

# NORTHGATE:

RECOMMENDATIONS FOR RE-INDIGENIZING URBAN  
LANDSCAPES FOR CLIMATE RESILIENCE



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# CONTENTS

## **0.1 CLIMATE RISKS IN NORTHGATE - 01**

Urban Heat Island Effect - 01

## **0.2 PRECEDENTS - 03**

Examples from Lo-TEK by Julia Watson - 03

Jingkieng Dieng Jri Living Root Bridges - 03

Kihamba Forest Gardens - 04

Zuni Waffle Gardens - 05

Totora Reed Floating Islands - 06

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Fond Du Lac Band Forest Carbon Project - 07

Indian Mounds Cultural Messaging Plan - 08

## **0.3 INDIGENOUS ECOSYSTEMS - 11**

Coast Salish Food Forests - 12

Upland Bog and Wetlands - 13

Upland Prairies - 14





## **0.4 EXISTING PLANT COMMUNITIES - 15**

Barton Woods Identifiable Plant Species - 15

Thornton Creek Identifiable Plant Species - 17

Historical v. Present Day Communities - 18

Climate Resilience Plant Matrix - 20

## **0.5 SITE RECOMMENDATIONS - 23**

Connecting Barton Woods to Thornton Creek - 24

Barton Woods - 26

Thornton Creek - 28

Potential Connections - 30

## **0.6 POSSIBLE CONTEXTS FOR ADATATION - 33**

Adapting Plant Lists for Different Contexts - 33

Indian Mounds Cultural Messaging Plan - 33

Public Right of Way - 36

Private Yards - 37

Commercial Spaces - 39

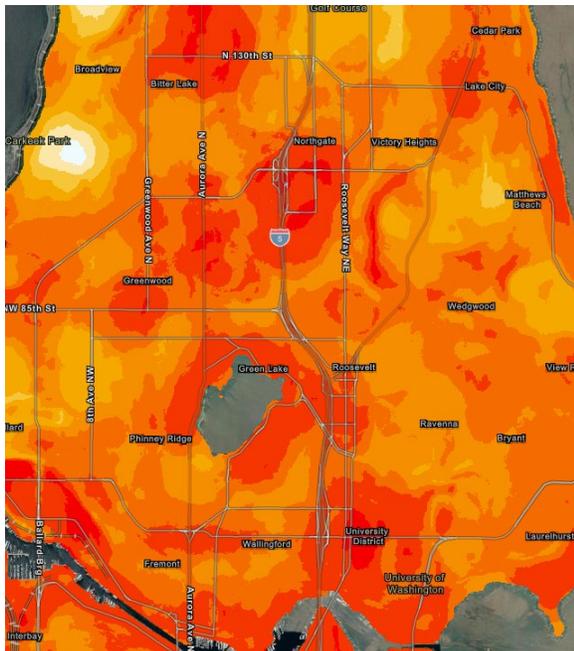
## **0.7 SOURCES - 40**

# 0.1 CLIMATE RISKS IN NORTHGATE:

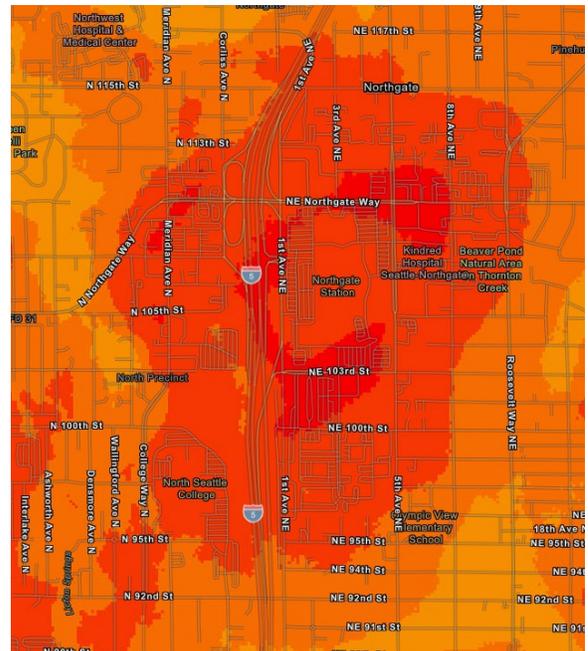
## URBAN HEAT ISLAND EFFECT

Northgate is particularly susceptible to the urban heat island effect when compared to surrounding neighborhoods in North Seattle. This is due to the way the built environment developed over time within the neighborhood. Because it is a more urbanized area than the surrounding low density housing, including large swaths of surface parking and large buildings, there is significantly lower tree canopy density in the neighborhood.

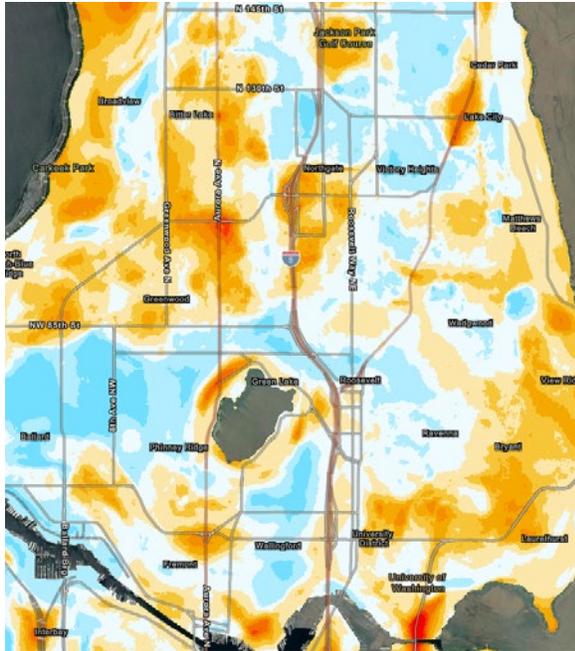
This, coupled with the fact that Northgate is more culturally diverse and more economically disadvantaged than most of North Seattle, it continues the narrative that is common in cities - that the brunt of the effects of climate change are placed on the most socioeconomically disadvantaged in our society.



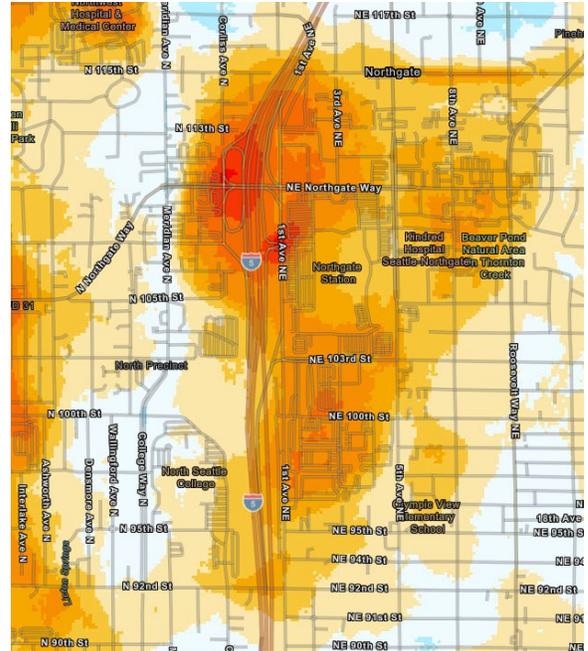
Morning Heat Index - North Seattle



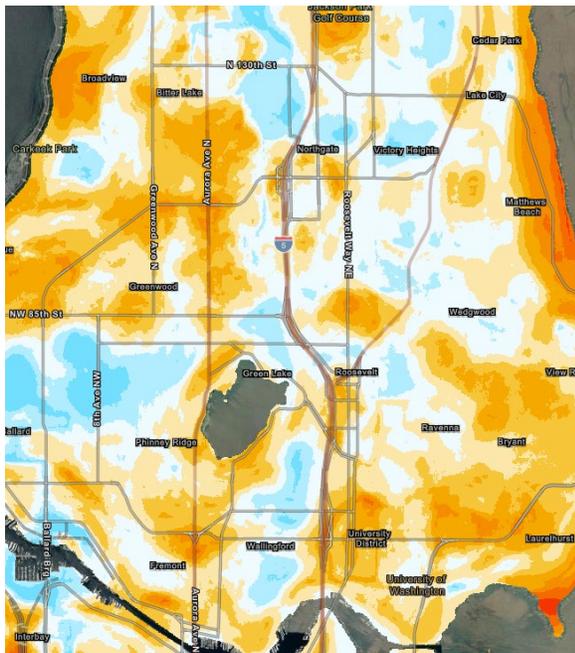
Morning Temperature Model - Northgate



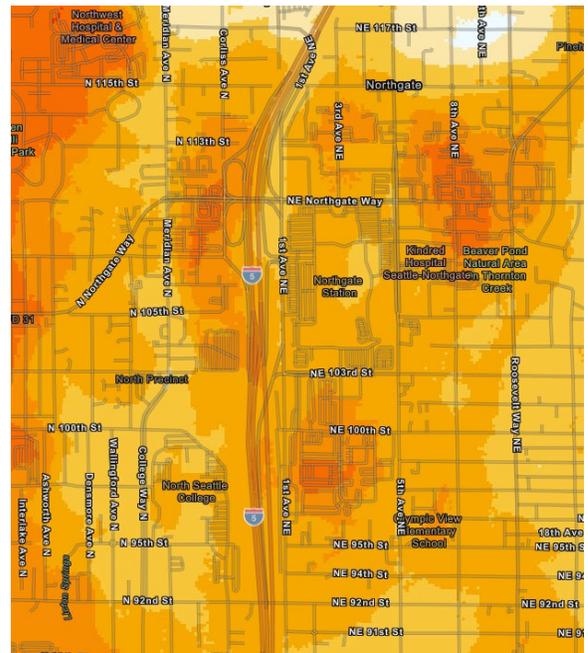
Afternoon Heat Index - North Seattle



Afternoon Temperature Model - Northgate



Evening Heat Index - North Seattle



Evening Temperature Model - Northgate

**Notable areas impacted by urban heat island: Northgate Way/I-5 interchange, Northgate Way/5th Ave Intersection, parking lots east of Link station, and office parks south of 100th St.**

