



# SHADE LOOKBOOK

A Guide to Designing Sun Safety

May 2024



**BC  
CAN  
CER** PREVENTION  
Provincial Health Services Authority

 **SunSafeBC**

 THE UNIVERSITY OF BRITISH COLUMBIA  
**School of Architecture  
+ Landscape Architecture**



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# ACKNOWLEDGMENTS



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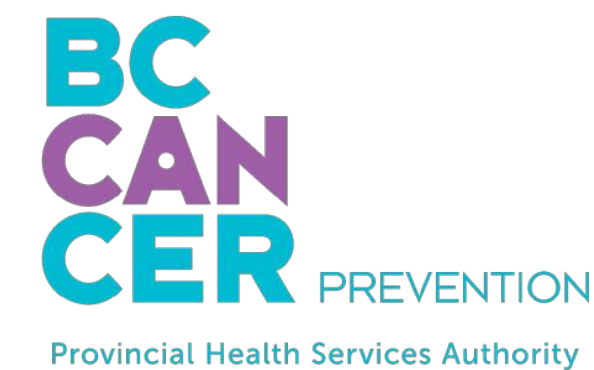
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# BACKGROUND





# WHY SHADE IS IMPORTANT

## Shade is critical for keeping us safe from both skin cancer and heat-related illnesses.

Skin cancer, like melanoma, occurs from overexposure to ultra-violet (UV) radiation from the sun. In Canada alone, around 80,000 people get skin cancer every year, and these numbers are rising. About one in 73 women and one out of every 59 men will get melanoma during their lifetime<sup>12</sup>.

Fortunately, skin cancer is largely preventable. Seeking shade reduces direct exposure to UV rays, lowering the risk of sunburn, skin damage, and the likelihood of developing skin cancer over time. Well-designed shade can reduce UV exposure by up to 90%<sup>8</sup>. Having access to shaded areas, whether natural or built, is critical for individuals to minimize their UV exposure and protect their skin.

On top of offering protection from skin cancer, shade also helps to prevent heat-related illnesses like heat exhaustion and heatstroke. As the world gets warmer due to climate change, these illnesses are becoming a bigger concern. Heat-related illnesses are usually caused by spending extended amounts of time in heat and humidity without drinking enough water or taking breaks<sup>12</sup>.

Seeking shade allows individuals to escape the direct heat from the sun, providing a cooler environment where their

bodies can better regulate their temperature<sup>2</sup>. This is especially critical for vulnerable populations such as children, the elderly, and individuals with certain medical conditions, who are more vulnerable to heat-related illnesses.

Shade also promotes outdoor comfort and encourages outdoor activities. By creating shaded spaces in parks, playgrounds, and recreational areas, communities can encourage people to get outside and play without the worry of getting sunburned or overheated. Furthermore, shaded areas can improve the appeal of outdoor spaces, making them more inviting and enjoyable to spend time in. The presence of shade not only safeguards against health risks but also contributes to the overall well-being and quality of outdoor experiences.



Photo Credit: Unsplash





# SHADE IN EARLY CHILDHOOD SETTINGS

Shade is especially important in early childhood settings, such as parks, playgrounds, childcare centres and schools.

Children are more vulnerable to both heat-related illness and skin damage from UV radiation. Serious sunburn during childhood can increase the risk of melanoma later in life, with as few as five sunburns in childhood doubling the risk <sup>13</sup>. Additionally, children spend more time outdoors compared to adults<sup>14</sup>, so providing sun safe and heat resilient settings for this group is critical.

Not only are children more vulnerable to UV radiation, but they are also more likely to experience serious health complications due to heat. Children have a higher metabolic rate and are less efficient at regulating their body temperature compared to adults<sup>18</sup>. Heat events can increase the risk of heatstroke, dehydration, and heat exhaustion. They can also worsen existing health conditions and cause death in extreme cases.

The growing impacts of climate change are making these risks worse. Canada has already experienced unseen heat events—for example in 2021, BC experienced a record-

breaking heat dome, leading to a 440% increase in community deaths during this time. Canada is expected to get hotter<sup>13</sup>, and children will be disproportionately impacted.

Not only will it have negative direct health consequences, such as an increase in heat-related illness and skin cancer occurrences<sup>1,9</sup>, but it also will impact outdoor play opportunities. Outdoor play is critical for children's development, encouraging mental, physical and social skills<sup>16</sup>. However, without access to sun safe and heat resilient settings considering climate change, children will have less opportunities for outdoor play. Experts in Canada agree that there is a lack of sun safe and heat resilient spaces for children to play and that existing playground design standards do not adequately consider heat and sun safety in their design<sup>7</sup>.

There is good news however, as skin cancer and heat-related illness are largely preventable. Helping children stay safe from extreme heat and UV radiation exposure involves many approaches, including well-designed shade. Effective shade can be natural, like trees, or built, like shade sails, or a combination. Along with choosing thoughtful shade and placing them in the right locations, promoting sun safe behaviours and adjusting school and childcare schedules to play outside during cooler times of the day are also effective.



Photo Credit: Canva



Here in BC, research shows that well-designed shade helps protect children from harmful UV rays and improves thermal comfort:

Cool Playgrounds 1.0

A [2021 study](#)<sup>5</sup> in BC showed that playground shade sails in early childhood settings can cut harmful radiation exposure in half. Shade sails covering about a third of the study site’s play area made a significant difference in protecting children from the sun during spring, summer and fall seasons.

Cool Playgrounds 2.0

In a 2023 study, researchers found that adding shade to playgrounds improved thermal comfort among toddlers. This meant they played for longer and performed more types of play, like running, using their imagination, and exploring.

Prioritizing shade in early childhood settings can protect against the dual threats of heat-related illnesses and UV radiation damage and at the same time, allow for important outdoor play that is critical for their development. By championing sun-safe practices and integrating shade-centric design principles, we can ensure that children thrive in safe and enriching outdoor environments.

Cancer Council (Australia) recommends:

- A combination of built and tree shade in every playground.
- Shade should cover at least 70% of the play equipment and nearby seating, including 45% of tree shade, to reduce children and caregivers’ overexposure to UV radiation.



Photo Credit: BC Cancer



Photo Credit: BC Cancer



Photo Credit: BC Cancer



# CO-BENEFITS OF SHADE

## 1 UV PROTECTION

Exposure to UV radiation is a leading cause of skin cancer, including melanoma, the deadliest form. Shade reduces direct UV exposure, decreasing the risk of skin damage and skin cancer. With climate change leading to more frequent heatwaves, individuals are more likely to spend time outdoors, increasing their exposure to harmful UV radiation. Shade becomes essential in providing protection against UV exposure, reducing the risk of skin damage and cancer.

## 5 ENERGY CONSERVATION

Shaded areas require less energy for cooling, contributing to energy conservation efforts and reducing greenhouse gas emissions, which further exacerbate climate change.

## 2 HEAT MITIGATION

Urban heat islands contribute to heat-related illnesses and discomfort. Rising global temperatures can lead to urban heat islands, adding to heat-related health risks in populated areas. Shade helps mitigate this heat by reducing ground temperatures and providing cooler areas where people spend time, enhancing outdoor comfort and safety.

## 6 CLIMATE ADAPTATION

As communities adapt to the impacts of climate change, incorporating shade into urban planning becomes a crucial strategy. By creating shaded areas in public spaces, cities can better withstand extreme heat events and protect vulnerable populations from heat-related illnesses.

## 3 PROMOTION OF OUTDOOR ACTIVITIES

Well-shaded areas encourage outdoor activities by providing a comfortable environment, promoting physical and mental well-being. This is especially crucial for children and the elderly, who are more susceptible to heat-related illnesses. It also offers social and cognitive value.

## 7 REDUCED AIR POLLUTION

Shade trees and shading structures can lower ambient air temperature and slow the process of smog formation, improving air quality. Trees not only cool down the air, increasing evapotranspiration (processes which move water from the Earth's surface into the atmosphere), but also absorb harmful airborne pollutants such as carbon dioxide (CO<sup>2</sup>).

## 4 PRESERVATION OF INFRASTRUCTURE

Shade extends the lifespan of outdoor furniture, equipment, and infrastructure by protecting them from direct sunlight, reducing maintenance costs, and enhancing durability.



Photo Credit: iStock





# 8 GUIDING PRINCIPLES OF WELL-DESIGNED SHADE

**NOT ALL SHADE IS CREATED EQUAL!**



# 1

## Prioritize natural shade for environmental co-benefits and ecological, cultural, and play values

Prioritizing natural shade for outdoor areas has lots of benefits for the environment and helps keep nature, culture, and play values safe.

Shade from trees and plants not only keeps things cooler and protects us from the sun, but it also helps biodiversity, improves air quality, and makes urban communities look nicer and more natural. Trees are important for urban communities because they absorb carbon dioxide, lower air pollution, and provide wildlife a place to live and food to eat. Plus, they help keep soil healthy and

stop rainwater from causing issues like poor water quality and floods.

Besides environmental benefits, natural shade also has significant meaning for different cultures and makes outdoor places feel uniquely special. Trees are meaningful in many cultures because they represent strength, growth, and being connected to nature. Incorporating natural shade into parks and playgrounds honours these cultural connections and strengthens community bonds by providing spaces for reflection, gathering, and cultural activities.

Furthermore, natural shade makes playing outside more enjoyable for children because it gives them cool, dynamic places to explore and use their imaginations. When designers focus on natural shade, they promote environmental sustainability and enrich the cultural and recreational experiences, helping communities feel stronger and more vibrant over time.



Photo Credit: Unsplash

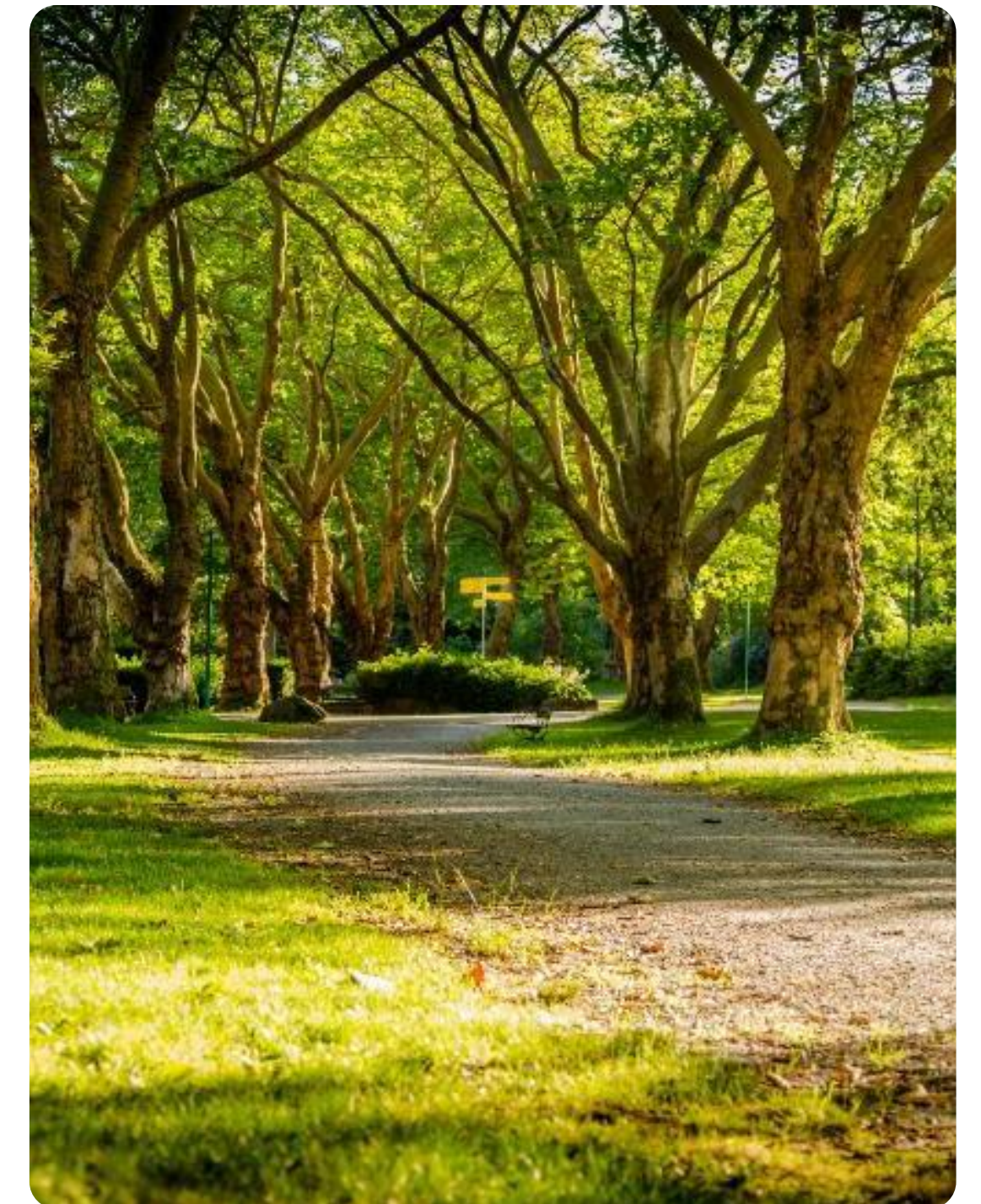


Photo Credit: Unsplash



# 2

## Conduct a shade audit to understand existing shade, site users, and activities

When we design shade, it's crucial to understand who will use the area and what they'll do there.

It's important to know when the site is busiest and how that matches up with the sun's strongest UV rays, usually between 11 a.m. – 3 p.m. and between 2 p.m. – 6 p.m. for peak heat during summer months in Canada.

It is also important to figure out which activities are optional, like visiting an outdoor site for leisure, and which are not, like scheduled events or waiting in lines. This will assist in making decisions about providing

shade in particular locations and consider user needs, activity patterns, and facility requirements.

Information can be gathered mostly by observing the site and interviews with users or supervisors at the site or facility.

### SHADE AUDIT RESOURCES

[Waterloo Shade Audit Guide Tool](#)

[BC Cancer Shade Audit Tool](#)

[NSW Shade Audit Sheets](#)



Photo Credit: Unsplash

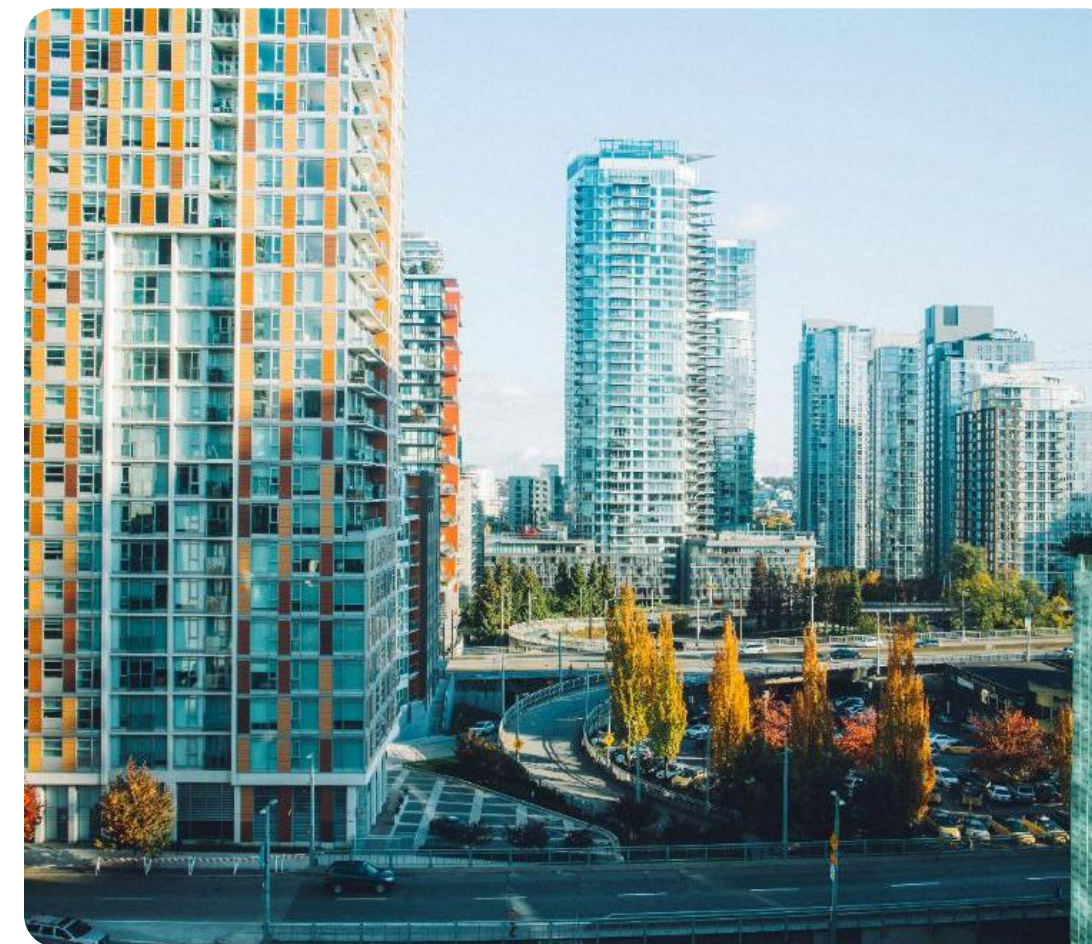


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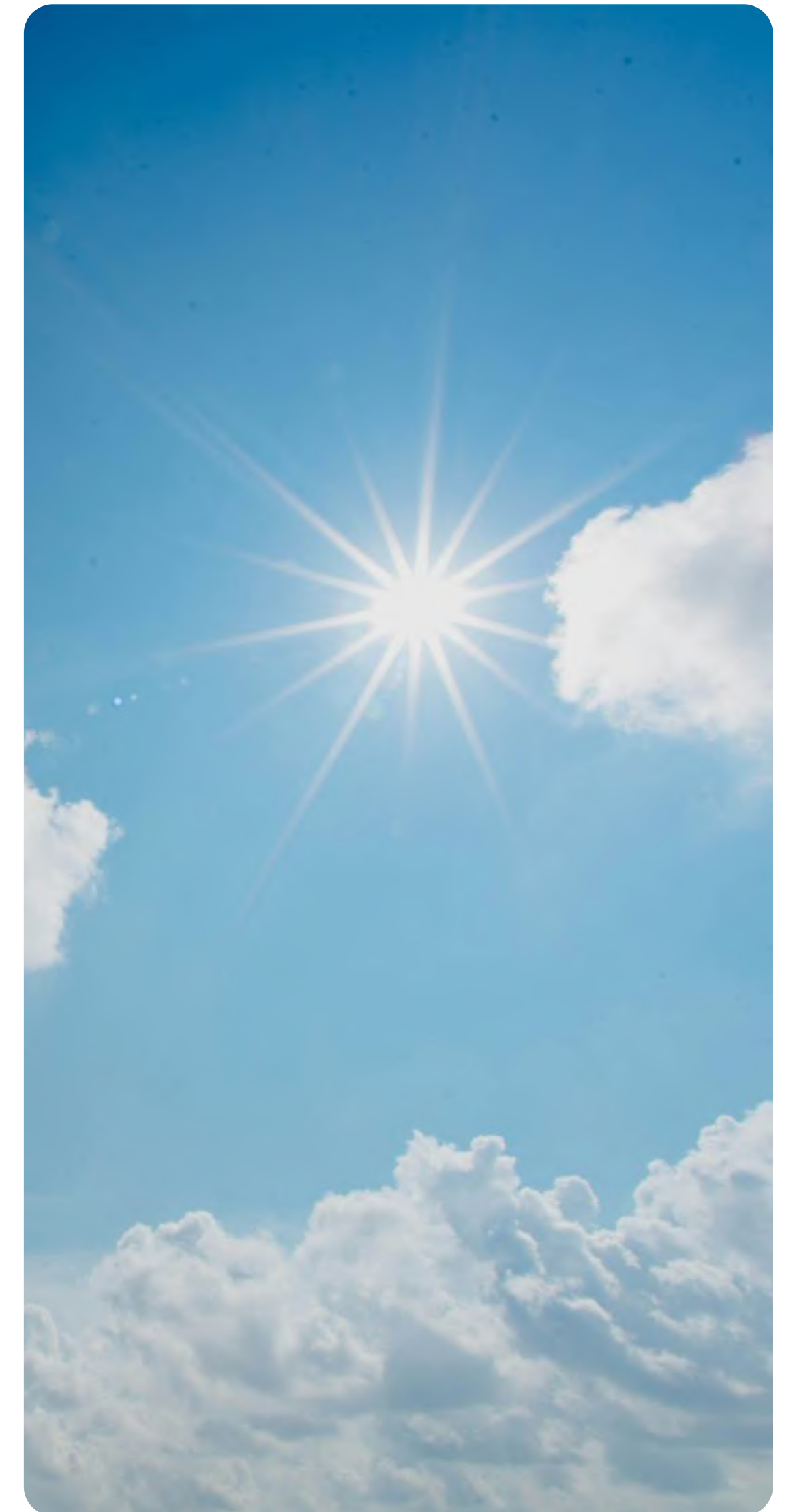


