinators (with a small exception: hummingbirds, and occasionally, songbirds), need provisions for their entire life cycles to potentially be present on a site. This includes open ground for ground-nesters (underground tunnellers), soft stems of various diameters for stem nesters (left intact over winter), snags for wood nesters: all essential for nesting. Nectar for adults (usually, although some are carnivorous) and host plants (sometimes specific species of plants for specific species of pollinator) are essential.
- Like weather forecasting, predicting plant succession is easier in the short term, and is a rough estimation for the long term. It also is highly dependent on management regimes. Under
- In general, control of invasive non-natives needs significant budget allocations and volunteer involvement. Invasive species likely will be an increasing part of future habitats unless enormous control

efforts are implemented to retain locally native plants and the invertebrates that depend on them. Many of these plants have been extirpated from the site and will need reintroduction.

- A "Friends of Bush's Pasture Park" group is needed to mobilize volunteer labor to supplement City of Salem efforts
- More educational signage is needed beyond camas signs at entrance and tiny sign on bat box.
- High human use and proximity of dwellings and other uses may preclude using fire, which likely was used for several thousand years in the area to maintain native diversity in oak and prairie habitats.
- Mechanized mowing, mechanical thermal treatment (such as propane or hot water), hand propane burner treatment, brush hog or weedeater, smothering (landscape cloth or heavy plastic), solarization (heavy plastic), livestock, and other alternatives to pesticides can be researched as initial control and ongoing maintenance of invasive plant species.
- Early Detection / Rapid Response (EDRR) should be employed for preventing establishment of invasive plant species. Immediate eradication is essential.
- Specialist native pollinators that rely on a single native species (or a very limited group of related native species) are lost when native plant diversity is lost; generalist native pollinators are more adaptable, some even having their needs met by non-native species if those species produce nectar.
- The habitats surveyed east of the sports complex offer very few native plant resources; planning and managing for more pollinator food, host plants and nesting resources could at least partially restore native plant species and native pollinators to the park.
- Restoration of structure could consist of thinning any trees competing with legacy oaks, and perhaps shrinking oak woodland areas.
- If some woodlands are reduced in tree density to restore prairies and savannas, few to no trees would remain in prairies, and only a few per acre in savanna.
- Oregon White Oaks that have grown up in woodlands will retain a narrow shape if released from competition; if scattered prairie or savanna "wide" oaks (much better for wildlife) are desired where oak woodlands now exist, all trees could be cut and a stump could be left to re-sprout wherever a tree is desired; one or two sprouts from the stump (which should have been cut to ground level) could be managed as the new "trees"; the existing root system will "jump start" the new sprout(s).
- If extensive restoration is undertaken, it might be more successful if done in 1/4 to 1/3 of the area (or less) at a time; let the first phase inform second phase (adaptive management); south 1/3 might be a good start; could be only the oak/prairie areas, or could include Pringle Creek; if the former, the entire stretch of Pringle Creek could be done as one, separate project.
- Identify any areas dominated by natives to "save," and seed collect heavily from all desired native species before commencing restoration.
- "Nudge" restoration also could be a possibility, for example, introduce nectar plants into "remnant prairie" area; introduce clumps of Tall Oregongrape (*Berberis aquifolium*, Oregon State Flower) on edges of oak habitats, where they could be mowed around.
- See salixassociates.com/resources for more information on pollinator plants

CITY OF *Salem*
AT YOUR SERVICE

Prepared by



www.migcom.com



WillametteCRA