# 0.2 PRECEDENTS:

## EXAMPLES FROM LO-TEK - JULIA WATSON

The projects highlighted by Julia Watson provide an interesting insight into how we can look to Indigenous tech and sciences to inspire designs, but lacks in how to apply these design interventions in a modern context. As one of the few design-oriented collections of Indigenous design strategies, it provides a starting point to reflect on how Indigenous peoples from around the world have crafted strategies that work in symbiosis with nature. Because she does not approach the precedents with a distinct way to propose design implementation, it does border on appropriative without direction for how these interventions could be proposed.

### JINGKIENG DIENG LIVING ROOT BRIDGES

Khasi Tribes - Meghalaya - Northern India



Image Source: Dwell Magazine

- Presented as an example for reducing urban heat island effects by increasing tree canopy cover
- Trees are trained to grow across flood areas to connect villages that become forest islands during monsoons
- Located in a place with some of the highest monsoon rain levels on earth

## **KIHAMBA FOREST GARDENS**

Chagga Tribe - Mount Kilimanjaro, Tanzania



Image Source: Dwell Magazine

- **Agroforestry System**
- **Supports forest biodiversity & human population growth**
- **Symbiotic approach to crafting complex ecosystems that are also agriculturally productive**
- **Relationship to Coast Salish Food Forests**
- **Precedent for using crafted ecosystems for production and urban heat island mitigation**

## **ZUNI WAFFLE GARDENS**

**Zuni People - Zuni Pueblo, New Mexico, USA**



Image Source: Dwell Magazine

- **Sunken Plots that catch & hold water during rain events to foster crop growth**
- **Combats unpredictable water availability**
- **Creates ideal environment to grow three sisters plantings (Corn, Beans, Squash) which grows in symbiosis and contributes to a balanced diet**
- **Watson proposes the idea that interventions like this could be integrated into architectural features like green roofs**

# TOTORA REED FLOATING ISLANDS

Uros Tribe - Lake Titicaca, Bolivia & Peru



Image Source: Dwell Magazine

- Floating cities built & developed over thousands of years out of necessity to protect from attacks from surrounding peoples
- Fully biodegradable materials used to create floating cities
- Responds to sea level rise and provides a precedent that can be integrated into coastal cities to respond to climate change

## CLOSING REGARDS ON LO-TEK

- The Kihamba Forest Gardens are an interesting precedent for integrating agroforestry into urban areas, and how working in symbiosis with nature by crafting intentional ecosystems creates a more resilient forest system that's mutually beneficial to both the human and non-human
- Further digging into finding design projects that have integrated these or other re-indigenizing principles into their designs, particularly in urban contexts, is necessary

# FOND DU LAC BAND FOREST CARBON PROJECT

Fond Du Lac Band of Lake Superior Chippewa - Minnesota, USA



Image Source: The Nature Conservancy

- **Indigenous management of forest to protect indigenous ecosystems**
- **Southern reaches of boreal forests - highly susceptible to the effects of climate change**
- **In 2020, 9000 acres of tribal forests became dedicated to carbon sequestration, being led by the National Indian Carbon Coalition**
- **Will sequester more than 77 metric tons of carbon dioxide per acre**
- **Carbon credits are sold to buyers who wish to offset carbon emissions**
- **Intentional management regimes of forest ecosystems allow for plants and soil to sequester more carbon**
- **Intentional management of invasive species and species who historically did not occupy these lands, like beaver, possums, and the emerald ash borer.**
- **A great precedent for the shifting of ecosystem management to Indigenous communities to foster greater climate impacts and protect fragile ecosystems**
- **“Fond du Lac doesn’t manage their forests, they’re in relationship with them – a relationship that is foundational to their culture and ways of life.” - The Nature Conservancy**

# INDIAN MOUNDS CULTURAL MESSAGING PLAN

City of St. Paul - St. Paul, Minnesota, USA



Image Source: Quinn Evans

- **A great example of how to integrate indigenous principles into a design and planning project**
- **Integrating indigenous planting schemes into existing urban contexts**
- **Can be used as a way to imagine integrating plantings into ROW and other public areas**
- **Precedent for integrating the historical and cultural significance of place into design elements in a way that pays respects to this significance**
- **Utilizing culturally and spiritually significant plant species to re-integrate indigenous ecosystems - organizing phasing plan into the reestablishment of ecosystems over time, in the way that supports the resilience of the ecosystems and removes the existing 'traditional' park plantings**



Image Source: Ten x Ten

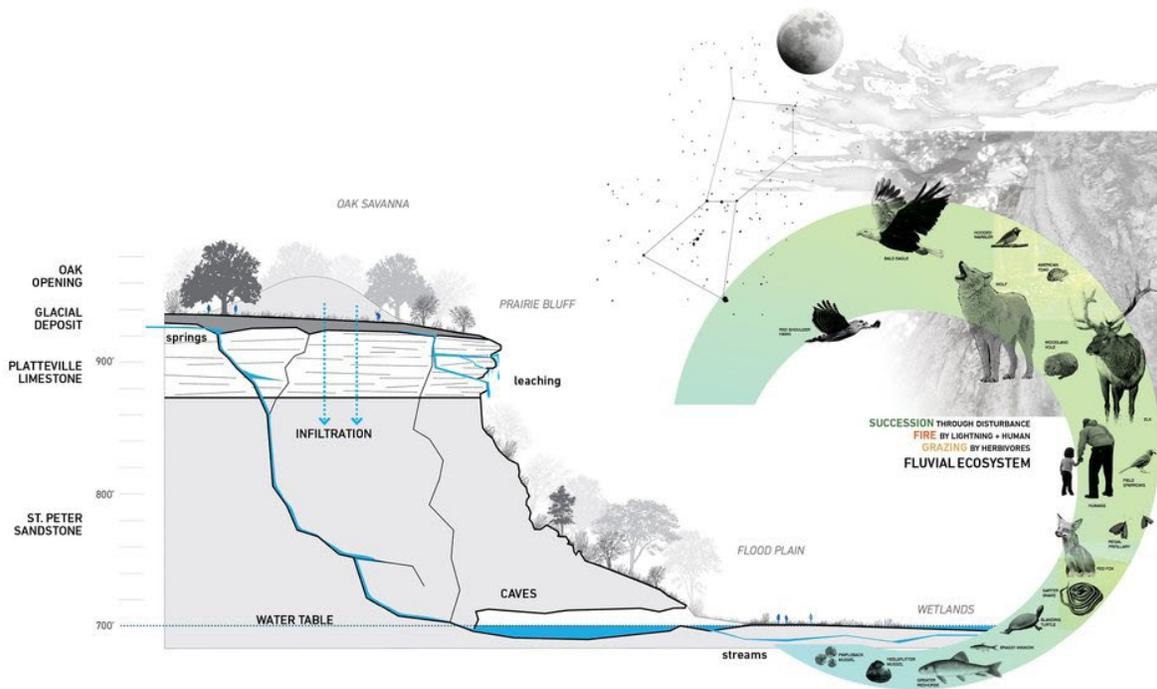


Image Source: Ten x Ten

Designing landscapes that both respect the local ecological systems while also maintaining a connection with the cosmology of the indigenous communities this project represents.



Image Source: Ten x Ten

Part of the messaging plan is to create slowly evolving indigenous planting schemes that reestablish the native prairie ecosystem into the space along trails throughout. This creates an ecosystem threshold that provides a transition into these reestablished ecosystems on the site.

As a precedent, the project provides a great framework for how to redesign urban spaces through indigenous planning methods with planting schemes that represent the plant communities that respect the historic ecologies that once existed on the site while reestablishing the capacity for the local indigenous peoples to have stewardship over this very sacred burial ground.