Photo Credit: Unsplash



# 3

## Perform a solar analysis to design for peak heat and UV levels and consider side protection from reflective surfaces

Before we design shade for outdoor spaces, we need to think about sun angles during the critical protection period between 11am and 3pm when UV levels are at their peak.

Understanding how the sun moves during the day and across seasons helps us figure out the best spots for shade, maximizing effectiveness, and minimizing potential issues.

Sun angles change depending on where you are, the time of year, and the time of day. By analyzing sun angles, planners and designers can see how sunlight hits specific areas. This helps us position shade structures to provide proper coverage from direct sunlight. Knowledge about sun angles also helps us solve issues like glare and uneven shading.

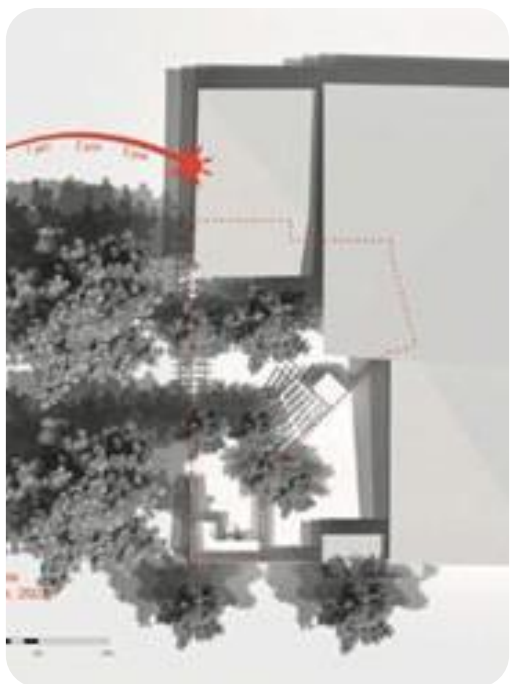
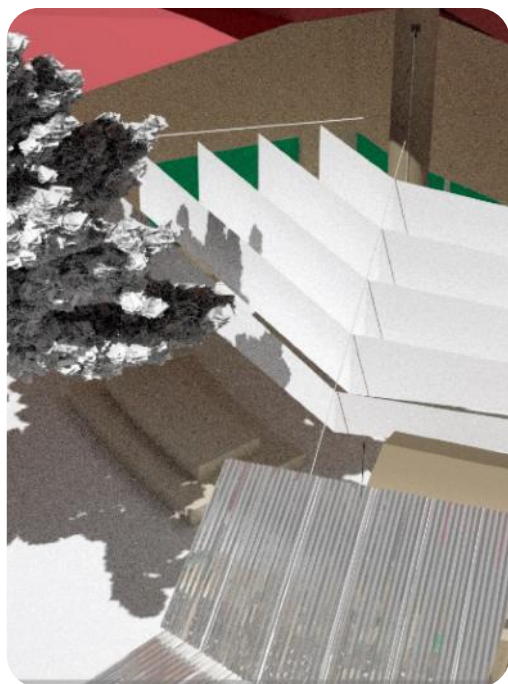


Photo Credit: UBC SALA



A quick and easy solar analysis involves observing the areas of a site that receive direct sunlight at different times of the day. This can be done by physically visiting the site and recording the location and duration of sunlight exposure. This helps us focus on shading the sunniest spots, addressing heat-related issues and improving comfort.

For more complete studies, designers can use software like Autodesk Insight, Solmetric SunEye, Rhinosolar, or Ladybug Tools for Grasshopper. These tools provide detailed simulations of solar exposure, shading patterns, and thermal comfort conditions based on the site. By performing these studies, designers can make smart choices about where to put shade and how to design it, ensuring optimal performance and user satisfaction.

Reflective surfaces, like water or light-coloured pavements, can change how sunlight and heat spread out in outdoor areas. When designers plan shade, they need to think about reflective surfaces too, to avoid creating hot spots or glare.

Incorporating side protection that also blocks light bouncing off these surfaces a

more a more comfortable and visually pleasing environment.

Considering sun angles, checking for reflective surfaces, conducting shade audits, and performing solar analyses are all important steps in designing effective shade for outdoor areas. By taking these factors into account, designers can create comfortable, well-shaded environments that enhance user experience while minimizing the negative effects of solar UV exposure.

### WHAT ARE UV INDEX LEVELS?

11+	Extremely high	Extra protection required
8-10	Very high	
6-7	High	Protection required
3-5	Medium	
0-2	Low	Minimal protection required

\*Critical Protection Period is generally between 11am-3pm when UV levels tend to be at 3 or higher.

Source: [Environmental and Climate Change Canada](#)



# 4

## Integrate dappled light into shade solutions to enhance aesthetic appeal

Dappled light, which is gentle, shifting patterns of light and shadow, offers a unique blend of beauty and protection to a shaded environment.

Created by the filtering of sunlight through leaves or other partly see-through materials, dappled light not only enhances the visual appeal of outdoor spaces but also provides crucial protection against UV radiation and heat.

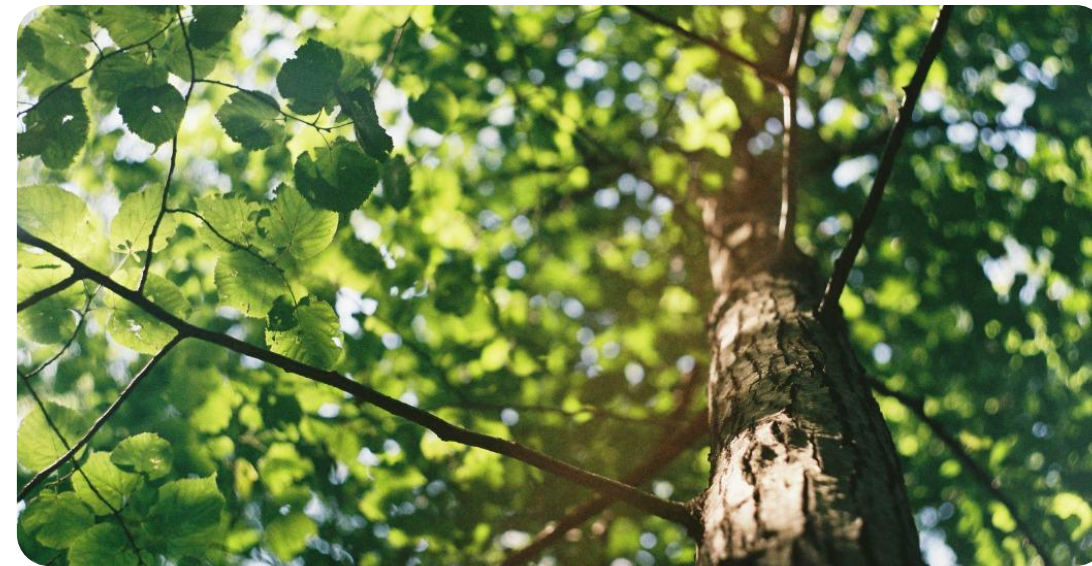


Photo Credit: Unsplash

A study from Europe in 2022 found that when people were exposed to both static and moving dappled light, they preferred dappled light more. They found it more interesting, felt it was more connected to nature, and thought it to be more complex than static light (Chamilothori et al., 2022)<sup>3</sup>.

In nature, dappled light occurs when sunlight shines through leaves, branches, and foliage. It makes patterns on the ground, transforming ordinary places to look and feel special. Besides its beauty, dappled light acts like sunscreen, helping to block harmful UV rays and lowering direct exposure to skin. The gentle flow of sunlight helps to control temperatures and maintain a comfortable environment, even on hot days.

We can bring dappled light into built forms of shade to extend its benefits in urban communities. Shade structures like pergolas, trellises, and lattice screens filter sunlight creating dappled patterns on the ground or seating areas below. Designers can use different materials or create openings in the structures to control how much dappled light there is, customizing how it looks and ensuring it meets functional requirements.



Photo Credit: Shade-A-resource-for-local-government.pdf (mav.asn.au)

### BEFORE & AFTER

Burning patterned holes into a shade sail using a blow torch:



Photo Credit: UBC SALA



# 5

## Consider ground surfaces and play structure surfaces to reduce ambient heat and protect from burns

When we design outdoor play spaces, we need to think about ground surfaces and play structure surfaces to keep children safe and promote enjoyable outdoor experiences.

The ground material can affect how hot it gets and contribute to heat-related discomfort or even skin burns. Surfaces like natural grass can help with cooling on hot days.



Photo Credit: Unsplash

A [2021 study](#)<sup>10</sup> looked at playground surfaces in Sydney, Australia, using a radiometric infrared camera. It found that dark rubber and synthetic turf were hottest, while natural grass turf was coolest. Surface temperature depended on material type and colour-tone when it was in the sun.

We should also select play structure surfaces that don't retain too much heat and promote sun safety. Materials like smooth wood or composite plastics are not only durable and stable, but they also resist absorbing excessive heat from the sun. Avoiding metal surfaces, which can become scorching hot under sunlight, is essential to prevent burns and discomfort. By prioritizing heat-reflective and cool-to-touch materials for play structures, designers can create environments where children can play without the risk of thermal injuries or discomfort.

Putting shade over outdoor play areas reduces ground surface and play structure surface temperatures. At the same time, it can offer sun protection and promote sun-safe practices that contribute to children's well-being both in the short and long term.

These images show the difference in temperature on a plastic slide surface before and after adding shade. Without the shade, some parts of the slide had a surface temperature of 56°C on a warm summer day in Vancouver, however after the installation of a UV canopy net above the slide, the surface temperature cooled to 22°C.

### BEFORE & AFTER

Temperature on a plastic slide surface before and after adding shade

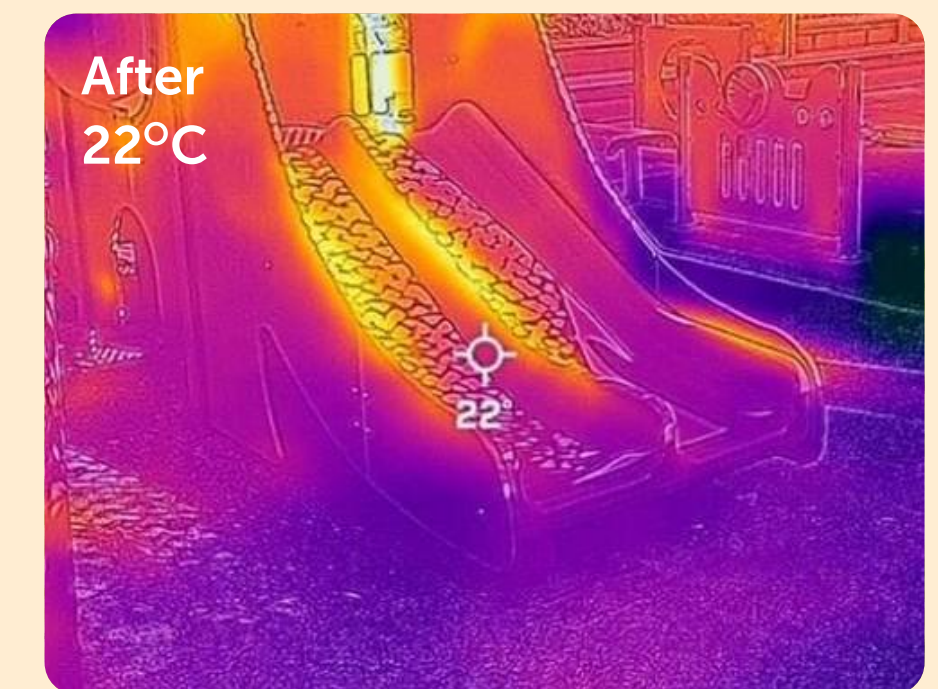
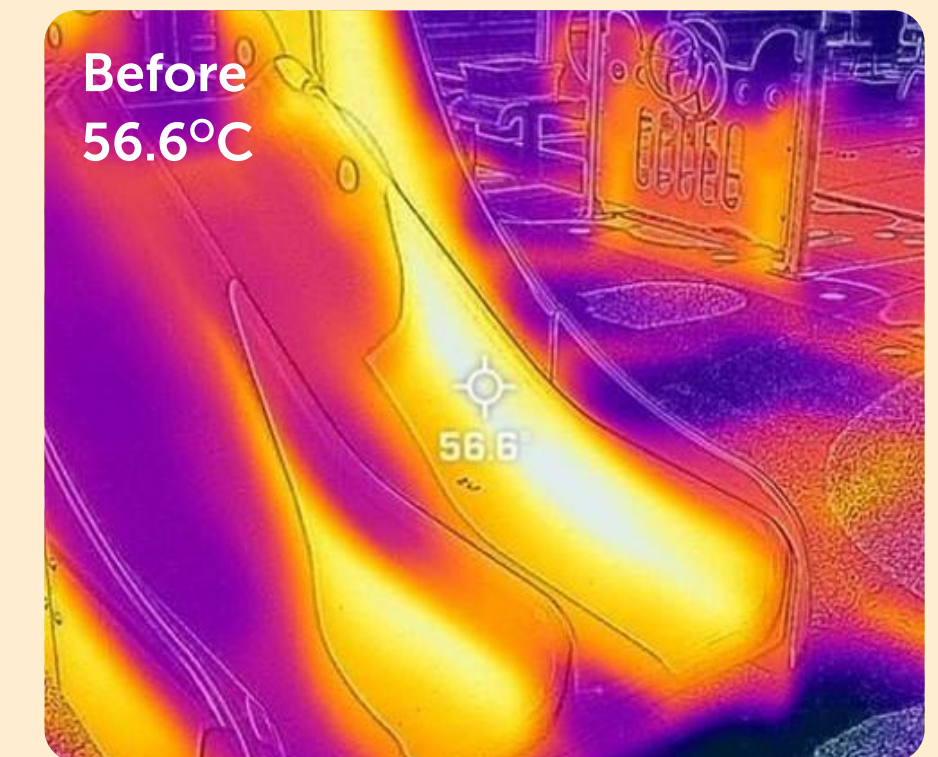


Photo Credit: BC Cancer



# 6

## Co-Design and collaborate with diverse partners and community members in the planning and design of shade solutions

Addressing heat and UV exposure requires expertise from different areas working together, including public health, urban planning, landscape architecture, and community development.

By forming partnerships and sharing knowledge, communities can develop shade solutions that fit their needs. This teamwork might include conducting heat vulnerability assessments, finding high-risk areas, and developing plans for enhanced shade coverage and sun safety infrastructure in communities that need it most.

Getting the community involved ensures the solutions are right for the people who live there and helps them to feel a sense of ownership and pride in public spaces. When people come together to find solutions, they come up with innovative ideas, feeling more connected and powerful.

For example, in Spain, a community came together to weave a recycled crochet shadecloth over a large public space to reduce urban heat and offer shade. This grassroots project not only provided relief from the sun but also brought the

community closer together and boosted creativity. By creating shade solutions together, community members develop a deeper connection to their surroundings, contributing to the improvement of public spaces that benefit everyone.



Photo Credit: Alhaurín de la Torre



Photo Credit: Alhaurín de la Torre



# 7

## Consider heat and shade inequities when prioritizing shade investments

When urban communities decide where to put shade, they need to think about who needs it most.

In many cities, some neighbourhoods are much hotter than others, and people who live there often suffer more from the heat. This is because these areas have more concrete and fewer trees, so they absorb more heat and have fewer places to cool down. Socioeconomic status, historical disinvestment, and inadequate urban planning can contribute to marginalized communities suffering health consequences.

These differences result in what is called the "urban heat island effect," where certain areas have higher temperatures than surrounding regions due to the presence of heat-absorbing materials like concrete and asphalt, combined with limited green spaces and tree cover.

In parks and playgrounds, prioritizing tree canopy and shade equity is important for everyone's health and well-being, especially for people who are vulnerable to negative consequences not in their control. Being in the shade helps people feel cooler and



Photo Credit: Unsplash

encourages them to spend time outside, which improves their physical and mental health. Unlike some ways of cooling down, like air conditioning or protective clothing, shade doesn't cost as much and can be accessible to everyone. By strategically planting trees and adding shade structures in parks and playgrounds in neighbourhoods that need it most, we can ensure that everyone has the ability to stay cool and enjoy outdoor spaces, no matter their background or circumstance. This creates fairer, more sustainable, and stronger communities for everyone.