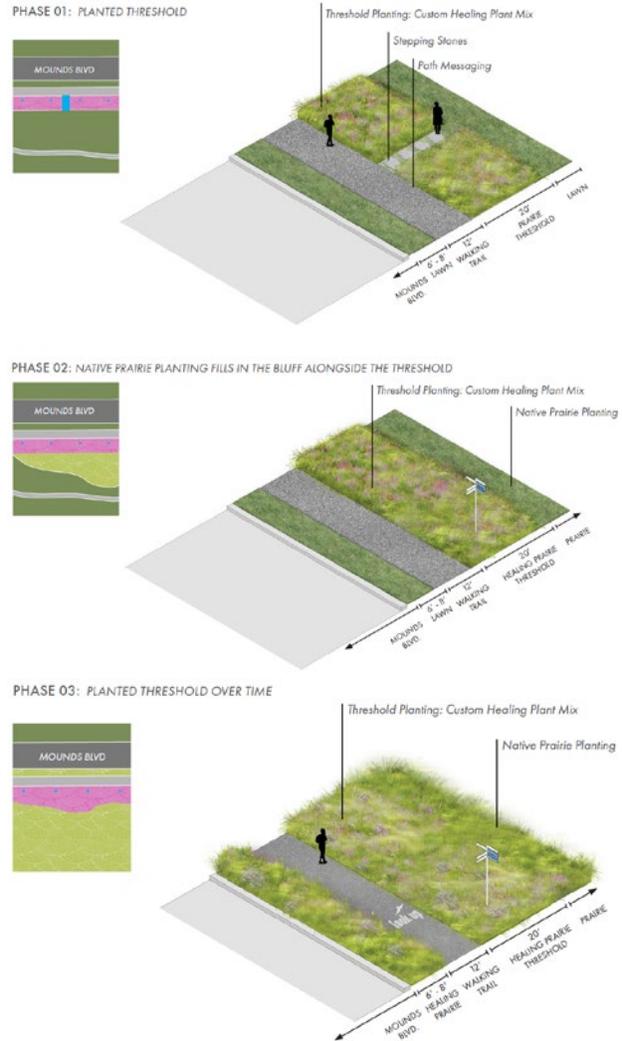


Image Source: Ten x Ten



Image Source: Quinn Evans

The planting schemes utilize a selection of plants that carry both cultural & spiritual significance and perform necessary ecosystem functions.

# 0.3 INDIGENOUS ECOSYSTEMS OF THE PUGET LOWLANDS:

## NOVEL ECOSYSTEMS OF NORTHGATE AREA

The Northgate area is the historic source of the headwaters of Thornton Creek, which is currently the last salmon-bearing waterway in contemporary Seattle. What is now the site of the Northgate Center redevelopment project and a large influx of new urban development was once a large wetland and prairie with periphery forests that surrounded the area. The geography functions as a bowl, collecting water from the surrounding hills which lead to the natural establishment of the wetland areas. This area was highly significant to the indigenous communities that used to live on the site. The site's name in Lushootseed is "tlooqw-QEED" which translates to "Bald Head" and was a vital summer hunting and cultivating site that different longhouse villages from the waterfronts of both Puget Sound and Lake Washington would make temporary summer homes at for resource gathering. The ecosystems on the site were deeply and intentionally curated to maximize their output of food and materials, with food-bearing plants that were both a resource and a lure for animals to create the ideal hunting grounds. Because of this, there is a rich ecological history on the site. In this history, three novel ecosystems stand out: Coast Salish Food Forests, Upland Bog and Wetlands, and Upland Prairies.

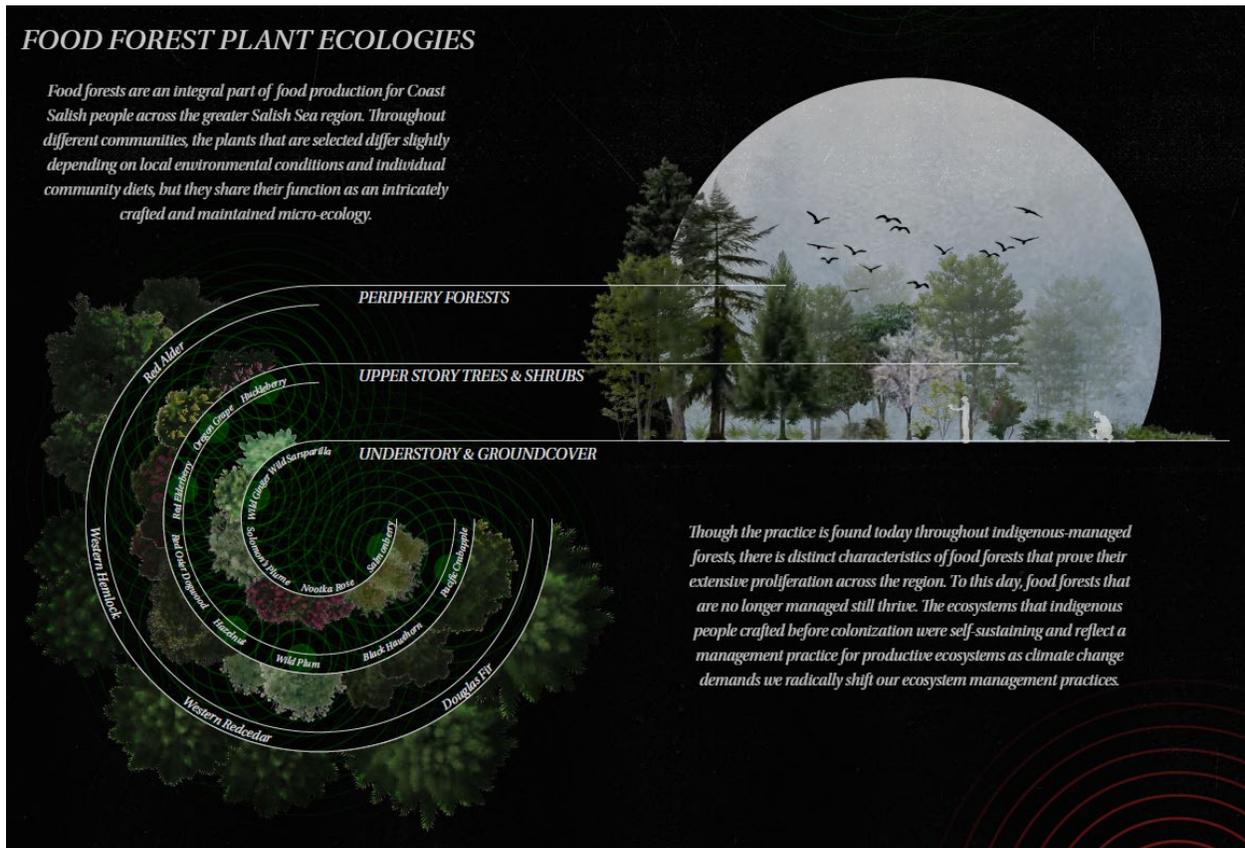


Image Source: Darryl Vallejos - "History Lines"

# COAST SALISH FOOD FORESTS

## FOOD FOREST PLANT ECOLOGIES

Food forests are an integral part of food production for Coast Salish people across the greater Salish Sea region. Throughout different communities, the plants that are selected differ slightly depending on local environmental conditions and individual community diets, but they share their function as an intricately crafted and maintained micro-ecology.



Though the practice is found today throughout indigenous-managed forests, there is distinct characteristics of food forests that prove their extensive proliferation across the region. To this day, food forests that are no longer managed still thrive. The ecosystems that indigenous people crafted before colonization were self-sustaining and reflect a management practice for productive ecosystems as climate change demands we radically shift our ecosystem management practices.

Image Source: Darryl Vallejos - "History Lines"

The Food Forest ecosystems were an intentionally planted array of food-bearing plants that maximized productivity while also performing as a fully functioning standalone ecosystem. The plants are categorized in three different levels that create a ringed ecosystem:

Periphery Forests that transition the upland forest ecosystems into the food forest space and often contain Douglas Fir, Western Redcedar, Western Hemlock, and Red Alder, amongst other tree species.

The Upper Story Trees & Shrubs that make up a large number of the plants found in the food forests are Pacific Crabapple, Black Hawthorn, Wild Plum, Hazelnut, Red Osier Dogwood, Red Elderberry, Oregon Grape, and Huckleberry.

The innermost layer, the Understory, often had Salmonberry, Nootka Rose, Solomon's Plume, Wild Ginger, and Wild Sarsparilla, amongst many others.