## CITY OF VANCOUVER

Heat inequities on a hot summer day, alongside a map of the urban tree canopy cover in Vancouver.

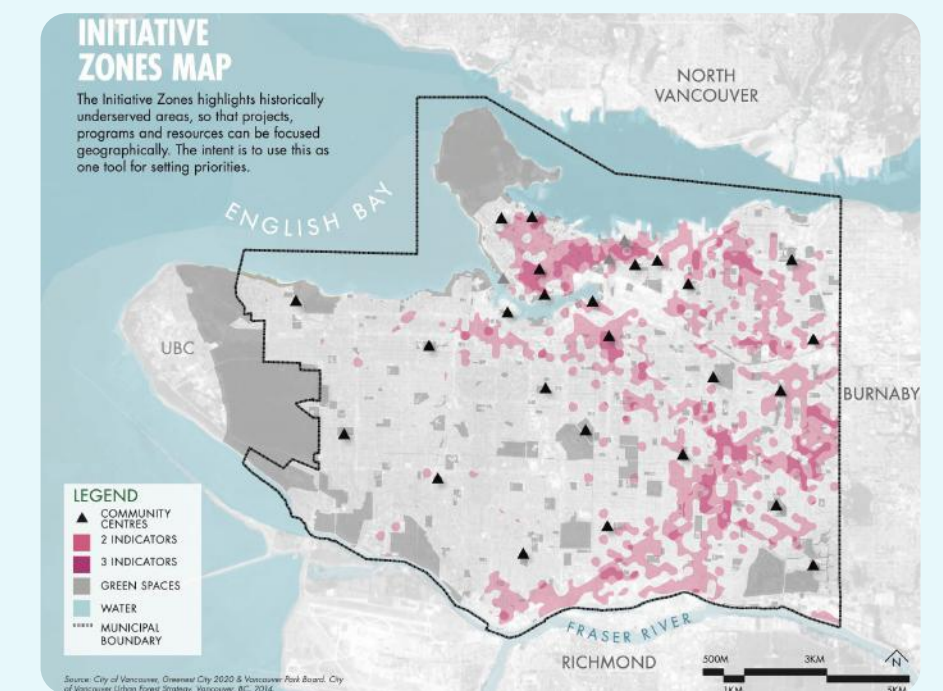
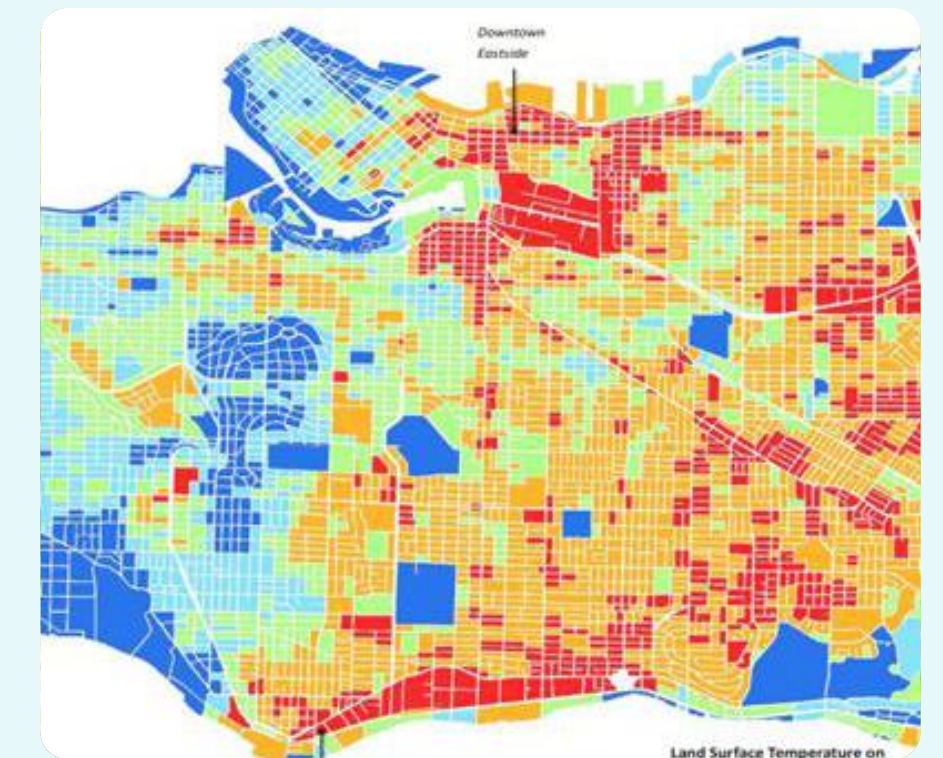


Photo Credit: City of Vancouver



# 8

## Plan for the long-term with sustainability at the forefront

Planning for the long-term with sustainability in mind is essential when designing shade solutions for community spaces like playgrounds.

It's important to choose materials and designs that will last a long time and won't harm the environment. By using durable materials, like weather-resistant fabrics or long-lived tree species, designers can make sure that shade structures stay functional and effective over time, lowering the need for replacements and saving resources.

We also need to think about how shade plans will cope with climate change, growing cities, and evolving community needs. Climate-resilient design strategies, like planting shade trees that can anticipate climate conditions or designing shade structures that can withstand extreme weather events, help future-proof playgrounds, parks and public spaces.

We can also make our shade designs more eco-friendly by using local plants and materials that won't harm the environment, creating inclusive and resilient outdoor environments that benefit current and future generations. Embracing a holistic approach to shade design creates long-term sustainability and ensures that community spaces like playgrounds remain vibrant, accessible, and environmentally responsible hubs of activity and enjoyment for years to come.



Photo Credit: Unsplash

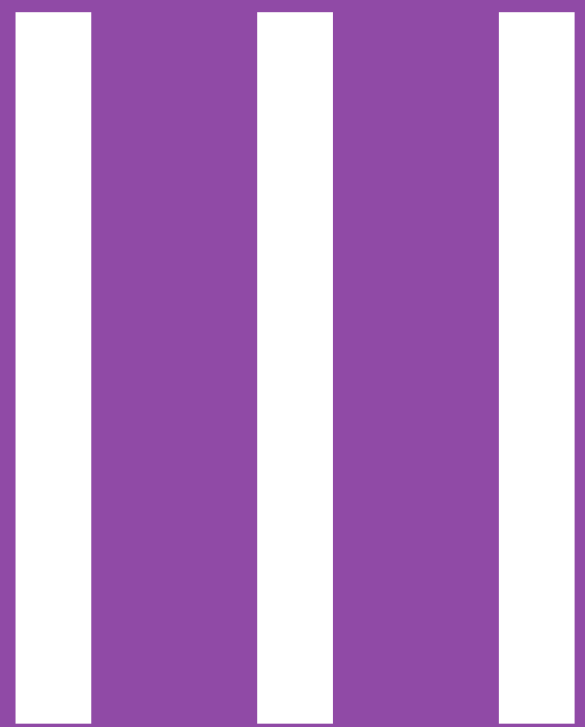
### NEW SOUTH WALES, AUSTRALIA

This project planted trees at the same time as the shade sails installment. The plan will be to remove and repurpose the shade sails once the trees reach their maturity to offer adequate shade.



Photo Credit: Cumberland City Council





# HOW TO USE THE SHADE LOOKBOOK

The Shade Design Lookbook is a comprehensive resource designed to assist designers, urban planners, and policymakers in implementing effective shade solutions in parks, playgrounds, and public settings. It offers practical design options for every budget, taking into account considerations such as maintenance and care.

## The Lookbook includes the following components:

### **NATURAL SHADE**

Incorporating vegetation, such as trees and shrubs, to provide shade. This option is cost-effective and environmentally friendly, offering natural beauty and biodiversity benefits.

### **BUILT SHADE**

Installing built structures, such as pergolas, umbrellas, and shade sails, to create shaded areas. Built shade offers flexibility in design and placement, allowing for customization to suit specific needs and aesthetics.



# IV

## NATURAL SHADE LOOKBOOK



# OVERVIEW

Natural shade is produced by the shade and shadows of plant materials.

There are lots of benefits to using natural shade in your landscape. Trees and other plants contribute to the ecosystem by providing habitat, food, and shelter for many species, and they can help stabilize slopes and shorelines by reducing soil erosion (the wearing away of soil). They help in mitigating climate change by absorbing carbon dioxide from the air, storing it, and releasing oxygen into the atmosphere.

Natural shade also lowers the heat-island effect and cools down spaces and structures which they shade, making it more comfortable and less expensive to cool mechanically. Trees, tall shrubs, and vines provide a type of shade that’s called dappled light, patches of light and shadow created when sunlight passes through their leaves. When the green of plants combine with dappled light this can help reduce mental and physical stress. Plant material also has great cultural value, and planting and caring for trees can help bring people together.

A downside to natural shade: plants take time to grow to produce these benefits. They also, like all living things, will die at some point. Pollen released by natural shade can trigger allergies, and some plants are toxic and/or invasive.

Bushy shrubs may also hide unwanted species of plants. If a tree provides too much shade, it can be very difficult to grow other plants underneath it, especially grass.

This lookbook includes a list of trees, tall shrubs, and vines that grow well in many parts of British Columbia. Plants with dense canopies were selected, which offer high or medium shade that can grow in a wide range of hardiness zones in BC (see the [British Columbia Plant Hardiness Zone Map](#)) and serve many landscape uses (residential yards, street trees, play spaces, parks, native plant gardens etc.).

## BC PLANT HARDINESS ZONE MAP

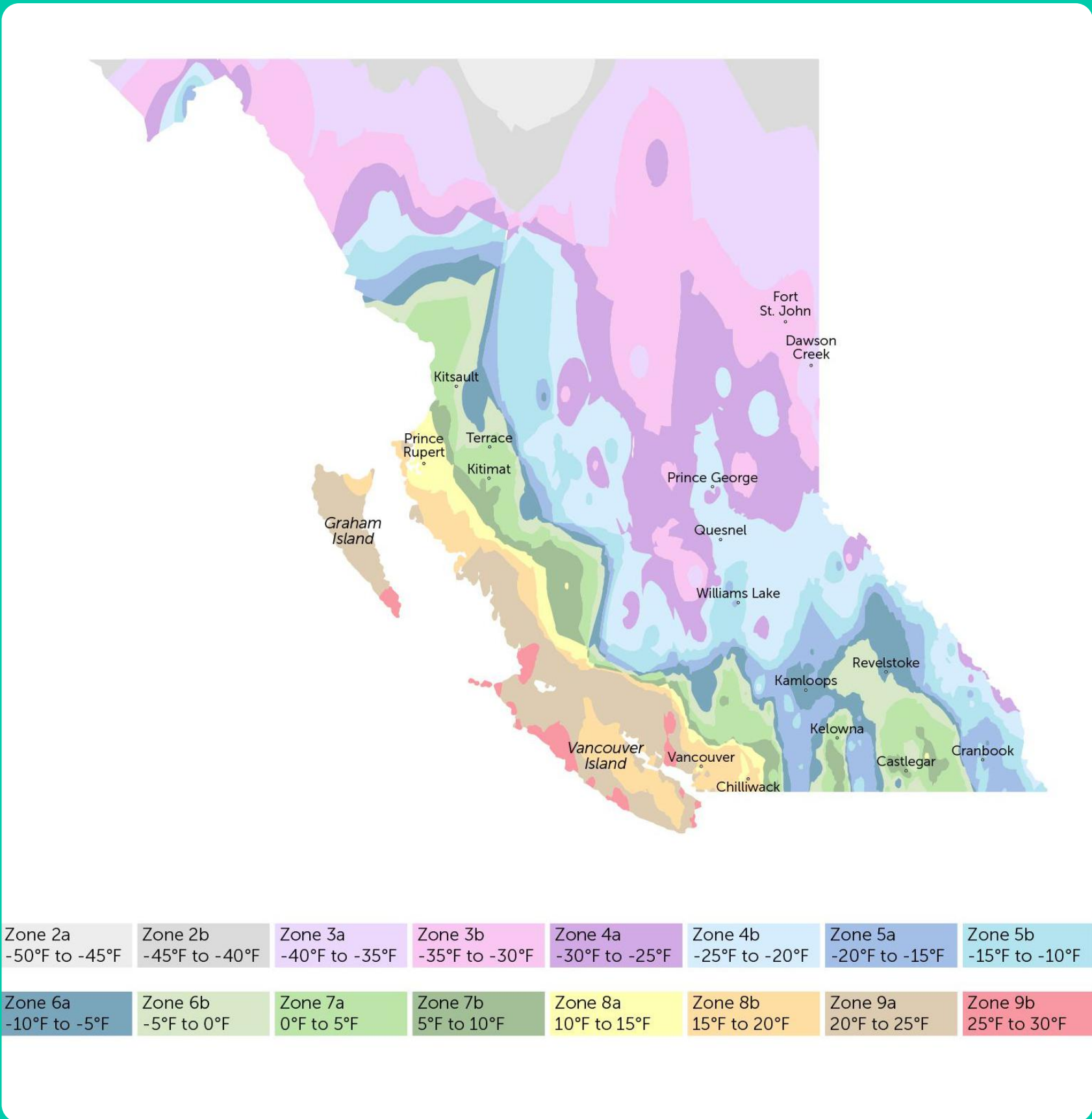


Photo Credit: plantmaps.com



# HOW TO NAVIGATE THIS SECTION

The natural shade in this lookbook is arranged alphabetically by the common tree name, for example: oak, red.

For each tree and tall shrub, a dappled analysis was done based on [Guidelines for shade planning and design](#). Since the analysis was in early May, not all trees were in full leaf, so in some instances the dappled light pattern may not match the rating for shade. An analysis for vines was not performed as most vines had not produced enough leaf or the support structure was too variable.

Plants identified provide heavy or medium shade, are not invasive, not toxic, and they are available for sale in BC. We also tried to identify plants that were native to BC, were listed as surviving Metro Vancouver’s changing climate and/or listed as a BC Firesmart fire-resistant plant.

## SPECIAL THANKS TO

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# DEFINTIONS

## Cultural Value

Highlights Indigenous, historical and/or current uses of the plants in daily life or special ceremonies. This includes things like providing wood for construction or art, using plant parts in cooking and in medicine, or the role of plants in stories and myths.

## Ecological value

Describes how the plant contributes to natural systems around it in the landscape. This includes things like providing habitat and food for birds, butterflies, and pollinators, and helping to keep soil in place on hills, so it doesn't wash away into rivers and streams.

## Play Value

Identifies elements of the plant that offer play experiences for children. It can be things like climbing opportunities, using plant parts as play props, or in arts and crafts projects. Some plants have unique smells and textures that can spark curiosity and wonder in children during playtime

# OTHER KEY RESOURCES THAT MIGHT BE USEFUL:

- BC Native Plants List
- BC Tree species compendium
- Canadian poisonous plants information system
- E-Flora BC
- Fire-Resistant Trees BC
- Government of Canada Trees
- Invasive species council of BC
- Native Plant PNW
- North Carolina Extension Gardener Plant Toolbox
- Tree Canada
- Trees for Hot Sites
- Urban Tree List for Metro Vancouver in a Changing Climate
- USDA Plant Database



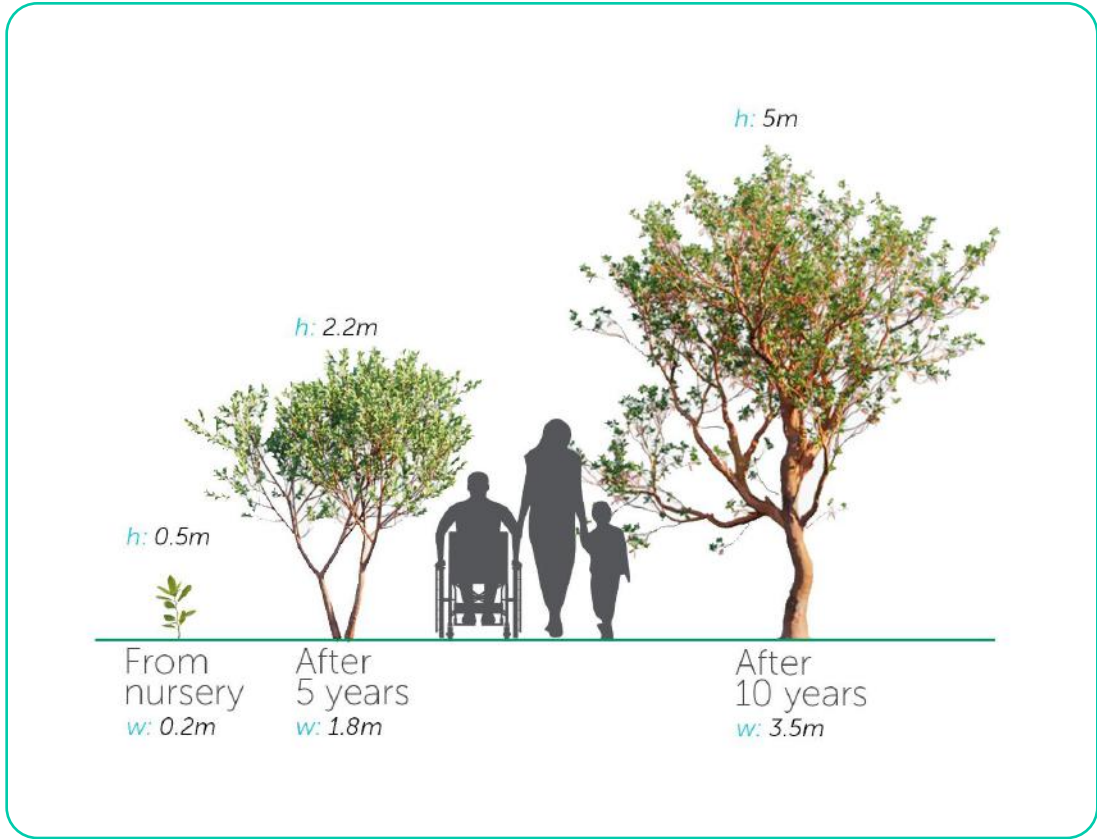
# ARBUTUS

Common Name	Arbutus
Scientific Name	<i>Arbutus menziesii</i>
UV Protection	Heavy
Hardiness Zone	6 – 8
Growth Rate	0.3m / year
Type	Broad-leaved evergreen tree
Site Conditions	Full sun, moist soil, but can be tolerant of drought conditions

Landscape Use	Residential yards, parks, play spaces, pollinator gardens, native plant gardens
Maintenance/Care	Young trees need irrigation to grow faster, very suitable to the current and projected future climate in the Metro Vancouver region, the fruits are edible, but overeating causes cramps

Cultural Value	The arbutus tree is native to BC. Indigenous people eat the fruit raw and cooked. They also use the bark for colds. The wood can be used for weaving shuttles.
Ecological Value	The berries are an important food for birds and small mammals. The flowers attract pollinators such as bees and hummingbirds. Listed as a BC Firesmart fire-resistant plant

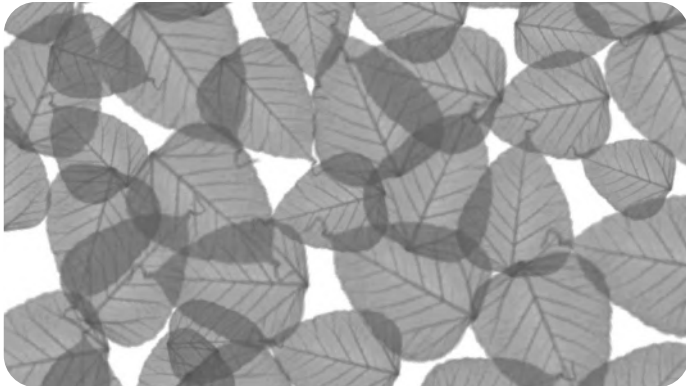
Play Value	The papery bark of the arbutus tree sheds every year, when it has fallen to the ground it can be used in arts and crafts.
Fun Fact	It is nicknamed the "refrigerator tree" due to its thin, papery bark. Place your hand on the bark and you can feel the cool water and minerals moving up from the cooler ground.



Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Heavy



Actual shade pattern  
Photo Credit: UBC SALA



Play value  
Photo Credit: NaJina McEnany



Cultural value  
Photo Credit: Marion Carniel



Ecological value  
Photo Credit: Lotus Johnson



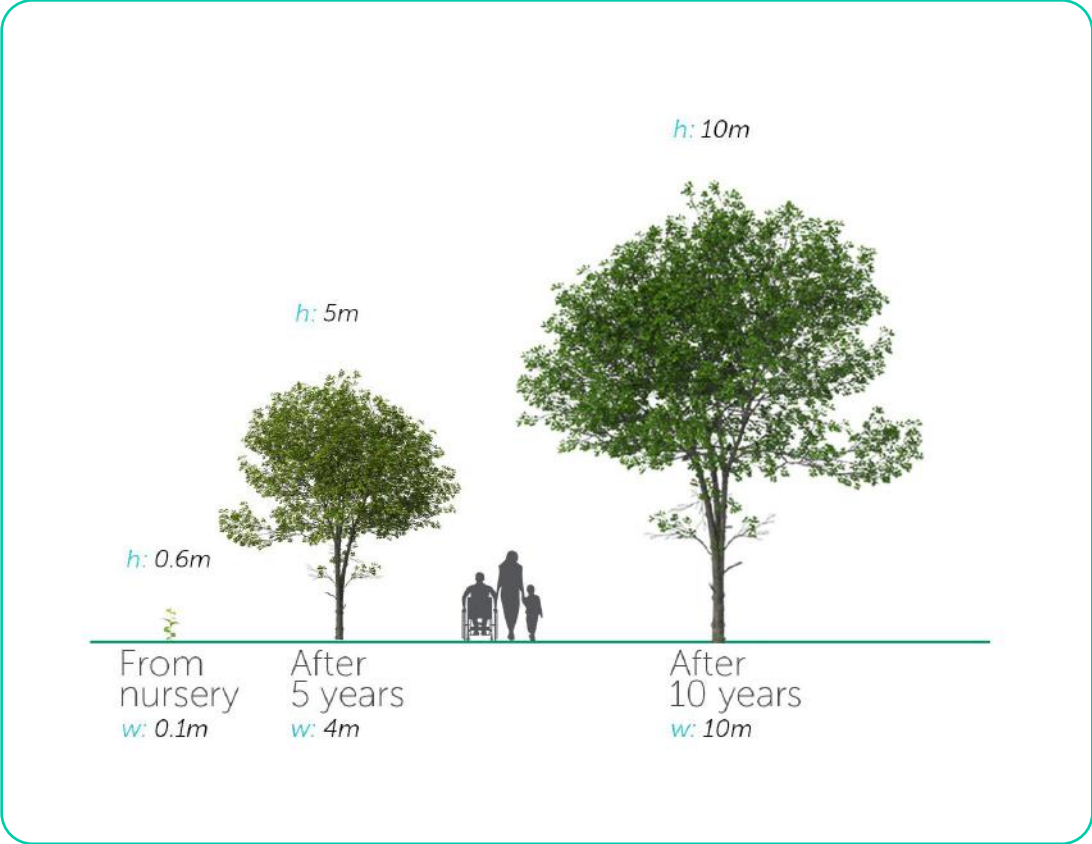
# BASSWOOD, AMERICAN

Common Name	Basswood, American
Scientific Name	<i>Tilia americana</i>
UV Protection	Heavy
Hardiness Zone	2 – 8
Growth Rate	0.7m / year
Type	Deciduous tree
Site Conditions	Full sun or partial shade, moist and well-drained soil

Landscape Use	Residential yards, parks, institutional settings, street trees, play spaces, pollinator gardens, butterfly gardens
Maintenance/Care	Low maintenance, tolerant to climate change, dried flowers can be used to make teas, but over-use can cause health issues

Cultural Value	American basswood trees are considered exotic to BC, but this species is great for quickly bringing high UV protection into your environment due to its rapid growth!
Ecological Value	American basswood provides a good food source for pollinators, birds, and small mammals.

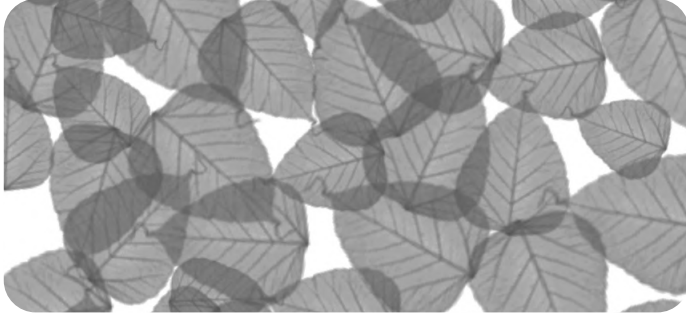
Play Value	The seeds are small round nutlets accompanied by a long strap-shaped bract, when you drop them, they will spin like helicopters!
Fun Fact	Before synthetics, American basswood was the material of choice for prosthetics, and it is a good honey plant!



Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Heavy



Actual shade pattern  
Photo Credit: UBC SALA



Play value  
Photo Credit: Naturally Curious



Ecological value  
Photo Credit: Pike Plumber Company



# BIRCH, PAPER

Common Name	Birch, paper
Scientific Name	<i>Betula papyrifera</i>
UV Protection	Medium
Hardiness Zone	2 – 7
Growth Rate	1.6m / year
Type	Deciduous tree
Site Conditions	Full sun or partial shade, moist soil

Landscape Use	Residential yards, parks, rain gardens, butterfly gardens, native plant gardens
Maintenance/Care	Needs irrigation in dry conditions, it tends to be short-lived in warmer climates.

Cultural Value	Paper birch is native to BC. Indigenous peoples use paper birch bark as material for baskets, cradles, and canoes. They also use birch wood for the making of snowshoe frames.
Ecological Value	Paper birch is a larval host plant for the lunar moth and its leaves are consumed by caterpillars.

Play Value	The papery exfoliating white bark can be used as paper in arts and crafts projects.
Fun Fact	Paper birch is a pioneer species, meaning it quickly recolonizes areas where there has been deforestation due to disturbances like forest fires.



Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Medium



Actual shade pattern  
Photo Credit: UBC SALA



Play value  
Photo Credit: Marie Studer



Cultural value  
Photo Credit: Cottage Surroundings

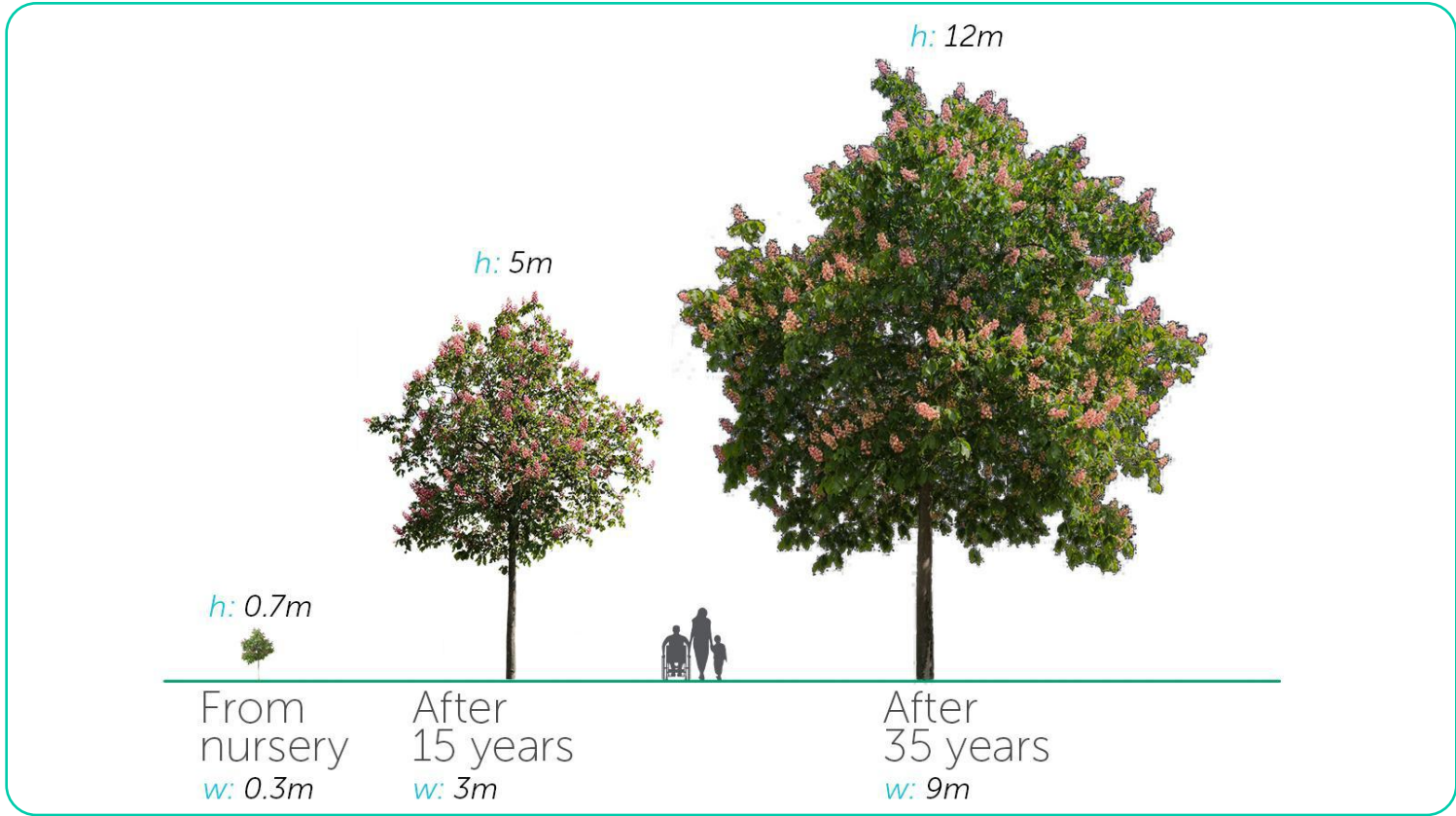


Ecological value  
Photo Credit: Robert Jensen



# CHESTNUT, PINK HORSE

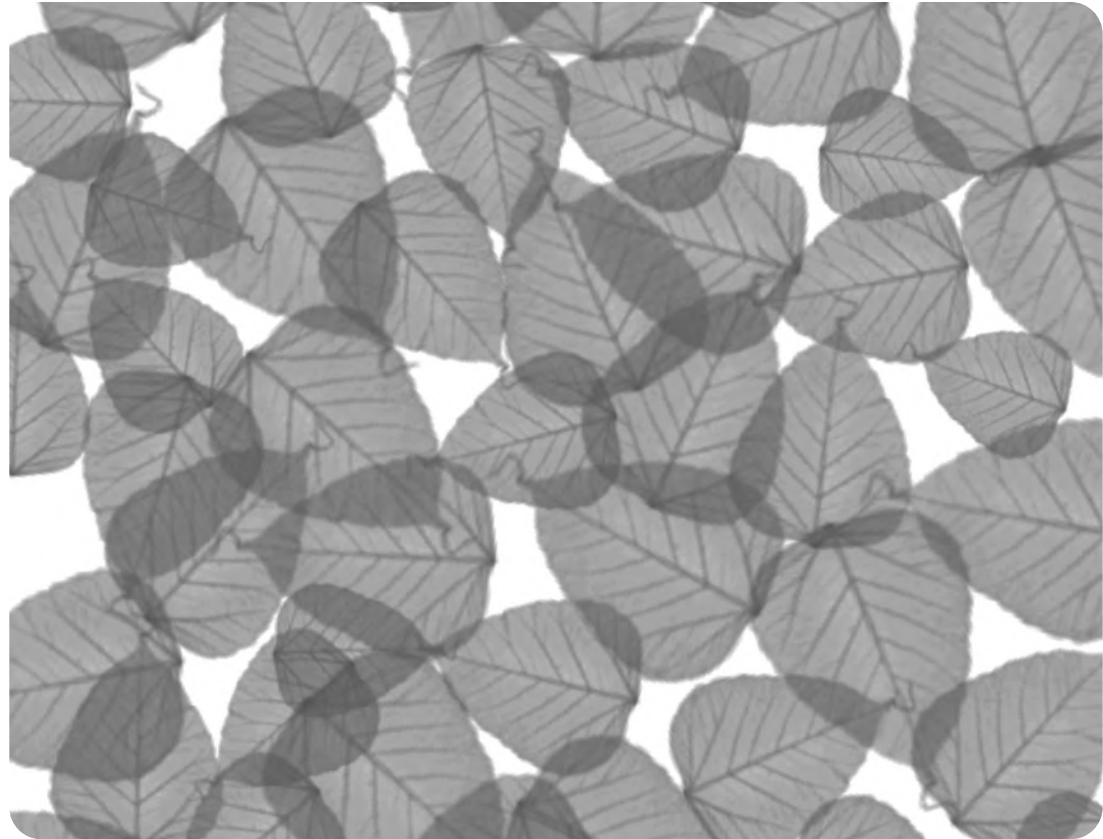
<b>Common Name</b>	Chestnut, Pink Horse	<b>Landscape Use</b>	Large residential yards, parks, institutional settings	<b>Cultural Value</b>	The pink horse-chestnut is a garden crossbreed of A. hippocastanum and A. pavia that was first discovered in Europe in 1812.	<b>Play Value</b>	The pink horse-chestnut can be used as a backdrop for imaginative play because of the beautiful flowers. The flowers can also be used to create miniature bouquets.
<b>Scientific Name</b>	<i>Aesculus x carnea</i>	<b>Maintenance/Care</b>	Regular pruning for shape and size. Water regularly during establishment years, then less frequently in later years. Species anticipated to tolerate all but the driest sites under future climate in the Metro Vancouver region, identified as thriving on hot sites. Nuts are mildly toxic, doubtfully ingested because of large size and bitterness	<b>Ecological Value</b>	The pink horse-chestnut flowers attract bees and hummingbirds.	<b>Fun Fact</b>	Pink horse-chestnut is a hybrid cultivar that does not appear naturally!
<b>UV Protection</b>	Heavy						
<b>Hardiness Zone</b>	5 – 8						
<b>Growth Rate</b>	0.4m / year						
<b>Type</b>	Deciduous tree						
<b>Site Conditions</b>	Full or partial sun, well-drained moist soil						



**Phases of maturity**  
Photo Credit: UBC SALA



**Full view of plant**  
Photo Credit: UBC SALA



**Shade pattern type - UV Protection Heavy**



**Actual shade pattern**  
Photo Credit: UBC SALA



# CURRENT, FLOWERING

Common Name	Currant, Flowering
Scientific Name	<i>Ribes sanguineum</i>
UV Protection	Heavy
Hardiness Zone	6 – 8
Growth Rate	0.5m / year
Type	Deciduous shrub
Site Conditions	Full or partial sun, well-drained moist soil

Landscape Use	Small residential yards, border, native plant gardens, play spaces
Maintenance/Care	Prune immediately after flowering, water deeply but less frequently especially during its establishment years

Cultural Value	Flowering currant is a BC Native shrub. Indigenous people use parts of the flowering currant for medicinal purposes as it has anti-bacterial and anti-viral qualities.
Ecological Value	Flowering currant attracts hummingbirds and provides nectar for bees, butterflies, and other pollinators. The berries can also be eaten.