# UPLAND BOG AND WETLANDS

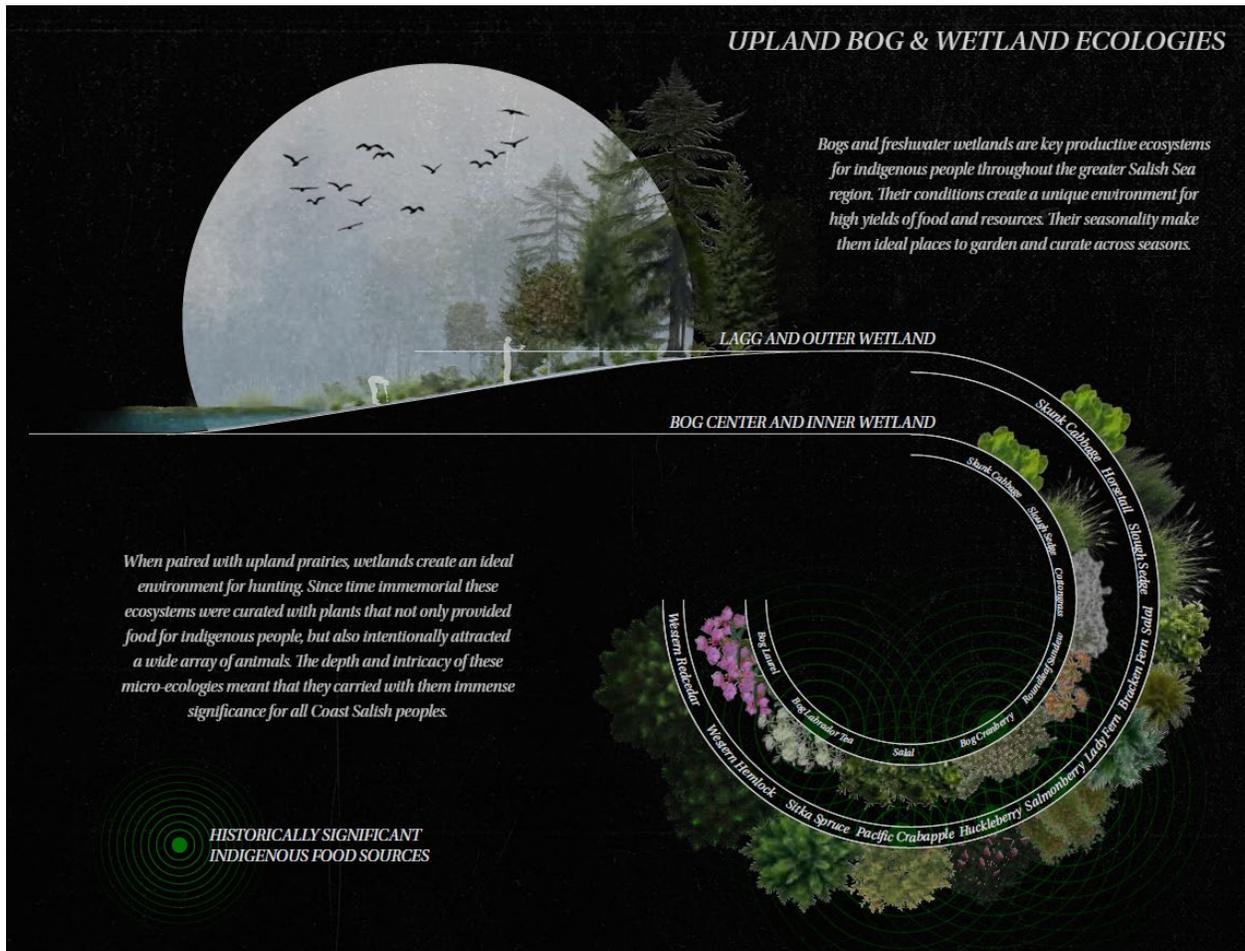


Image Source: Darryl Vallejos - "History Lines"

The Upland Bog and Wetlands ecosystem were incredibly important in the Northgate area, as the water that created this ecosystem was the source for Thornton Creek. This incredibly productive ecosystem was the source of a vast number of useful and significant plants to the indigenous people who cultivated and harvested them.

The Lagg and Outer Wetland often contained Western Redcedar, Western Hemlock, Sitka Spruce, Pacific Crabapple, Huckleberry, Salmonberry, Lady Fern, Bracken Fern, Salal, Slough Sedge, Horsetail, and Skunk Cabbage.

The Bog and Inner Wetland often contained Skunk Cabbage, Slough Sedge, Cottongrass, Redleaf Sundew, Bog Cranberry, Salal, Bog Labrador Tea, and Bog Laurel amongst others.

## UPLAND PRAIRIES



Image Source: Darryl Vallejos - "History Lines"

**The Upland Prairies were also an integral ecosystem in the Northgate area. The cultivation of these ecosystems adjacent to the Wetland and Periphery Forests created a vast and productive ecosystem that was beneficial for hunting and resource cultivation. These ecosystems today are very sensitive to climate change and are in decline throughout the greater Salish Sea region.**

**The plants that were often found in these ecosystems include Garry Oak, Vine Maple, Flowering Dogwood, Snowberry, Ocean Spray, Camas, Fawn Lilies, Lupine, Yellow Montane Violet, Yarrow, Kinnikinnick, Foxglove, and Salal, amongst a larger selection of trees, wildflowers, fruit-bearing shrubs, and native grasses.**



# 0.4 EXISTING PLANT COMMUNITIES:

## BARTON WOODS PLANT COMMUNITIES

Barton Woods exists as one of the few large green spaces found in the Northgate area. It also sits adjacent to the wetlands found on the North Seattle College campus which is what remains of the historic wetlands that once existed here. The plantings found throughout the site are a mix of natives, non-natives that were common for park design in the 20th century, and invasives that have slowly encroached on the site, most notably Himalayan Blackberry, a hardy and fast-spreading species that overtakes the forested edges of nearly the entire park.

### BARTON WOODS IDENTIFIABLE PLANT SPECIES

TREES	SHRUBS	GROUNDCOVER
Black Locust	Osoberry	Himalayan Blackberry
Cascara/Buckthorn	Oregon Grape	Herb Robert
Common Alder	Common Holly	Creeping Bentgrass (?)
Black Cottonwood	Sword Fern	Common Velvet Grass
Western White Pine		Reed Canary Grass
Norway Maple		Bitersweet Nightshade
Western Redcedar		English Ivy
Douglas Fir		Perennial Pea
Bigleaf Maple		

TREES		
Common Hawthorn		
Sitka Spruce		
Pacific Madrona		
Pacific Willow		
Scotch Pine		
Alaska Yellow Cedar		Native
Ponderosa Pine		Non-Native Naturalized
Western Hackberry		King County Weeds of Concern
Tulip Tree		Non-Regulated Noxious Weeds

The native species found throughout the park seem as though they were planted long ago with varying degrees of intention in their placement, but have over time been managed less and don't create a cohesive ecosystem that relates to the ecological history of the site. There are meadows throughout the site, but are mostly covered in what appeared to be Creeping Bentgrass or another type of successive grass species that grows when the original planted lawn has been overtaken. This, along with the "throw anything and see what sticks" kind of palette with the trees seems like this park hasn't been thoroughly examined from a holistic or ecological perspective in quite a while, and also needs intervention to remove the sheer volume of Himalayan Blackberry and Ivy that have taken over large swaths of the site.



# THORNTON CREEK PLANT COMMUNITIES

The Thornton Creek area immediately northeast of the intersection of NE 103rd St and 5th Ave NE is more intricately managed than Barton Woods, and that shows from the prevalence of natives in the area. There are also a number of newer plants with protection throughout that show the intentional management of the ecosystem here. There is a prevalence of invasives, particularly along 105th St, where the plants seem to become less managed as Thornton Creek approaches the Beaver Pond Natural Area. This makes sense, as the Thornton Creek Water Quality Channel is on the other end of this daylight portion of the creek and was established much more recently than the beaver pond or Barton Woods.

## THORNTON CREEK IDENTIFIABLE PLANT SPECIES

TREES	SHRUBS	GROUNDCOVER
Douglas Fir	Snowberry	Skunk Cabbage
Bigleaf Maple	Oregon Grape	English Ivy
Vine Maple	Western Sword Fern	Horsetail
Sweetgum	Lady Fern	Reed Canary Grass
Western Redcedar	Rose Spirea	
Flowering Dogwood	Bindweed	
Oregon Ash	American Silverberry	
Western Hemlock	Cherry Laurel	
Mountain Ash	Salmonberry	
Black Cottonwood	Wintergreen	

	SHRUBS	
	Purple Flowering Raspberry	
	Elderberry	
	Field Rose (?)	Native
	Huckleberry	Non-Native Naturalized
	Nipplewort	King County Weeds of Concern
	Spotted Jewelweed	Non-Regulated Noxious Weeds

# HISTORICAL v. PRESENT DAY PLANT SPECIES

## BARTON WOODS

Barton Woods has a large number of native plant species currently on the site, most notably in the prevalence of a diverse tree canopy, and has a small number of understory plants that are also native. The most notable difference is in the open prairie areas, which are mostly covered in lawn and aren't filled with a diversity of historically significant prairie ecosystem plants. Knowing that these plants aren't present on the site highlights the most noticeable gap between what these ecosystems once looked like and what they are today. The other glaring difference, of course, is the almost complete absence of a functional wetland ecosystem. There is wetlands located on the North Seattle College campus along Interstate 5, but beyond that, where Barton Woods stands, the small wetland areas are mostly filled with Reed Canary Grass (*Phalaris arundinacea*) which is a known invasive species and doesn't serve the local ecosystem.

Because of the lack of understory plant species, the area does little to serve the pollinator population in the area, which means the ecologically beneficial function they serve is distinctly lacking. Without these plants, especially the fruit-bearing plants, this means there is also little to serve wildlife in any significant way. The most prevalent fruit-bearing species on the

site is the Himalayan Blackberry, which is a known noxious weed in western Washington, and outcompetes other natives so aggressively, and doesn't allow for the prevalence of these missing components of the ecosystem here.