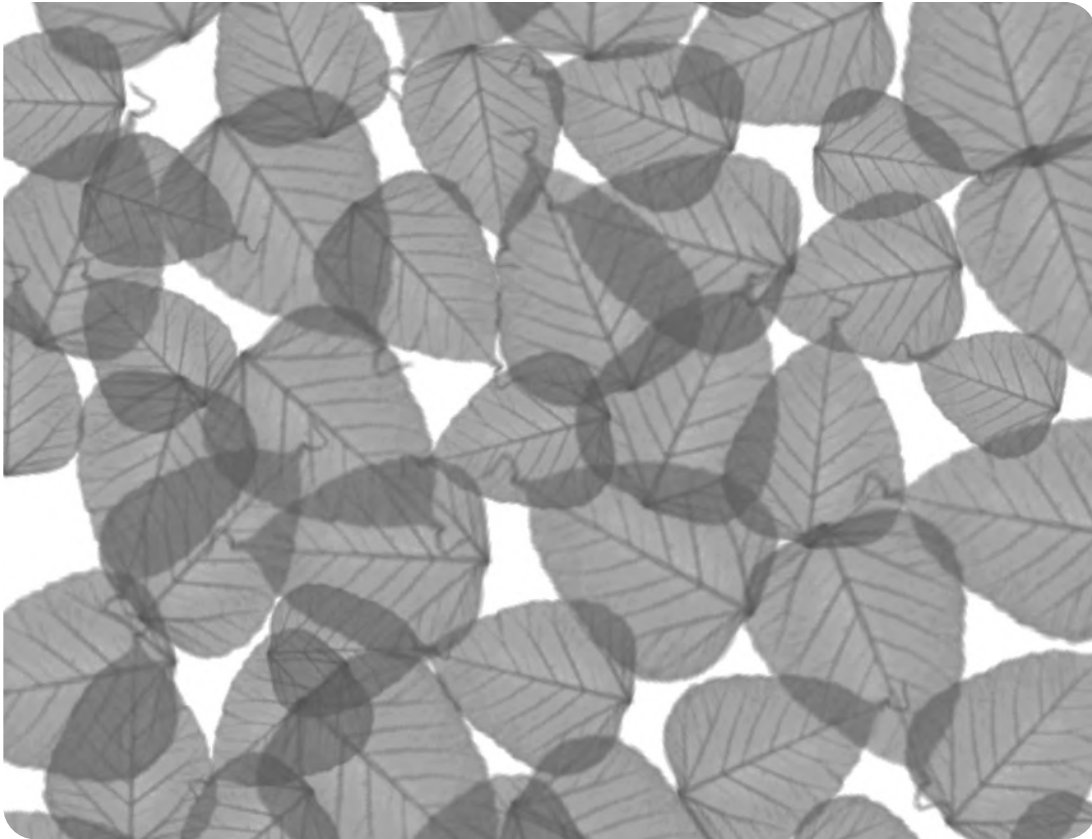
Play Value	The fallen flowers can be used for flower crowns and the berries can be picked for a jam making activity!
Fun Fact	The foliage is fragrant when crushed!



Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Heavy



Actual shade pattern  
Photo Credit: UBC SALA



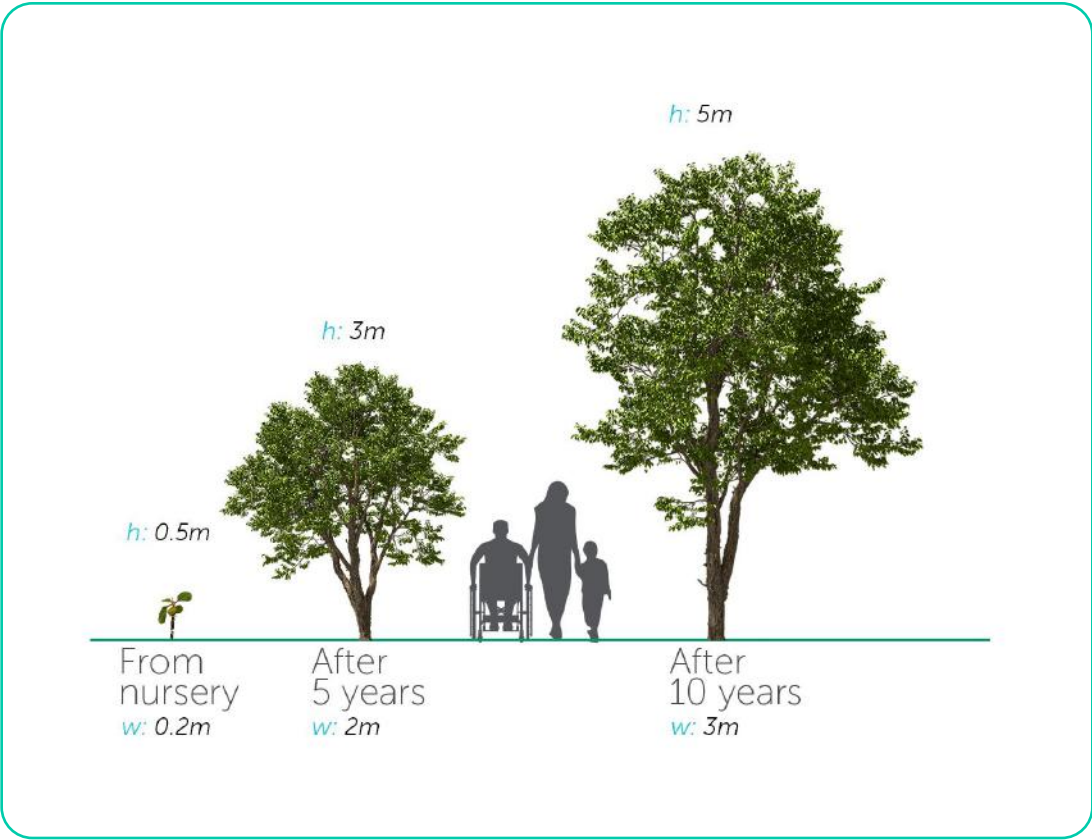
# DOGWOOD, PACIFIC

Common Name	Dogwood, Pacific
Scientific Name	<i>Cornus nuttallii</i>
UV Protection	Heavy
Hardiness Zone	7 – 9
Growth Rate	0.4m / year
Type	Deciduous tree
Site Conditions	Partial shade, moist, well-drained soil, coastal areas

Landscape Use	Residential yards, play spaces, pollinator gardens, native plant gardens
Maintenance/Care	Young trees grow quickly, anticipated to be restricted to moist sites under future climate, this species is easy prey to a fungus disease if it has been wounded, so a buffer against lawnmower damage should be considered.

Cultural Value	Pacific dogwood is native to BC. Indigenous people use hard, dried wood for harpoon shafts and other implements.
Ecological Value	Pacific dogwood’s fruits attract birds, squirrels, and even deer.

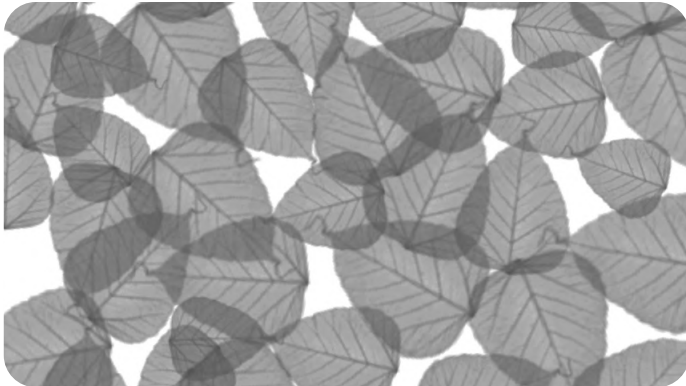
Play Value	Edible fruit can be used in pretend play cooking!
Fun Fact	With its showy flowers, Pacific dogwood was adopted as British Columbia’s official floral emblem in 1956.



Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Heavy



Actual shade pattern  
Photo Credit: UBC SALA



Play value  
Photo Credit: Danny Foster



Cultural value Photo Credit: Eastbourne Auctions



Ecological value Photo Credit: Cr: Matthew Wills



# FIR, DOUGLAS

Common Name	Fir, Douglas
Scientific Name	<i>Pseudotsuga menziesii</i>
UV Protection	Heavy
Hardiness Zone	2 – 6
Growth Rate	0.9m / year
Type	Evergreen tree
Site Conditions	Deep, well-drained soil with low acid, and full sun with light shade

Landscape Use	Residential yards, native plant gardens, borders, and windbreaks
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Maintenance/Care	Low maintenance with medium water use, species anticipated to tolerate all but the driest sites under future climate in Metro Vancouver region. Be careful of sharp cones!
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Cultural Value	Indigenous people utilize Douglas firs for construction, basketry, and medicinal uses. Douglas firs are used to treat digestive issues, headaches, joint pain, and seasonal colds.
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Ecological Value	Douglas Fir is a main component of the Western hemlock ecological zone. The seeds inside cones are food sources for squirrels and other small animals. This tree species is on the BC Firesmart best to avoid list.
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Play Value	The Douglas fir is native to BC. Younger trees can serve as an outdoor Christmas tree in winter.
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Fun Fact	Douglas fir grows quickly. It normally matures to be between 60 - 75 meters tall. Today's tallest Douglas firs stand at slightly over 90 meters.
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Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Heavy  
Photo credit: UBC SALA



Actual shade pattern  
Photo Credit: UBC SALA



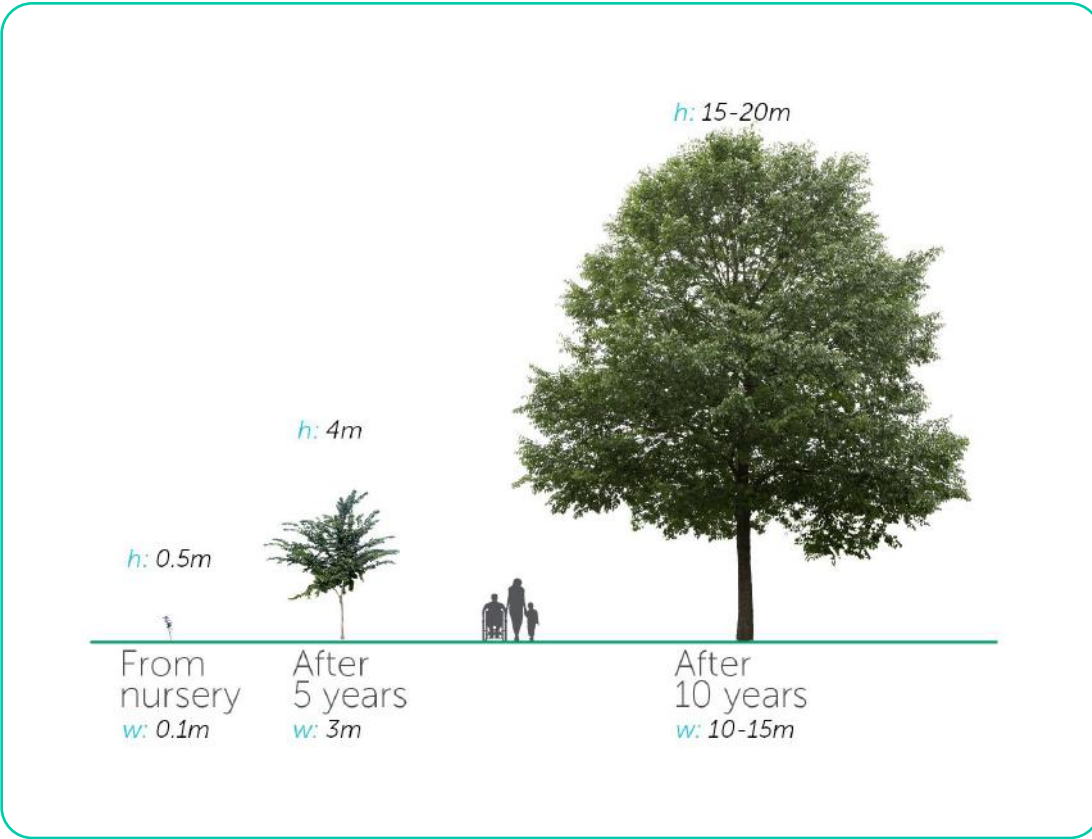
# ELM, AMERICAN

Common Name	Elm, American
Scientific Name	<i>Ulmus americana</i>
UV Protection	Heavy
Hardiness Zone	2 – 9
Growth Rate	0.5m / year
Type	Deciduous tree
Site Conditions	Full sun, partial shade, well-drained soil

Landscape Use	Residential yard, park, institutional setting, street tree, butterfly garden
Maintenance/Care	Young trees need irrigation, especially in hot dry summers, but it is drought tolerant when mature, suitable to the current and projected future climate in the Metro Vancouver region, this species will provide highly dense shade when fully leafed out

Cultural Value	American elm tree is considered an exotic in BC, however, this species is great for quickly bringing UV protection into your environment due to its rapid growth!
Ecological Value	It is valuable to wildlife as a food source, nesting site, and habitat. This tree is anticipated to tolerate all but the driest sites under future climate conditions in Metro Vancouver.

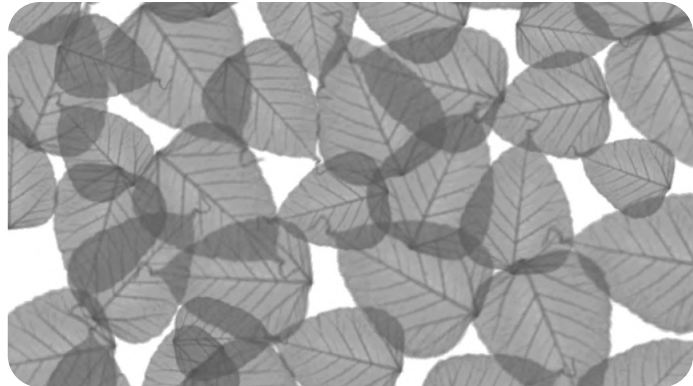
Play Value	The oval-shaped winged seeds have hairs on the margin. They look fluffy and very cute, and they can be used as a play prop.
Fun Fact	It is considered deer-resistant and tolerates urban conditions.



Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Heavy



Actual shade pattern  
Photo Credit: UBC SALA



Play value  
Photo Credit: Kurt Hasselman



Ecological value  
Photo Credit: gardenia.net



# FOX GRAPE

<b>Common Name</b>	Fox grape	<b>Landscape Use</b>	Train on large supports of arbors, trellises, fences or other structures	<b>Cultural Value</b>	Indigenous people and European settlers have used fruit as table grapes and juice grapes. The cultivation of grapes for winemaking has been an important cultural practice in many places where it's found.	<b>Play Value</b>	Children can pick and eat the grapes of fox grapes vines.
<b>Scientific Name</b>	<i>Vitis labrusca</i>						
<b>UV Protection</b>	Heavy	<b>Maintenance/Care</b>	Requires sturdy support for their twining stems, pruning should be carried out in winter	<b>Ecological Value</b>	Fox grape provides shelter and nesting sites for birds and small animals. Its flowers attract pollinators such as bees and butterflies. Listed as a BC Firesmart fire-resistant plant	<b>Fun Fact</b>	They have the strongest aroma among wine grape varieties.
<b>Hardiness Zone</b>	5 – 8						
<b>Growth Rate</b>	1 – 3m / year						
<b>Type</b>	Deciduous shrub/climber						
<b>Site Conditions</b>	Full sun, well-drained soil, drought-tolerant						



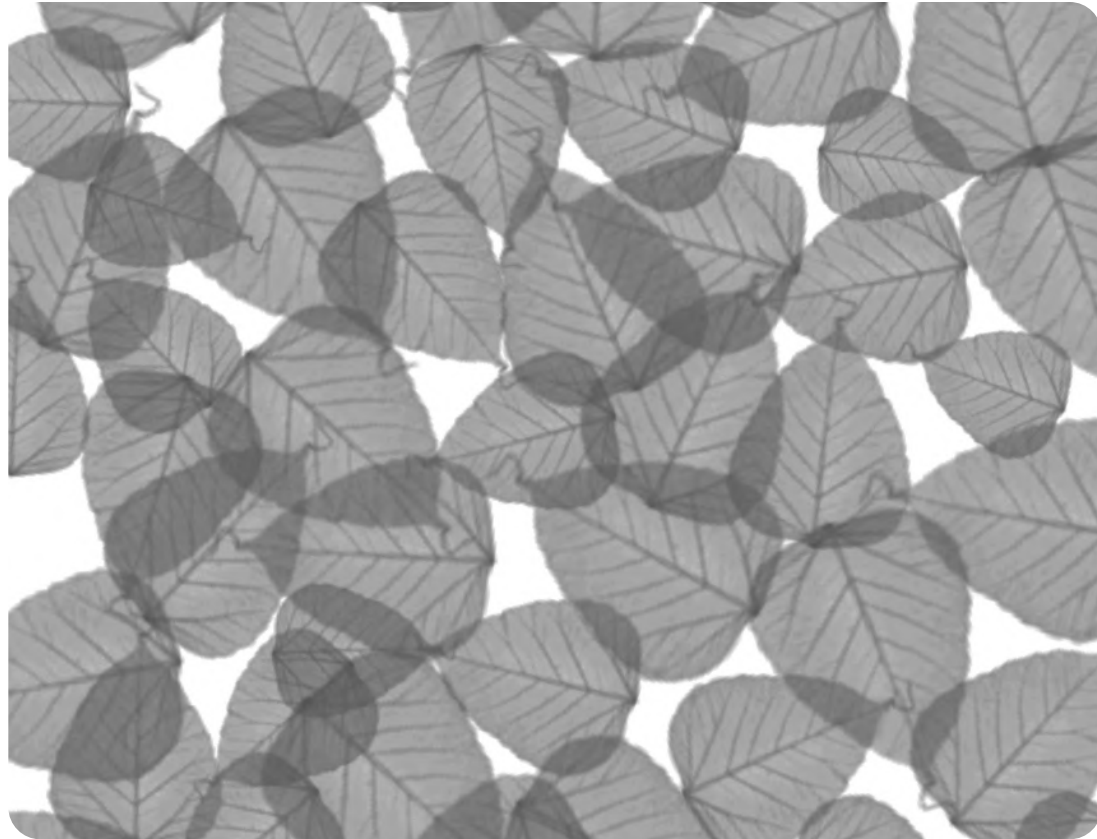
**Phases of maturity**  
Photo Credit: UBC SALA



**Fox grape leaves**  
Photo Credit: UBC SALA



**Fox grape fruit**  
Photo Credit: UBC SALA

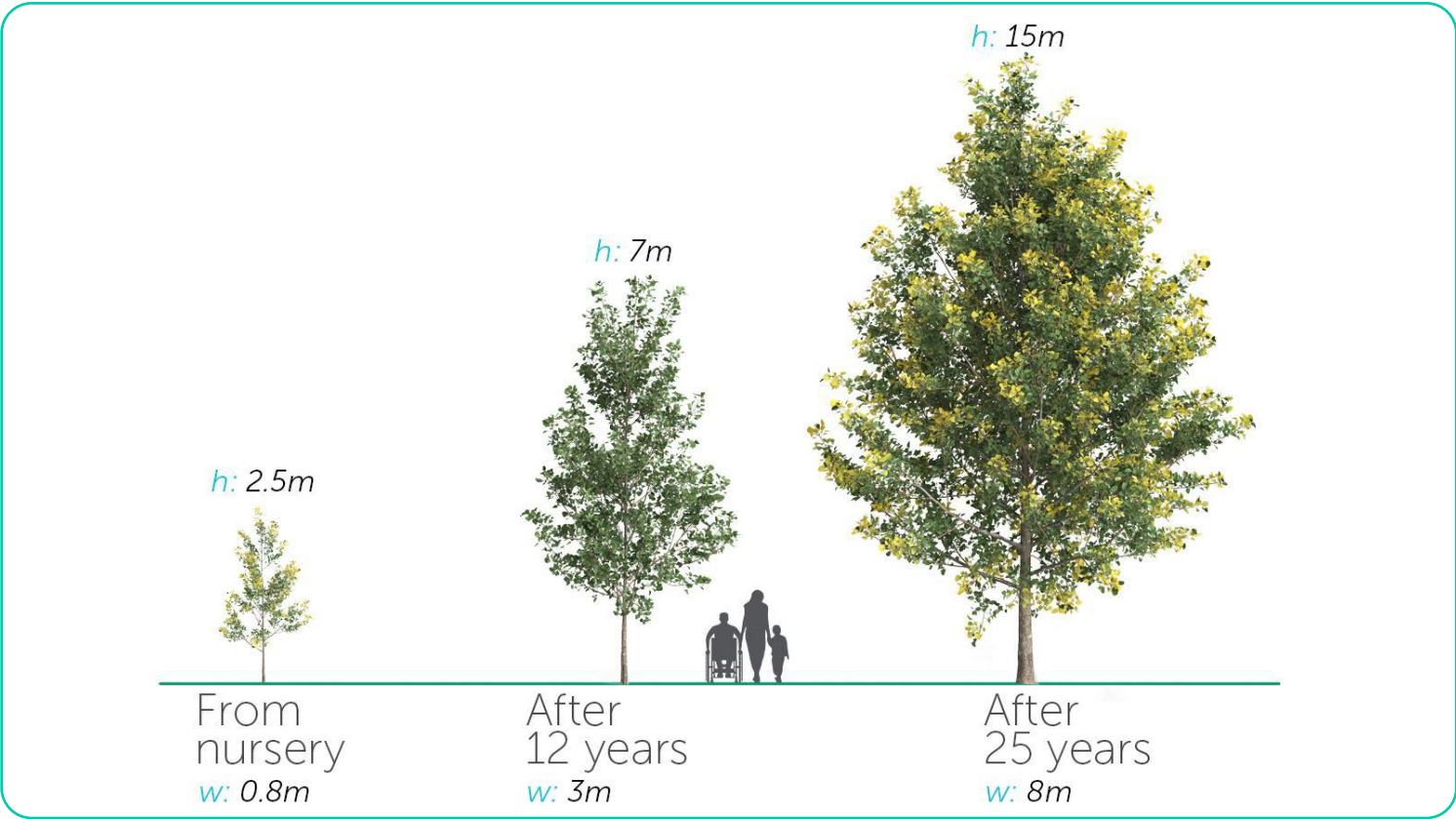


**Shade pattern type - UV Protection Heavy**  
Photo credit: UBC SALA



# GINGKO

<b>Common Name</b>	Ginkgo	<b>Landscape Use</b>	Urban-tolerant, street trees, along walkways, play spaces, residential yards, parks	<b>Cultural Value</b>	Historically, ginkgo trees have medicinal, spiritual, and horticultural importance as it has been a natural symbol of China. In its seeds, leaves, and roots, Ginkgo contains antioxidant and anti-inflammatory properties.	<b>Play Value</b>	The fan-shaped leaves are fun to collect because of their shape and the seeds are edible if cooked which provides a good “fruit-picking” activity!
<b>Scientific Name</b>	<i>Ginkgo biloba</i>	<b>Maintenance/Care</b>	Prune during late winter and keep soil moist, especially during early establishment, very suitable to the current and projected future climate in the Metro Vancouver region, identified as thriving on hot sites, seed pulp juice may cause skin irritation	<b>Ecological Value</b>	Ginkgo trees can survive a wide range of temperatures and site conditions making it climate resistant. Listed as a BC Firesmart fire-resistant plant	<b>Fun Fact</b>	Ginkgo is nicknamed the living fossil because it has existed for hundreds of millions of years!
<b>UV Protection</b>	Medium						
<b>Hardiness Zone</b>	4 – 9						
<b>Growth Rate</b>	0.5m / year						
<b>Type</b>	Deciduous tree						
<b>Site Conditions</b>	Full sun, well-drained moist soil						



**Phases of maturity**  
Photo Credit: UBC SALA



**Full view of plant**  
Photo Credit: UBC SALA



**Shade pattern type - UV Protection Medium**  
Photo Credit: UBC SALA

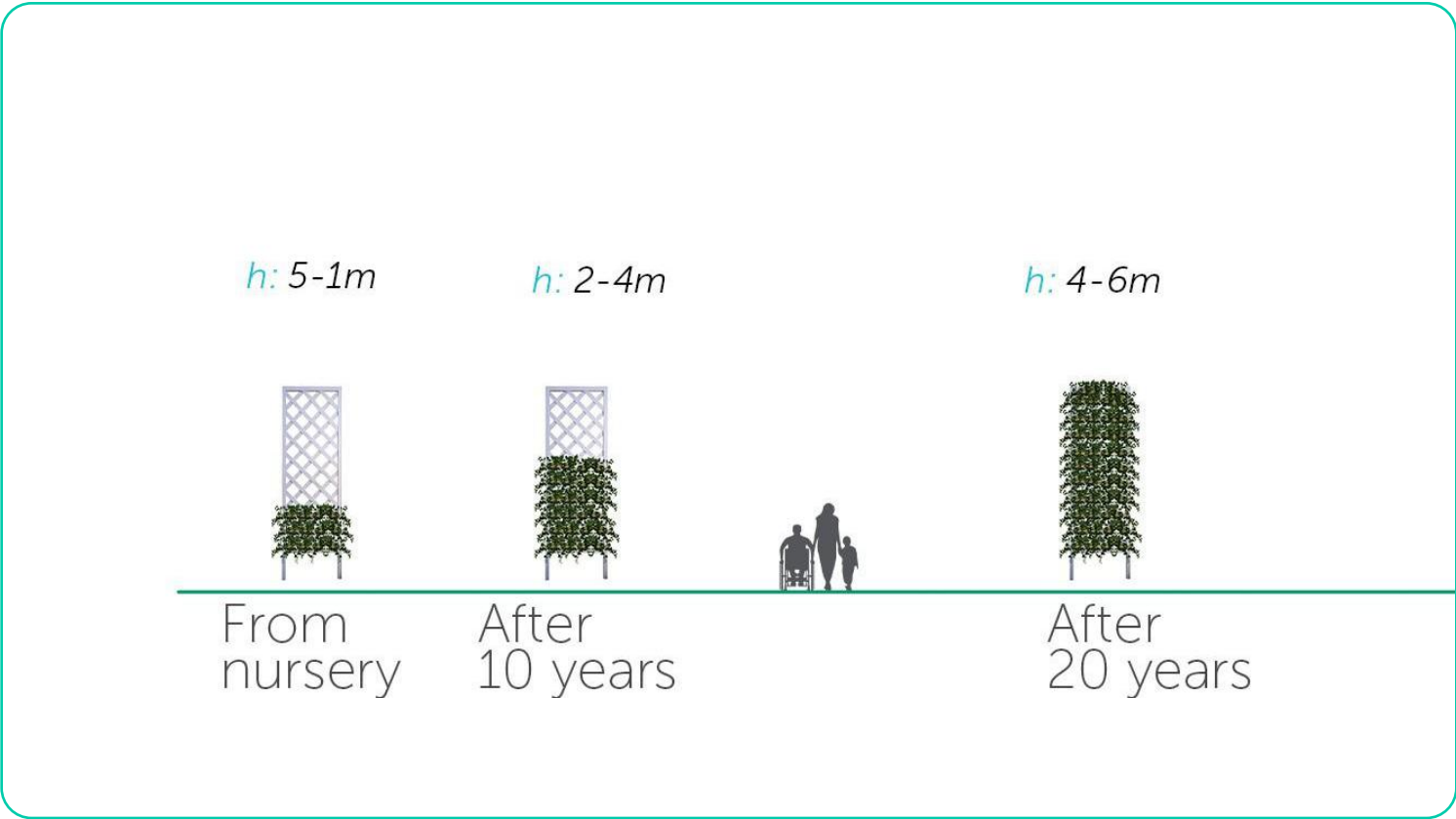


**Actual shade pattern**  
Photo credit: UBC SALA



# HONEYSUCKLE, LIMBER

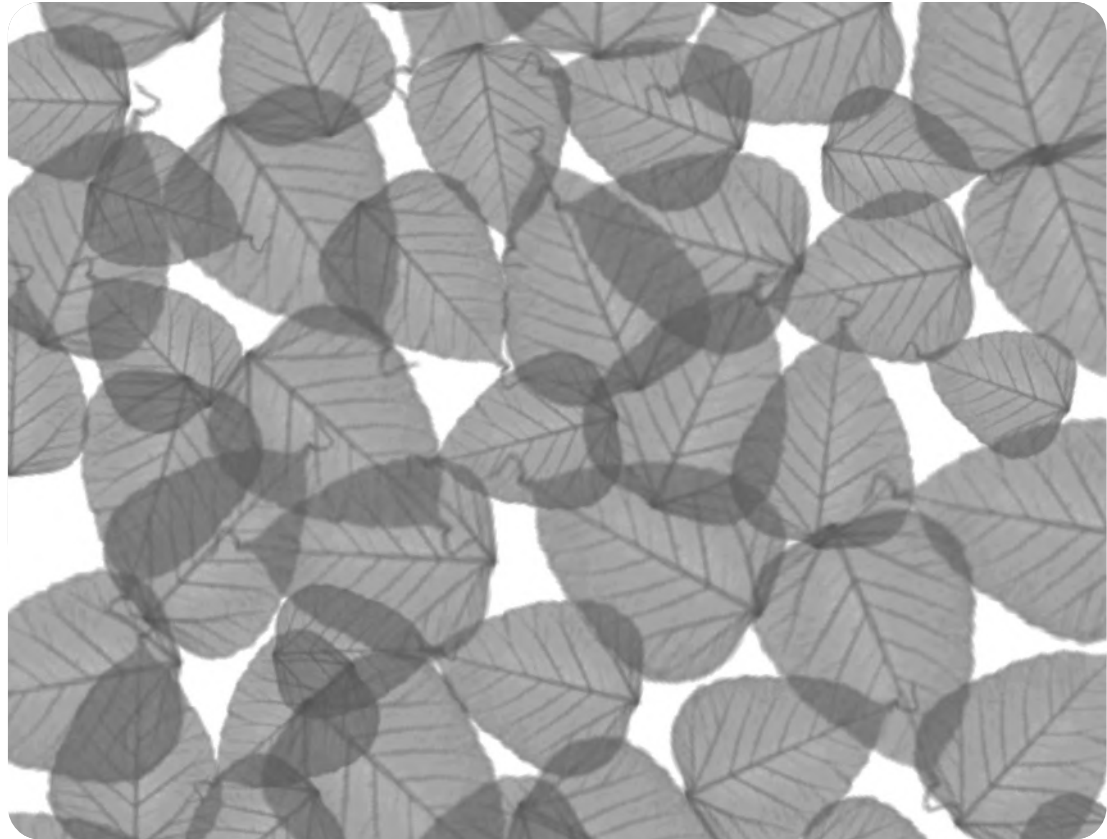
<b>Common Name</b>	Honeysuckle, Limber	<b>Landscape Use</b>	Vine for arbors, trellises, fences or other structures, butterfly gardens, native plant gardens	<b>Cultural Value</b>	Limber honeysuckle is native and it is used by Indigenous people for medicinal purposes. The stems were used for building and the fiber was used for twine.	<b>Play Value</b>	The fan-shaped leaves are fun to collect. Children can observe the hummingbirds and butterflies who are attracted to its nectar-rich flowers. Their seeds are edible if cooked which provides a good “fruit-picking” activity!
<b>Scientific Name</b>	<i>Lonicera dioica</i>	<b>Maintenance/Care</b>	To train, gently tie the plant to the support, they climb by twining themselves around the supports, the berries are generally considered mildly toxic to humans.	<b>Ecological Value</b>	The flowers of the limber honeysuckle draw hummingbirds and butterflies, and the berries are consumed by birds.	<b>Fun Fact</b>	The term “limber” refers to its supple stems, so limber honeysuckle is known for its flexibility.
<b>UV Protection</b>	Heavy						
<b>Hardiness Zone</b>	3 – 5						
<b>Growth Rate</b>	1 – 2m / year						
<b>Type</b>	Deciduous vine						
<b>Site Conditions</b>	Part sun and shade, shade, various moist to dry soils						



**Phases of maturity**  
Photo Credit: UBC SALA



**Full view of plant**  
Photo Credit: UBC SALA



**Shade pattern type - UV Protection Heavy**  
Photo Credit: UBC SALA

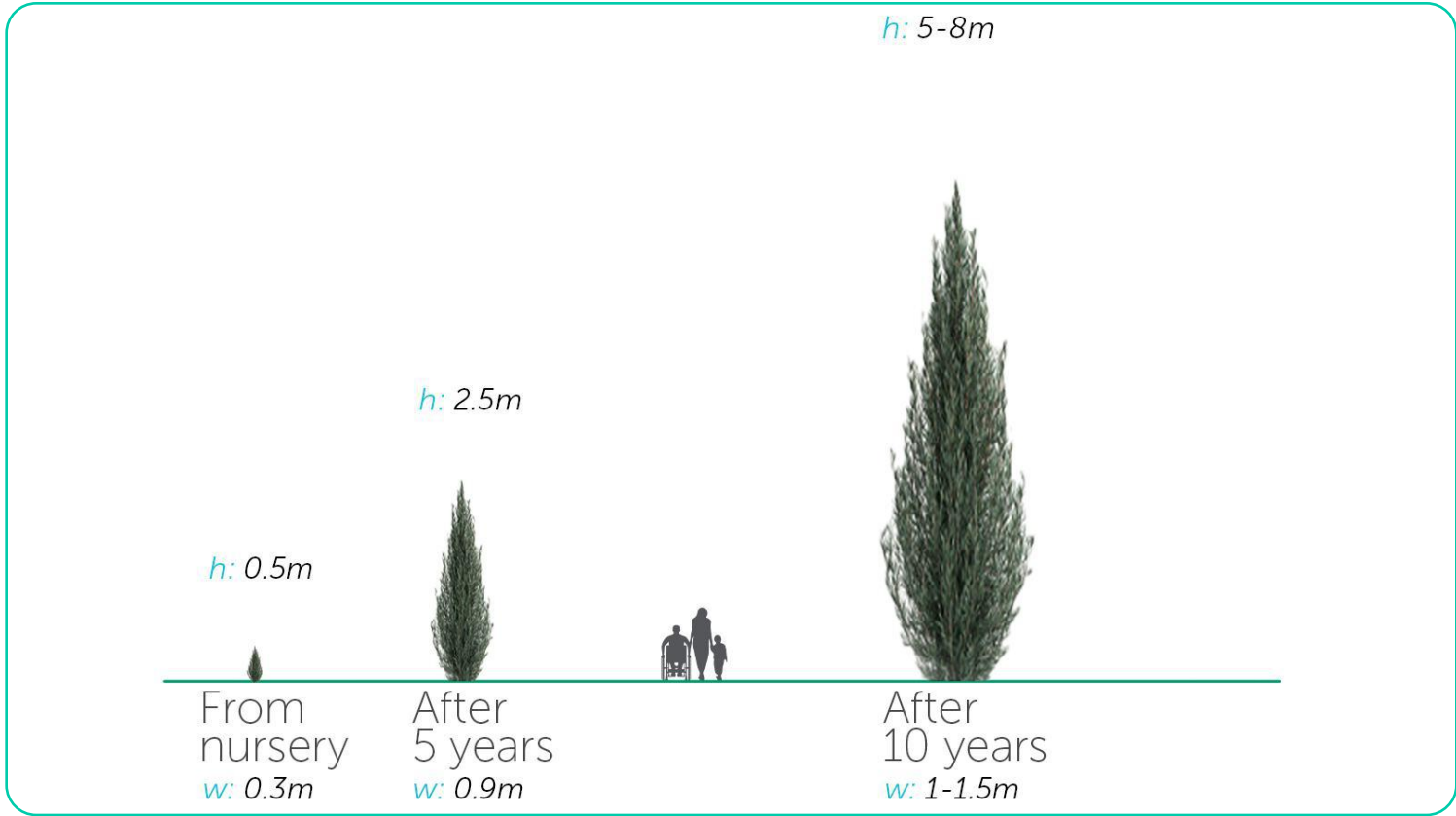


**Flowers**  
Photo credit: UBC SALA



# JUNIPER, ROCKY MOUNTAIN

<b>Common Name</b>	Juniper, Rocky Mountain	<b>Landscape Use</b>	Small residential yard, hedge	<b>Cultural Value</b>	Indigenous peoples of BC have used Rocky Mountain juniper's distinctive berries for a variety of purposes, including flavoring meat stew and cakes.	<b>Play Value</b>	Rocky Mountain junipers can be used spatially, meaning they can be used to create outdoor rooms, perfect for hide-and-seek play.
<b>Scientific Name</b>	<i>Juniperus scopulorum</i> cvs.						
<b>UV Protection</b>	Heavy						
<b>Hardiness Zone</b>	1 – 8						
<b>Growth Rate</b>	0.3m / year	<b>Maintenance/Care</b>	Moderate to low water use, fast growing, can be pruned into a hedge	<b>Ecological Value</b>	Rocky Mountain juniper provides food and shelter for many birds and mammals. This tree species is on the BC Firesmart best to avoid list.	<b>Fun Fact</b>	Indigenous people boil the Rocky Mountain juniper roots and use them medicinally in bathing and disinfection.
<b>Type</b>	Evergreen tree						
<b>Site Conditions</b>	Rocky or gravelly or dry, well-drained, full sun, identified as thriving on hot sites						



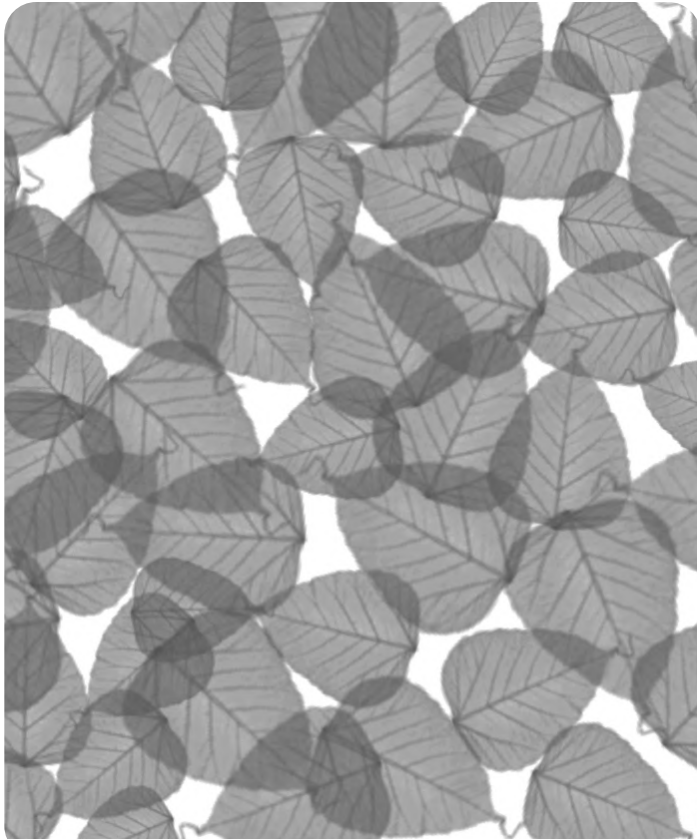
**Phases of maturity**  
Photo Credit: UBC SALA