## THORNTON CREEK

Thornton Creek is more intentionally planted than Barton Woods, and has a large diversity of native species that have historically been found together. The impact on the ecosystem here was immediately noticeable in the large amount of insects and small mammals in the area. There was also a noticeable lack in the prevalence of Himalayan Blackberry, which wasn't found on the site. There are, of course, invasives still prevalent, and English Ivy could be seen slowly encroaching on the site. The prevalence of invasives along 105th St was also noticeable, as unmanaged roadsides tend to be sites where invasive species thrive best. The diversity of invasives was highest here between both sites, where a diverse number of species were located.

The health of the native species on the site was also of significance, as most of the plants seemed to be in good health. The localized reduction of heat island effects due to shade and proximity to the daylight creek makes for a microclimate that stabilizes the temperature, even now in the height of summer. The most notable native performing well was the Skunk Cabbage (*Lysichiton americanus*) which was found throughout the site in the creek bed and along the riparian zone, which is its native habitat.



Image Source: Joe Yan

# CLIMATE RESILIENCE PLANT MATRIX

Given the existing vs historical plant communities that exist on both sites, as well as the considerations for climate resilience in the future, a plant matrix that synthesizes both native and non-native plants and their associated ecosystems has been developed. This gives a clearer picture of what non-native plants should be considered for removal and more importantly which native species should be reintroduced based on ecosystem function and climate resilience. This is by no means a definitive or exhaustive list, and the climate vulnerability rating is merely speculative based on the volatile and unpredictable changes that lie ahead as a result of climate change, but given these projections as well as an understanding of native ecosystems, this list provides a framework for plants that can continually provide their essential ecosystem services in the face of climate change.

COMMON NAME	SCIENTIFIC NAME	PLANT TYPE	CLIMATE VULNERABILITY	NATIVE/ INVASIVE STATUS	ECOSYSTEM DESIGNATION
Douglas Fir	<i>Pseudotsuga menziesii</i>	Tree	Moderate-High	Native	Subalpine Forests
Western Redcedar	<i>Thuja plicata</i>	Tree	Low	Native	Subalpine Forests
Western Hemlock	<i>Tsuga heterophylla</i>	Tree	Moderate	Native	Subalpine Forests
Red Alder	<i>Alnus rubra</i>	Tree	Moderate-High	Native	Subalpine Forests
Pacific Crabapple	<i>Malus fusca</i>	Tree	Moderate	Native	Scrub-Shrub Wetlands
Black Hawthorn	<i>Crataegus douglasii</i>	Tree	Low-Moderate	Native	Subalpine Forests
Wild Plum	<i>Prunus americana</i>	Tree	Unknown/Low	Native	Prairie
Hazelnut	<i>Corylus americana</i>	Tree	Unknown	Native	Subalpine Forests
Sitka Spruce	<i>Picea stitchensis</i>	Tree	Moderate-High	Native	Subalpine Forests
Garry Oak	<i>Quercus garryana</i>	Tree	High	Native	Scrub-Shrub Wetlands
Vine Maple	<i>Acer circinatum</i>	Tree	Low	Native	Subalpine Forests
Oregon Ash	<i>Fraxinus latifolia</i>	Tree	Moderate	Native	Subalpine Forests
Black Locust	<i>Robinia pseudoacacia</i>	Tree	Moderate	"Weed of Concern"	Non-Native
Cascara	<i>Frangula purshiana</i>	Tree	Moderate	Native	Prairie
Common Alder	<i>Alnus glutinosa</i>	Tree	Unknown	"Weed of Concern"	Non-Native
Black Cottonwood	<i>Populus trichocarpa</i>	Tree	Unknown	Native	Scrub-Shrub Wetlands
Western White Pine	<i>Pinus monticola</i>	Tree	Moderate	Native	Subalpine Forests
Norway Maple	<i>Acer platanoides</i>	Tree	Low	"Weed of Concern"	Non-Native
Bigleaf Maple	<i>Acer macrophyllum</i>	Tree	Moderate	Native	Subalpine Forests
Common Hawthorn	<i>Crataegus monogyna</i>	Tree	Moderate	Non-Regulated Noxious Weed	Non-Native
Pacific Madrona	<i>Arbutus menziesii</i>	Tree	Moderate	Native	Subalpine Forests
Pacific Willow	<i>Salix lucida</i>	Tree	Unknown	Native	Scrub-Shrub Wetlands
Scotch Pine	<i>Pinus sylvestris</i>	Tree	Moderate	Naturalized	Non-Native
Alaska Yellow Cedar	<i>Cupressus nootkaensis</i>	Tree	Unknown	Native	Subalpine Forests
Ponderosa Pine	<i>Pinus ponderosa</i>	Tree	High	Native	Subalpine Forests
Western Hackberry	<i>Celtis occidentalis</i>	Tree	Low	Native	Subalpine Forests

Tulip Tree	<i>Liriodendron tulipifera</i>	Tree	High	Native	Subalpine Forests
Sweetgum	<i>Liquidambar styraciflua</i>	Tree	High	Naturalized	Non-Native
Flowering Dogwood	<i>Cornus florida</i>	Tree	Moderate	Native	Scrub-Shrub Wetlands
Mountain Ash	<i>Sorbus americana</i>	Tree	Unknown	Native	Subalpine Forests
Red Osier Dogwood	<i>Cornus sericea</i>	Shrub	Unknown/Low	Native	Scrub-Shrub Wetlands
Red Elderberry	<i>Sambucus Racemosa</i>	Shrub	Unknown/High*	Native	Subalpine Forests
Oregon Grape	<i>Mahonia aquifolium</i>	Shrub	Low	Native	Subalpine Forests
Huckleberry	<i>Vaccinium membranaceum</i>	Shrub	Moderate	Native	Subalpine Forests
Salmonberry	<i>Rubus spectabilis</i>	Shrub	Unknown/Low*	Native	Subalpine Forests
Lady Fern	<i>Athyrium filix-femina</i>	Shrub	Unknown/Low	Native	Subalpine Forests
Bracken Fern	<i>Pteridium aquilinum</i>	Shrub	Unknown/Low	Native	Scrub-Shrub Wetlands
Western Sword Fern	<i>Polystichum munitum</i>	Shrub	Unknown/Low	Native	Subalpine Forests
Bog Laurel	<i>Lakima polifolia</i>	Shrub	Unknown	Native	Scrub-Shrub Wetlands
Snowberry	<i>Symphoricarpos albus</i>	Shrub	Unknown/Low	Native	Scrub-Shrub Wetlands
Ocean Spray	<i>Holodiscus discolor</i>	Shrub	Unknown/Low*	Native	Scrub-Shrub Wetlands
Osoberry	<i>Oemleria cerasiformis</i>	Shrub	Unknown/Low*	Native	Subalpine Forests
Common Holly	<i>Ilex aquifolium</i>	Shrub	Unknown/Low	"Weed of Concern"	Non-Native
Rose Spirea	<i>Spiraea douglasii</i>	Shrub	Unknown/High*	Native	Scrub-Shrub Wetlands
Bindweed	<i>Convolvulus arvensis</i>	Shrub	Unknown/Low*	Non-Regulated Noxious Weed	Non-Native
American Silverberry	<i>Elaeagnus commutata</i>	Shrub	Unknown/Moderate*	Native	Subalpine Forests
Cherry Laurel	<i>Prunus laurocerasus</i>	Shrub	Unknown/Moderate*	"Weed of Concern"	Non-Native
Wintergreen	<i>Gaultheria procumbens</i>	Shrub	Unknown/Moderate*	Naturalized	Non-Native
Purple Flowering Raspberry	<i>Rubus odoratus</i>	Shrub	Unknown/Low*	"Weed of Concern"	Non-Native
Elderberry	<i>Sambuca nigra</i>	Shrub	Unknown/Low*	"Weed of Concern"	Non-Native
Field Rose	<i>Rosa arvensis</i>	Shrub	Unknown/Moderate*	Unknown	Non-Native
Nipplewort	<i>Lapsana communis</i>	Shrub	Unknown/Low*	Non-Regulated Noxious Weed	Non-Native
Spotted Jewelweed	<i>Impatiens capensis</i>	Shrub	Moderate	Non-Regulated Noxious Weed	Non-Native
Nootka Rose	<i>Rosa nutkana</i>	Groundcover	Unknown/Moderate*	Native	Scrub-Shrub Wetlands
Solomon's Plume	<i>Maianthemum racemosum</i>	Groundcover	Unknown/Low*	Native	Scrub-Shrub Wetlands
Wild Ginger	<i>Asarum canadense</i>	Groundcover	Unknown/Moderate*	Native	Scrub-Shrub Wetlands
Wild Sarsaparilla	<i>Aralia nudicaulis</i>	Groundcover	Unknown/Moderate*	Native	Scrub-Shrub Wetlands
Salal	<i>Gaultheria Shallon</i>	Groundcover	Low-Moderate	Native	Subalpine Forests
Slough Sedge	<i>Carex obnupta</i>	Groundcover	Unknown/Low*	Native	Scrub-Shrub Wetlands
Horsetail	<i>Equisetum arvense</i>	Groundcover	Unknown/Low	Native	Scrub-Shrub Wetlands
Skunk Cabbage	<i>Symplocarpus foetidus</i>	Groundcover	Unknown/Moderate*	Native	Scrub-Shrub Wetlands
Bog Labrador Tea	<i>Ledum groenlandicum</i> Oeder	Groundcover	Unknown/Low*	Native	Scrub-Shrub Wetlands
Bog Cranberry	<i>Vaccinium oxycoccos</i>	Groundcover	Unknown/High*	Native	Scrub-Shrub Wetlands
Roundleaf Sundew	<i>Drosera rotundifolia</i>	Groundcover	Unknown/Moderate*	Native	Scrub-Shrub Wetlands
Cottongrass	<i>Eriophorum angustifolium</i>	Groundcover	Unknown/Moderate	Native	Scrub-Shrub Wetlands
Camas	<i>Camassia quamash</i>	Groundcover	Low	Native	Prairie
Fawn Lilies	<i>Erythronium oregonum</i>	Groundcover	Unknown/Low	Native	Prairie
Yellow Montane Violet	<i>Viola praemorsa</i>	Groundcover	Unknown/Low*	Native	Prairie

Lupine	Lupinus perennis	Groundcover	Unknown	Native	Prairie
Yarrow	Achillea millefolium	Groundcover	Low-Moderate	Native	Prairie
Kinnikinnick	Arctostaphylos uva-ursi	Groundcover	Moderate	Native	Prairie
Foxglove	Digitalis purpurea	Groundcover	Moderate	Native	Prairie
Himalayan Blackberry	Rubus armeniacus	Groundcover	Unknown/Low	Non-Regulated Noxious Weed	Non-Native
Herb Robert	Geranium robertianum	Groundcover	Unknown/Low*	Non-Regulated Noxious Weed	Non-Native
Creeping Bentgrass	Agrostis stolonifera	Groundcover	Unknown/Low*	Unknown	Non-Native
Common Velvet Grass	Holcus lanatus	Groundcover	Unknown/Low	Native	Prairie
Reed Canary Grass	Phalaris arundinacea	Groundcover	Unknown/Low*	Non-Regulated Noxious Weed	Non-Native
Bittersweet Nightshade	Solanum dulcamara	Groundcover	Unknown/Low*	"Weed of Concern"	Non-Native
English Ivy	Hedera helix	Groundcover	Unknown/Low*	Non-Regulated Noxious Weed	Non-Native
Perennial Pea	Lathyrus latifolius	Groundcover	Unknown/Low*	"Weed of Concern"	Non-Native

Plant sensitivity to climate change in ecosystem is based on *Puget Sound Region: Tree Species Vulnerability Assessment (2023)*, *Relative Sensitivity to Climate Change of Species in Northwestern North America (2014)*, *Climate Change Vulnerability Index Reports For Selected Washington State Rare Plant Species: Phase II (2022)*, *Assessing Species Vulnerability - Washington State Department of Natural Resources, Prairie Plant Responses to Climate Change in the Pacific Northwest (2021)*, and *Using a Vegetation Model and Stakeholder Input to Assess the Climate Change Vulnerability of Tribally Important Ecosystem Services (2020)* metrics for relative change in habitat area by the end of the century. A vast majority of these are based around the Climate Change Vulnerability Index (CCVI) developed by NatureServe which rates the relative vulnerability of plants based on various climate factors and geographic location.

\*Climate Vulnerability assessment not found/assumption made based on USDA hardiness zone score and the recent change of hardiness zone for the Seattle area from 8b to 9, and the changes that are projected to occur with climate change.



# 0.5 SITE RECOMMENDATIONS:

The sites have different needs, functioning as distinct ecosystems with different conditions that call for unique plant palettes. For Barton Woods, the recommendation would be to reestablish a native prairie ecosystem with the introduction of native wildflowers like Camas, Lupine, Yarrow, Fawn Lilies, Foxglove, and Kinnickinick. These should be interspersed with larger shrubs and small trees like Pacific Crabapple, Red Osier Dogwood, Garry Oak, Vine Maple, Huckleberry, Snowberry, Oregon Grape, etc. as well as a solid groundcover of Salal, Horsetail, and Lady Fern.

The more densely forested areas have a diversity of tree species that can be maintained, but should be more purposefully maintained with the removal of the large swaths of Himalayan Blackberry and the reintroduction of functional understory plants. These include Vine Maple, Oregon Ash, Sword Fern, Lady Fern, Oregon Grape, Snowberry, Wild Ginger, and Salal.

The wetland areas could be enhanced with Slough Sedge, Skunk Cabbage, Horsetail, Cottongrass, and other wetland plants.

This is of course not an exhaustive list of plant species that could be introduced into the sites. There is also the question of climate resilience with these plants. A large number of native species are vulnerable to climate change, and should be handled as such. The introduction of variants from their southernmost extents could be used to increase the resilience of the plants, much like the work that Oxbow Farms is using to establish more resilient riparian ecosystems along the Snoqualmie River by using seeds of natives from their southernmost extents in Oregon where the plants are already experiencing much hotter and drier conditions.

As for Thornton Creek, the plants are already managed in a healthy and resilient way with the intentional planting of natives. The slow introduction of more riparian species like Slough Sedge and Salal could increase the resilience of the site, while naturally holding back the slow encroachment of non-native invasive species. The continual management of Himalayan Blackberry and English Ivy is also important, and the management of invasive plants should be as intentional in the rest of the ecosystem with the removal of the invasives along 105th St. A more densely planted diversity of natives

along this stretch like Oregon Grape, Snowberry, and different Fern species along with more intentional diversion of street runoff with the construction of a curb would prevent harmful runoff from harming the natives.

These recommendations are from an observational perspective and are not intended to be considered the only path forward for these areas. Certain plants may not perform well or may interfere with the functioning of the ecosystem, or may require more intensive management in the face of climate change and the prevalence of invasives.

## **CONNECTING BARTON WOODS TO THORNTON CREEK**

As it currently stands, there is no ecological connection between the two areas - divided by the interstate and the large swaths of parking lots and heavy development immediately south of the old Northgate Mall. As it stands, the headwaters of Thornton Creek at Barton Woods and the wetlands on the North Seattle College campus are currently piped to the Thornton Creek Water Quality Channel where the water from Barton Woods, along with the stormwater runoff from the surrounding area is channeled through.

Given the current infrastructure that exists between the sites, Thornton Creek is unable to be daylight through to its historic headwaters, but there is an opportunity to connect the ecosystems back together through intentional intervention between the two. This can be accomplished by utilizing the existing Right Of Way areas to reintroduce native plant communities and create a corridor for wildlife and pollinators.





Current flow of Thornton Creek through Northgate. Location of drain pipe connecting the two is not exact.



Opportunity areas for native plant introductions in Right of Way.

# RECOMMENDED PLANT LISTS FOR AREAS OF INTEREST

## BARTON WOODS



-  Prairie Ecosystem Area
-  Periphery Forest Ecosystem Area
-  Wetland Ecosystem Area

## PRAIRIE ECOSYSTEM AREA

TREES	SHRUBS	GROUNDCOVER
Cascara	Oregon Grape	Camas
Pacific Willow	Snowberry	Fawn Lilies
Flowering Dogwood	Lady Fern	Yellow Montane Violet
Wild Plum		Lupine
Red Osier Dogwood		Yarrow
Garry Oak*		Kinnikinnick
		Common Velvet Grass

## PERIPHERY FOREST ECOSYSTEM AREA

TREES	SHRUBS	GROUNDCOVER
Western Redcedar	Oregon Grape	Salal
Western Hemlock	Huckleberry	
Black Hawthorn	Salmonberry	
Vine Maple	American Silverberry	
Western White Pine	Osoberry	
Western Hackberry	Lady Fern	
Oregon Ash	Western Sword Fern	
Bigleaf Maple		
Alaska Yellow Cedar		

Climate Vulnerability

	Low - Low/Moderate		Moderate-High
	Moderate/Unknown		High

## WETLAND ECOSYSTEM AREA

TREES	SHRUBS	GROUNDCOVER
Western Redcedar	Huckleberry	Salal
Western Hemlock	Bog Laurel	Slough Sedge
Sitka Spruce	Snowberry	Horsetail
Pacific Willow	Ocean Spray	Skunk Cabbage
Black Cottonwood	Bracken Fern	Bog Labrador Tea
Pacific Crabapple		Cottongrass
Flowering Dogwood		

Climate Vulnerability

	Low - Low/Moderate		Moderate-High
	Moderate/Unknown		High

## THORNTON CREEK



Thornton Creek Protected Area

Thornton Creek Riparian Zone

## THORNTON CREEK PROTECTED AREA

Because the plantings along Thornton Creek in this area were planted more recently and are more intentionally managed than Barton Woods, the recommendations here are much less intricate. The slow introduction of more riparian and wetland plants like Salal, native Sedges like Slough Sedge, and others would only stand to improve the ecosystem functioning, there isn't a pressing need to create large-scale interventions like Barton Woods. The area with the highest need for intervention is along 105th street, where, as stated before, is a large concentration of invasives. Because of that, the following recommendations are made for the improvement of the health of the ecosystem in this area.