**Full view of plant**  
Photo Credit: UBC SALA



**Cultural value**  
Photo Credit: UBC SALA



**Shade pattern type - UV Protection Heavy**  
Photo Credit: UBC SALA



**Actual shade pattern**  
Photo Credit: UBC SALA



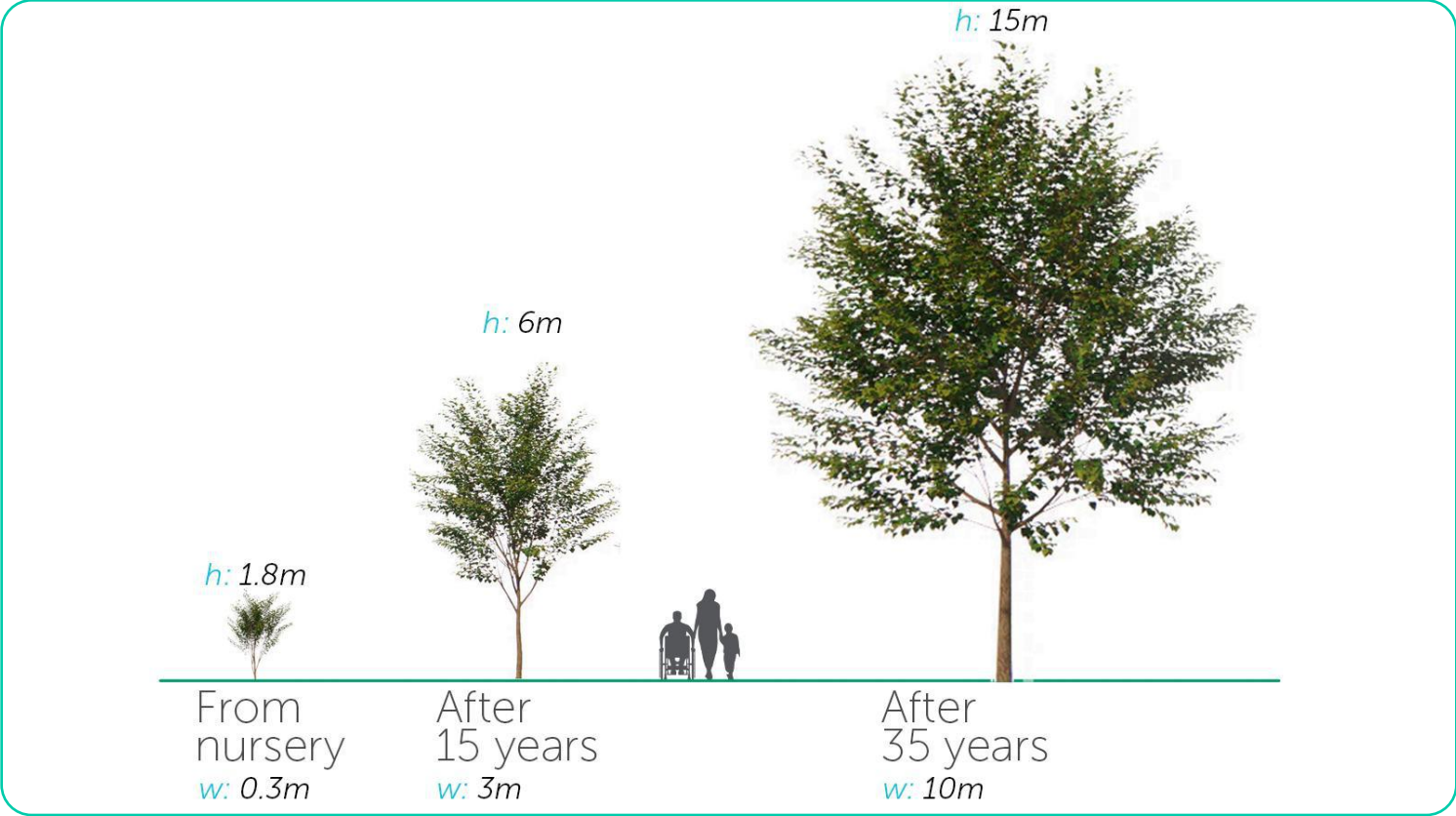
# KATSURA

Common Name	Katsura
Scientific Name	<i>Cercidiphyllum japonicum</i>
UV Protection	Medium
Hardiness Zone	4 – 8
Growth Rate	0.4m / year
Type	Deciduous tree
Site Conditions	Full or partial sun, well-drained moist soil

Landscape Use	Residential yards, shade near patios, play spaces, parks, institutional settings, street trees
Maintenance/Care	Prune every 3-5 years, requires moist soil when first establishing, species anticipated to be restricted to moist sites under future climate in the Metro Vancouver region

Cultural Value	In Japanese legends, the Katsura tree symbolized the connection between earth and sky. Their delicate foliage and form have also been depicted in traditional Japanese art throughout history.
Ecological Value	Katsura trees provide habitats for birds and attracts insect pollinators.

Play Value	The heart-shaped leaves can be used for arts and crafts. The Katsura tree can also be a good climbing tree.
Fun Fact	In the fall, the foliage emits a caramel-like fragrance!



Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Medium  
Photo Credit: UBC SALA

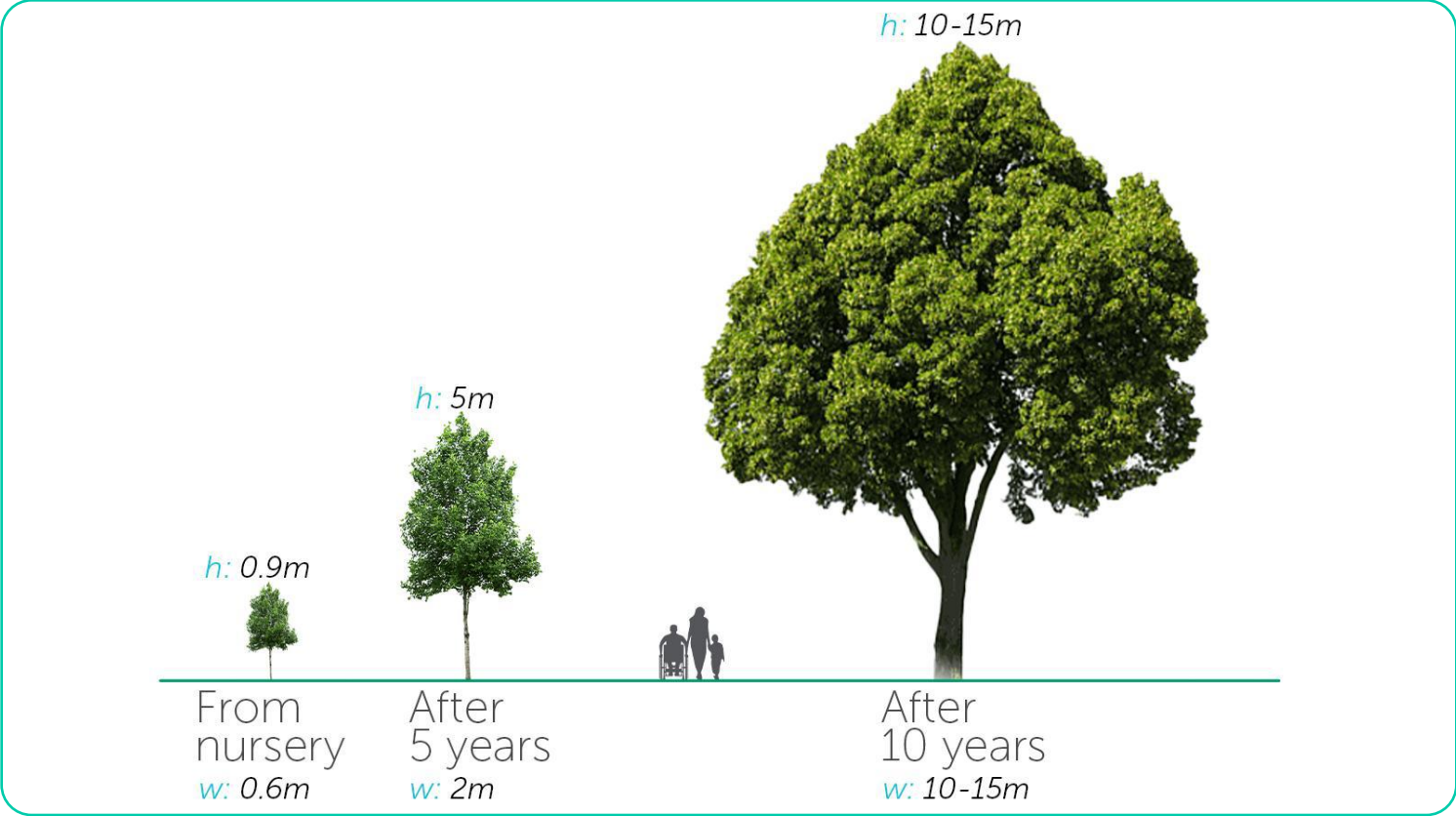


Actual shade pattern  
Photo credit: UBC SALA



# LINDEN, GLENLEVEN

<b>Common Name</b>	Linden, Glenleven	<b>Landscape Use</b>	Residential yards, street trees, parks, butterfly gardens, institutional settings	<b>Cultural Value</b>	The linden tree's wood is used in traditional Polish wood carvings, its dried blooms are used in beverages that relieve stomach aches and sleep disorders, and its perfume is said to ward away evil spirits.	<b>Fun Fact</b>	Its heart-shaped leaves are linked to Freya, the Germanic Goddess of Truth and Love. It was thought that people couldn't tell lies beneath the linden tree.
<b>Scientific Name</b>	<i>Tilia x flavescens 'Glenleven'</i>						
<b>UV Protection</b>	Heavy						
<b>Hardiness Zone</b>	3 – 7						
<b>Growth Rate</b>	0.7m / year	<b>Maintenance/Care</b>	Sun or light shade, tolerates wet soil, easily transplantable, this is a fast growing tree and it will bring shade quickly into the landscape, bees are attracted to the flowers	<b>Ecological Value</b>	The tree's flowers attract a variety of pollinators, including bees and butterflies. Listed as a BC Firesmart fire-resistant plant	<b>Play Value</b>	The linden tree's large, heart-shaped leaves and fragrant flowers can serve as play props.
<b>Type</b>	Deciduous tree						
<b>Site Conditions</b>	Full sun, highly adaptable to both dry and wet environments						



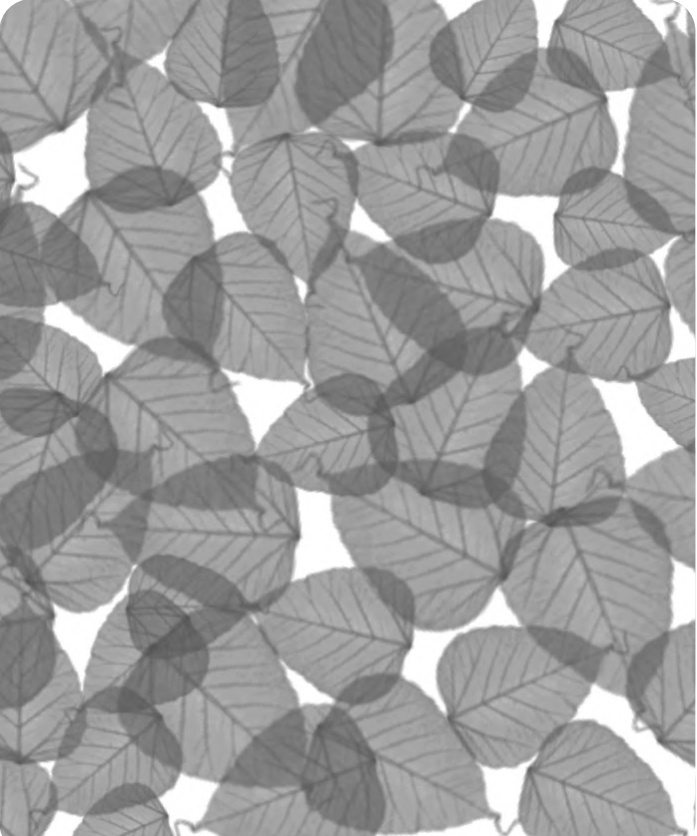
Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Play value  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Heavy  
Photo Credit: UBC SALA



Actual shade pattern  
Photo Credit: UBC SALA



# MAPLE, DOUGLAS / ROCKY MOUNTAIN

Common Name	Maple, Douglas / Rocky Mountain
Scientific Name	<i>Acer glabrum</i> var. <i>douglasii</i>
UV Protection	Heavy
Hardiness Zone	0 – 5
Growth Rate	0.4m / year
Type	Deciduous tree
Site Conditions	Dappled light or partial shade, well-drained soil preferred but could grow in a wide range of conditions

Landscape Use	Small residential yards, play spaces, butterfly gardens, native plant gardens
Maintenance/Care	Little maintenance, young trees need irrigation in hot dry summers, toxic to horses

Cultural Value	Douglas maple is native to BC. Indigenous people use the green wood for snowshoe frames, masks, and fishing hoops.
Ecological Value	Deer, elk, and other large mammals eat the Douglas maple leaves, and small mammals eat the seeds. Douglas maple attracts butterflies and pollinators when blooming. Listed as a BC Firesmart fire-resistant plant.

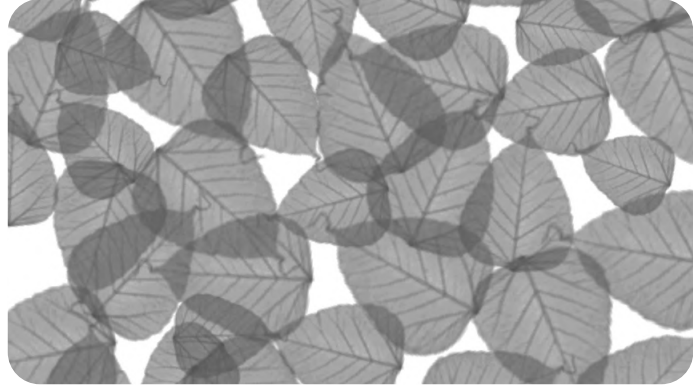
Play Value	The winged seeds of the Douglas maple turn reddish-pink in early fall, and when they become dry they will twirl down from the sky.
Fun Fact	The Douglas maple will withstand drier, more open sites than the vine maple and will also withstand colder temperatures.



Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



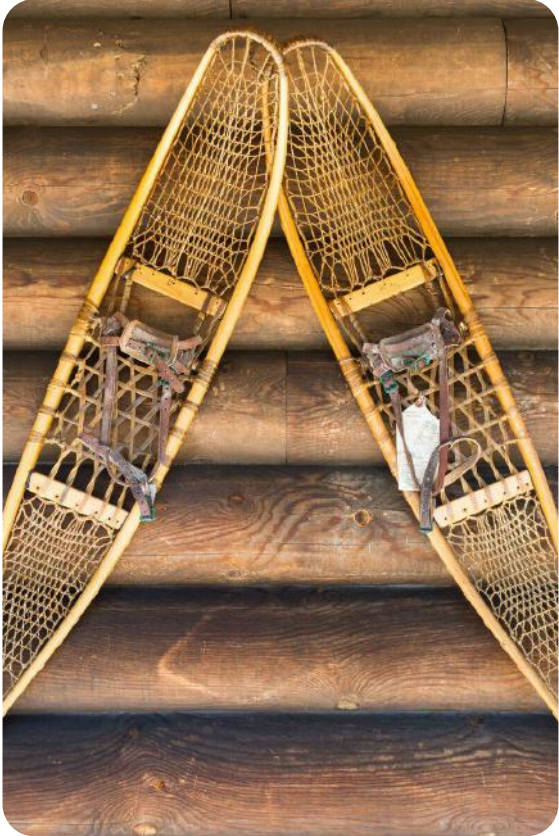
Shade pattern type - UV Protection Heavy



Actual shade pattern  
Photo Credit: UBC SALA



Play value  
Photo Credit: The Canadian Encyclopedia



Cultural value  
Photo Credit: Denise Potrzeba Lett



Ecological value  
Photo Credit: naturewithus.com



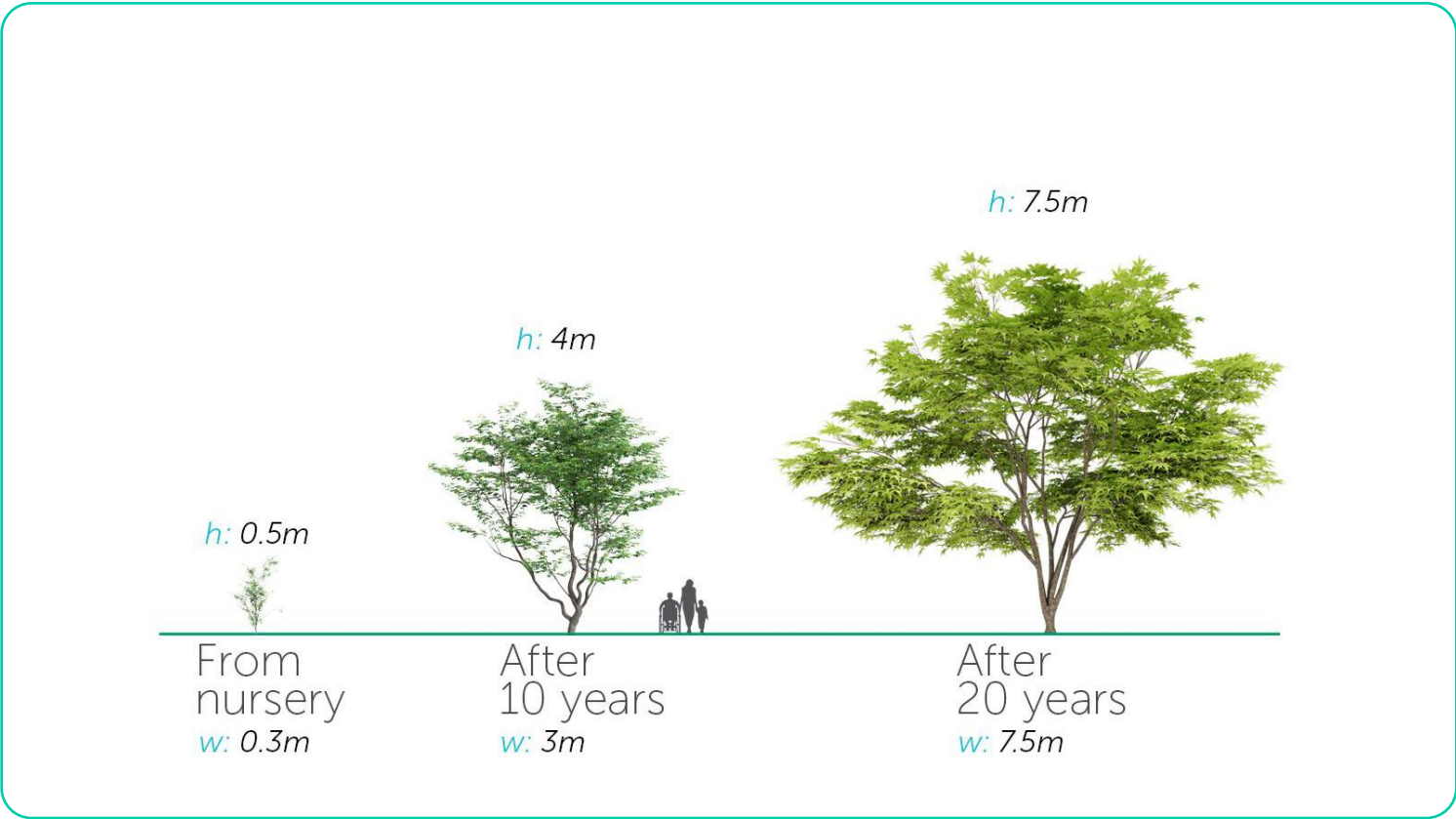
# MAPLE, JAPANESE

Common Name	Maple, Japanese
Scientific Name	<i>Acer palmatum</i>
UV Protection	Heavy
Hardiness Zone	5 – 9
Growth Rate	0.45m / year
Type	Deciduous tree
Site Conditions	Full or partial sun, well-drained moist soil

Landscape Use	Small residential yards, borders, containers, on-structure planting, play spaces
Maintenance/Care	Pruning not necessary, species anticipated to be restricted to moist sites under future climate in the Metro Vancouver region, water regularly during dry periods, but avoid waterlogging. Listed as a BC Firesmart fire-resistant plant.