### THORNTON CREEK PROTECTED AREA - 105TH STREETSCAPE



TREES	SHRUBS	GROUNDCOVER
Pacific Willow	Oregon Grape	Skunk Cabbage
Red Osier Dogwood	Snowberry	Slough Sedge
Western Redcedar	Lady Fern	Horsetail
	Western Sword Fern	

Climate Vulnerability



Low - Low/Moderate



Moderate/Unknown

# POTENTIAL CONNECTION AREAS



## 01 - 100TH STREETSCAPE

- Using the Indian Mounds Burial Grounds as a framework for targeted intervention, the streetscape can be reimagined as a space to connect the spaces between Barton Woods and Thornton Water Quality Channel, which then connects to Thornton Creek itself.

## 02 - I-55 MEDIAN SPACES

- Because I-55 cuts directly through the neighborhood, it is currently

impossible for Thornton Creek to be daylighted across it. This limits the possibilities for extending a green belt through the area. The options that currently exist involve targeted planting interventions in the medians of the highway, which currently are underutilized and have opportunity to provide wildlife and pollinators a safer crossing across the highway.

### REFERENCE: Indian Mounds Burial Grounds Cultural Messaging Plan

This could be used as a precedent for intervention along this corridor, creating space for indigenous planting areas that rebuild some of the prairie ecosystems along with the addition of street trees which would create a belt of green space in this area.

PHASE 03: PLANTED THRESHOLD OVER TIME

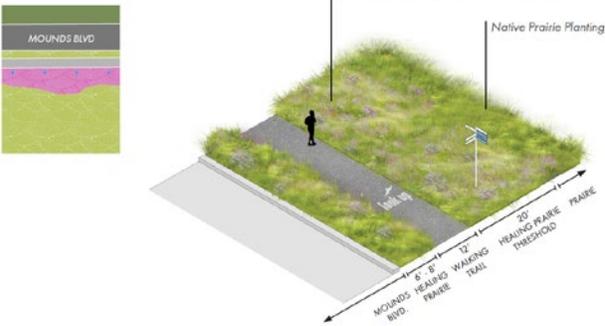


Image Source: Ten x Ten

As for the highway medians, a planting palette that is a mix of the Periphery Forest ecosystems as well as the Prairie ecosystem could serve well at both providing a corridor for wildlife, as well as the potential for small scale noise and air pollution from the highway.

### 100TH STREETSCAPE

TREES	SHRUBS	GROUNDCOVER
Tulip Tree*	Oregon Grape	Camas
Oregon Ash	Snowberry	Fawn Lilies
Cascara	Western Sword Fern	Yellow Montane Violet
Vine Maple	Lady Fern	Lupine
Oregon Oak	Huckleberry	Yarrow
Red Osier Dogwood	Salmonberry	Kinnikinnick
		Salal

Climate Vulnerability

	Low - Low/Moderate		Moderate-High
	Moderate/Unknown		High

The trees featured on this list were curated based on comparison between the Climate Vulnerability Matrix and the Seattle Department of Transportation’s Approved Street Trees List. The Tulip Tree\* was selected because it was one of the few native species listed in SDOT’s list, despite it’s high climate vulnerability.



## 15 MEDIAN SPACE

TREES	SHRUBS	GROUNDCOVER
Western Redcedar	Snowberry	Camas
Oregon Ash	Salmonberry	Fawn Lilies
Cascara	Huckleberry	Yellow Montane Violet
Western Hemlock	Osoberry	Lupine
Douglas Fir	Western Sword Fern	Yarrow
Bigleaf Maple	Lady Fern	Kinnikinnick
Vine Maple		Salal
		Common Velvet Grass

Climate Vulnerability

	Low - Low/Moderate		Moderate-High
	Moderate/Unknown		High

The plants on this list are meant to be regarded as a speculative list, as the actual regulations governing what can and can't be planted in the medians based on things like site distance, vegetal clearance, design clear zones, etc. ultimately dictate what can be planted on these sites. This is decided by a number of governmental organizations like Washington Department of Transportation, the Federal Highway Administration, etc.



# 0.6 POTENTIAL CONTEXTS FOR ADAPTATION:

## ADAPTING PLANT LIST FOR DIFFERENT CONTEXTS

The potential for reintegrating indigenous planting schemes in these public spaces is important for tackling the climate resilience of Northgate, and because of this, the adaptation of this for different private spaces means that it could have an even broader impact. The use of this in private spaces like front and back yards, expansion into other Rights of Way, and in commercial spaces is something that should be considered. Using the Indian Mound Cultural Messaging Plan from St. Paul, MN again as a precedent for this, the interjection of these schemes could greatly increase the biodiversity and ecosystem function of Northgate as a whole.

### INDIAN MOUNDS CULTURAL MESSAGING PLAN

This study has a number of areas to pull inspiration from, most notably in the phasing of their ecosystem reintegration and the phasing of the messaging plan along the trail systems bordering the site. It's easy to imagine these being reworked into the context of a streetscape or a private yard for example, and by altering the ecological context to being grounded in Northgate, there's limitless possibilities for this.

Using the inspiration from their adaptation of the indigenous cosmology by developing with tribes a deeper understanding of the local cosmology is a great place to start moving forward so that the intentions stay grounded in this place.

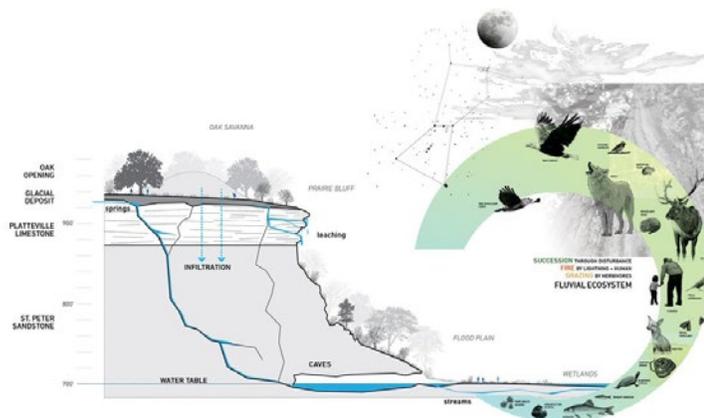
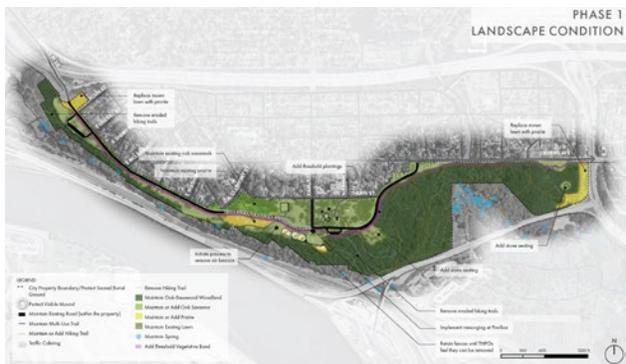


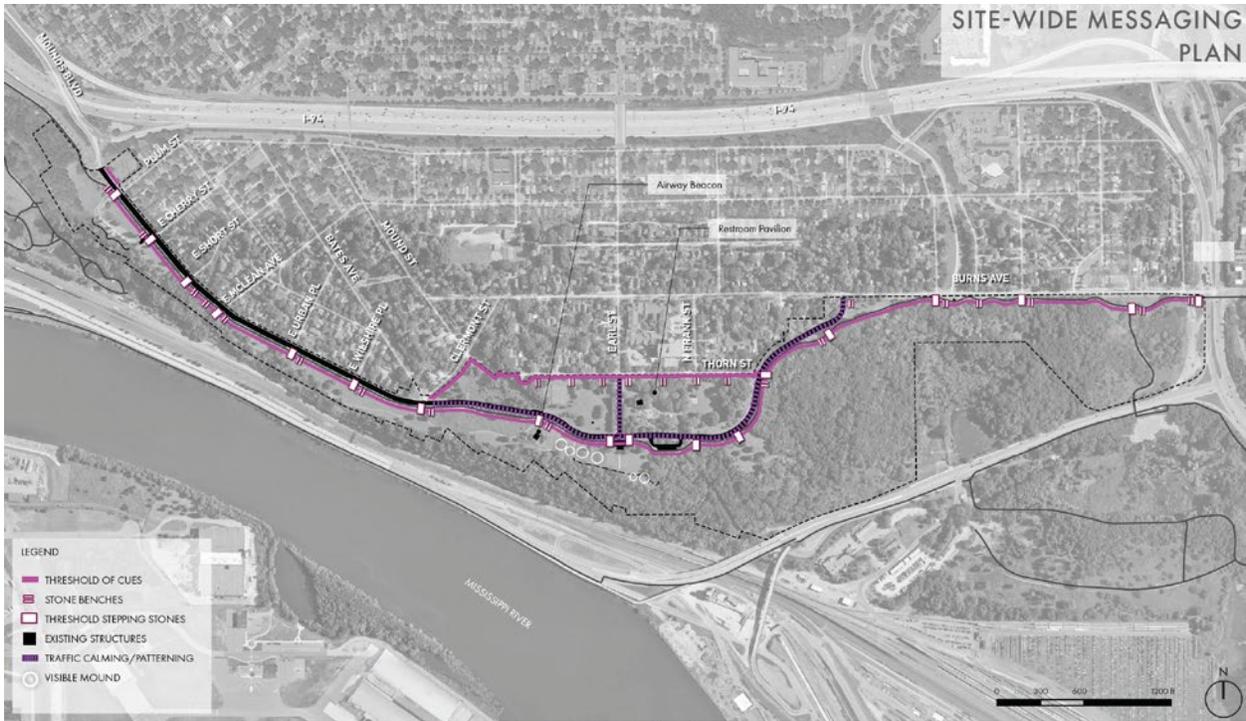
Image Source: Ten x Ten

# PHASING AND CULTURAL MESSAGING PLAN



Their phasing follows a long term, slow reintroduction of native ecosystems to the site, which allows for a gentle transition of the space from the current plant communities to fully realize their vision. This slow reintroduction allows for the plants to slowly retake the site, much as they would in their original contexts, and allows for a parallel development of intentional indigenous management programming to take place as well. Though Northgate doesn't carry with it the cultural and spiritual significance of a burial ground, there is still intrinsic significance to the history of Northgate, and exemplifying this is equally important.

Image Source: Ten x Ten



Applying this slow phasing to right of way along trails and roads throughout the park can easily be reimagined into context in Northgate by adapting these ideas to fit into Right of Way along streets throughout the neighborhood. These ideas could also be reimagined to fit the context of private yards and commercial planting spaces to increase biodiversity throughout, not just along streetscapes.

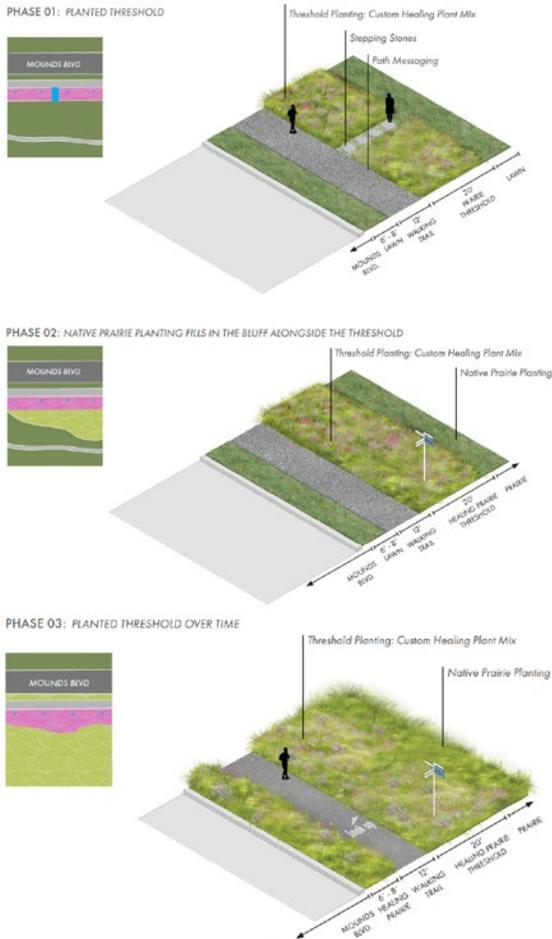


Image Source: Ten x Ten

# PUBLIC RIGHT OF WAY



It's easy to imagine adapting these ideas into the Right of Way (ROW) of different streets throughout Northgate, and would improve both the biodiversity & ecosystem functions of these spaces while also creating a more enjoyable pedestrian environment.

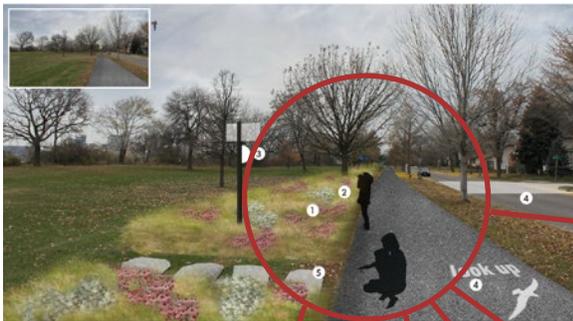


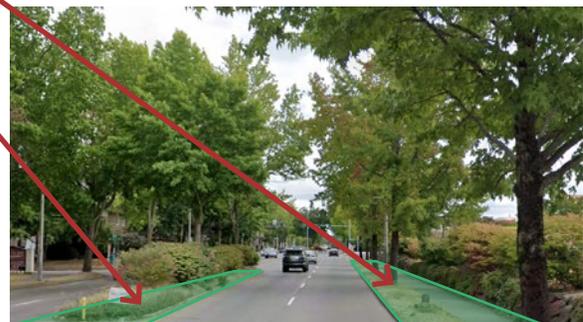
Image Source: Ten x Ten



100th St. Looking East



5th Ave. Looking East



Northgate Way Looking East

## ROW PLANTING MIX

TREES	SHRUBS	GROUNDCOVER
Tulip Tree*	Oregon Grape	Camas
Oregon Ash	Snowberry	Fawn Lilies
Cascara	Western Sword Fern	Yellow Montane Violet
Vine Maple	Lady Fern	Lupine
Oregon Oak	Huckleberry	Yarrow
Red Osier Dogwood	Salmonberry	Kinnikinnick
		Salal

Climate Vulnerability	 Low - Low/Moderate	 Moderate-High
	 Moderate/Unknown	 High

## PRIVATE YARDS

This planting intervention could also be implemented relatively easily into private yards as a way to increase the biodiversity of the area. Yards represent a very large component of the greenspace in the greater Northgate area, as a majority of the immediately adjacent neighborhoods are single family homes with sizable plots. These also provide more flexibility for plant selection because of their size, and can become in themselves a large component of increasing ecosystem functions for the whole area.

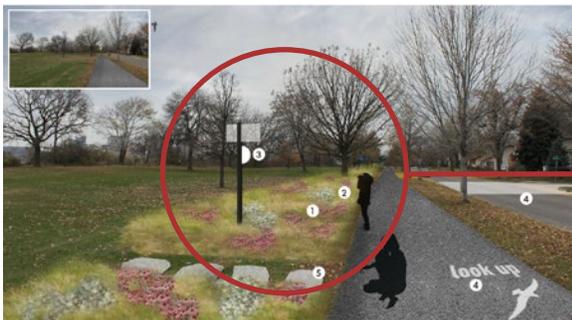


Image Source: Ten x Ten



98th St. Looking West

## PRIVATE YARD PLANTING MIX

TREES	SHRUBS	GROUNDCOVER
Western Redcedar	Oregon Grape	Salal
Western Hemlock	Huckleberry	Camas
Black Hawthorn	Salmonberry	Fawn Lilies
Vine Maple	American Silverberry	Yellow Montane Violet
Western White Pine	Osoberry	Lupine
Western Hackberry	Lady Fern	Yarrow
Oregon Ash	Western Sword Fern	Kinnikinnick
Bigleaf Maple		Common Velvet Grass
Alaska Yellow Cedar		
Cascara		
Pacific Willow		
Flowering Dogwood		
Wild Plum		
Red Osier Dogwood		

Climate Vulnerability

	Low - Low/Moderate		Moderate-High
	Moderate/Unknown		High

# COMMERCIAL SPACE



Much like the private yards, there is much more space and flexibility in terms of what can be planted, dependant upon the size and location of the sites. This gives commercial land owners the capability to implement these interventions on their properties as well.

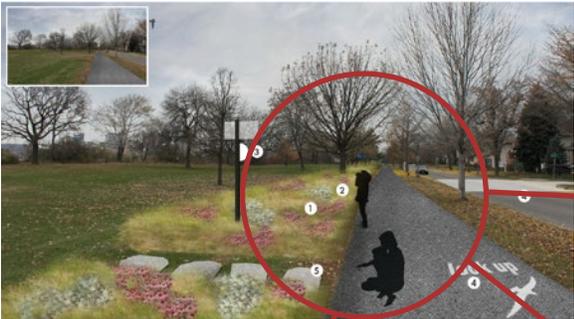


Image Source: Ten x Ten



Northgate Center North Entrance



Seattle Athletic Club - 97th St



Northgate Apartments - 1st Ave

## COMMERCIAL SPACE PLANTING MIX

TREES	SHRUBS	GROUNDCOVER
Western Redcedar	Oregon Grape	Salal
Western Hemlock	Huckleberry	Camas
Black Hawthorn	Salmonberry	Fawn Lilies
Vine Maple	American Silverberry	Yellow Montane Violet
Western White Pine	Osoberry	Lupine
Western Hackberry	Lady Fern	Yarrow
Oregon Ash	Western Sword Fern	Kinnikinnick
Bigleaf Maple		Common Velvet Grass
Alaska Yellow Cedar		
Cascara		
Pacific Willow		
Flowering Dogwood		
Wild Plum		
Red Osier Dogwood		

Climate Vulnerability

	Low - Low/Moderate		Moderate-High
	Moderate/Unknown		High

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