Cultural Value	In Japan, Japanese maples are valued for their history of being featured in temple grounds and tea gardens.
Ecological Value	Japanese maples can provide a nesting site for birds and shelter for various insects including pollinators.

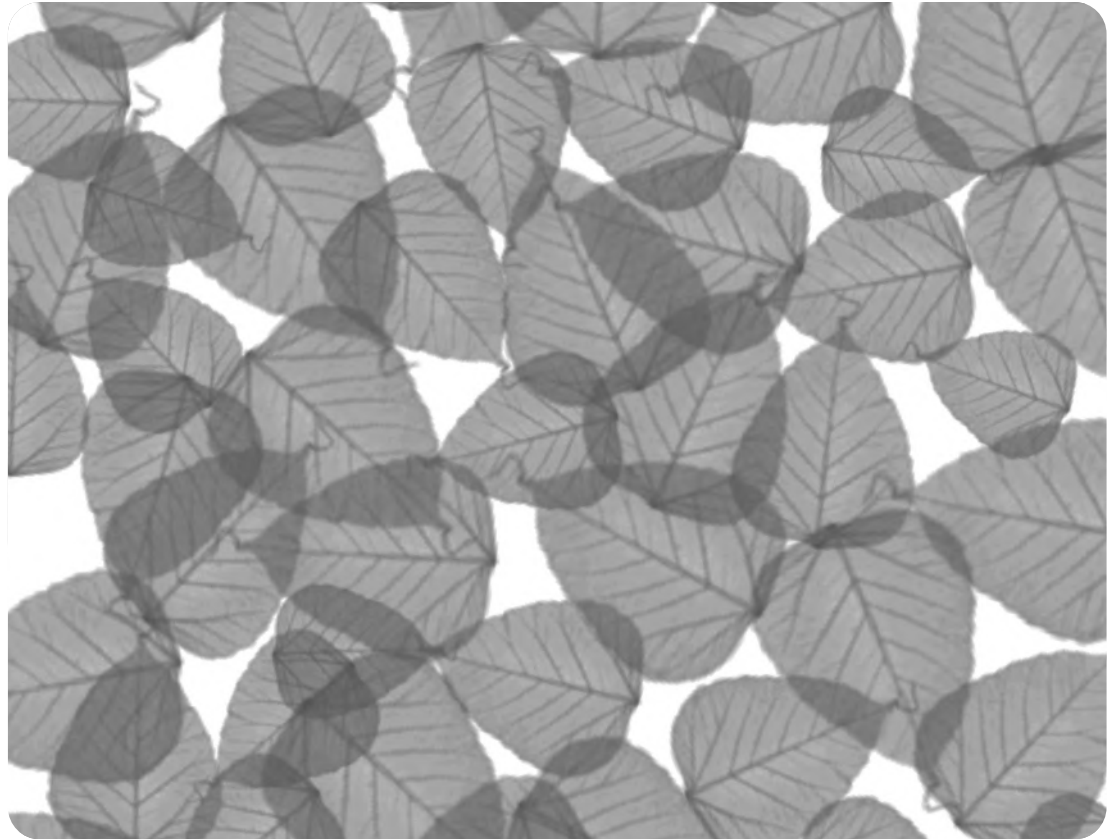
Play Value	The changing colour of the leaves are fascinating and can kickstart a leaf collecting activity!
Fun Fact	The Japanese maple signifies peace, longevity, and prosperity!



Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Heavy  
Photo Credit: UBC SALA

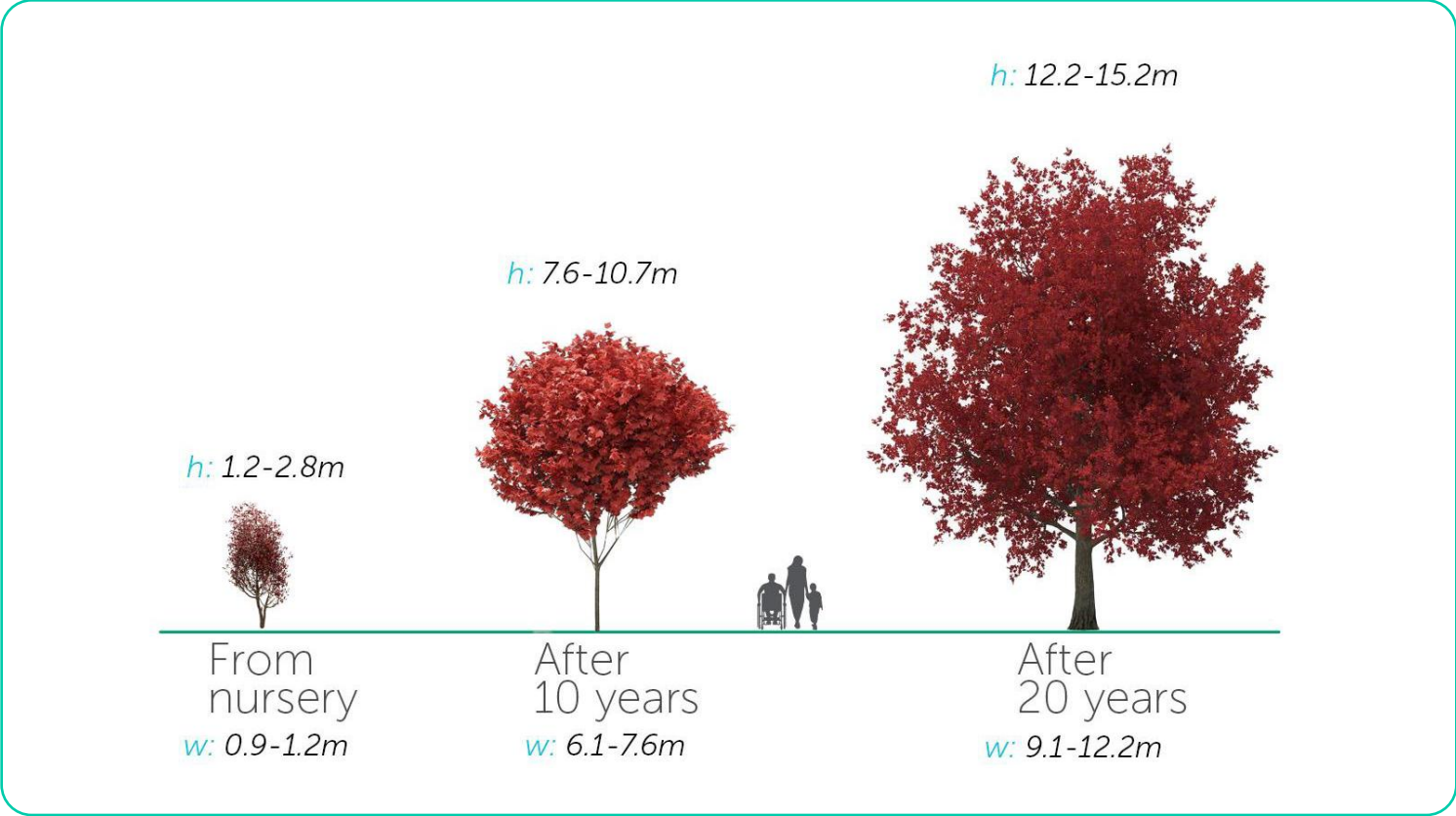


Actual shade pattern  
Photo credit: UBC SALA



# MAPLE, RED

<b>Common Name</b>	Maple, Red	<b>Landscape Use</b>	large residential yards, parks, institutional settings	<b>Cultural Value</b>	While sugar maples are known for their use in the production of syrup, red maples can also be tapped for their sap to make syrup.	<b>Play Value</b>	Red Maples have double samaras that twirl as they fall to the ground, giving them the name helicopters.
<b>Scientific Name</b>	<i>Acer rubrum</i>						
<b>UV Protection</b>	Heavy						
<b>Hardiness Zone</b>	3 – 9	<b>Maintenance/Care</b>	Low maintenance, regular watering, prune only to retain natural shape, identified as a tree thriving in hot sites, toxic to horses	<b>Ecological Value</b>	The flowers of red maple trees provide early-season nectar for pollinators, while the seeds are a food source for birds and small mammals. Planting red maples can attract wildlife to your landscape. Listed as a BC Firesmart fire-resistant plant.	<b>Fun Fact</b>	The wood of the red maple has acoustical properties and it is used to make musical instruments like violins.
<b>Growth Rate</b>	0.3 – 0.6m / year						
<b>Type</b>	Deciduous tree						
<b>Site Conditions</b>	Full sun, partial sun/shade, moist, well-drained soils, adaptable to a wide range of soil types, medium water needs						



Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Heavy  
Photo Credit: UBC SALA



Actual shade pattern  
Photo credit: UBC SALA



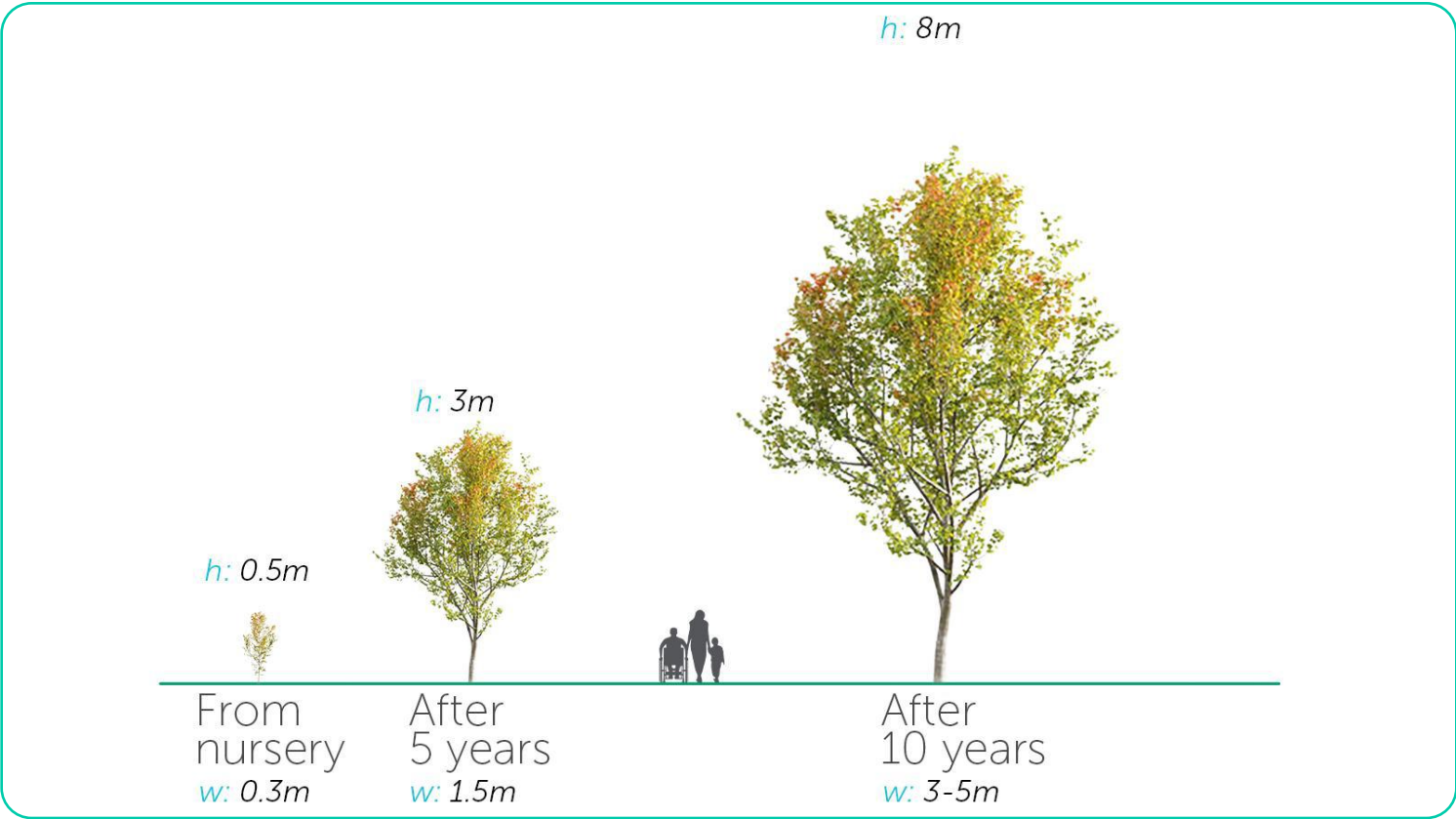
# MAPLE, VINE

Common Name	Maple, Vine
Scientific Name	<i>Acer circinatum</i>
UV Protection	Heavy
Hardiness Zone	6 – 8
Growth Rate	0.4m / year
Type	Deciduous tree
Site Conditions	Moist and well-drained soil, they will suffer in dry and hot conditions.

Landscape Use	Small residential yards, play spaces, native plant gardens
Maintenance/Care	Water during dry weather, species anticipated to be restricted to moist sites under future climate in Metro Vancouver region, considered fire-resistant

Cultural Value	Vine maples are native to BC. Their branches were used by Indigenous people to make baskets and fish traps. They also carved the wood to make spoons, bowls, and platters.
Ecological Value	Deer and elk love to eat its summer foliage. A variety of birds feed on seeds, buds, and flowers. Squirrels and chipmunks will collect the seeds. Listed as a BC Firesmart fire-resistant plant.

Play Value	Vine maples have samaras that look like small dragonflies, children can peel back the seed caps and stick the samara on their noses!
Fun Fact	If you try to collect seeds, you might discover that many samaras have already had their seeds removed by some small animals living around you.



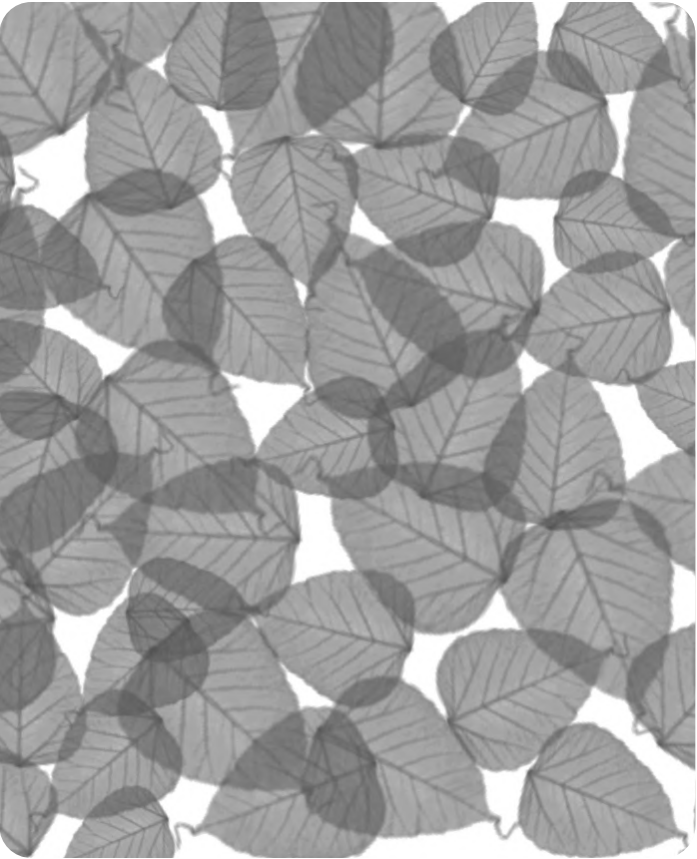
Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Play value  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Heavy  
Photo Credit: UBC SALA



Actual shade pattern  
Photo Credit: UBC SALA



# OAK, GARRY

Common Name	Oak, Garry
Scientific Name	<i>Quercus garryana</i>
UV Protection	Heavy
Hardiness Zone	6 – 9
Growth Rate	≤0.1m / year
Type	Deciduous tree
Site Conditions	Full sun, dry, well-drained soil, on dry, rocky slopes or bluffs, BC’s coastal areas only

**Landscape Use** Small residential yards, parks, native plant gardens

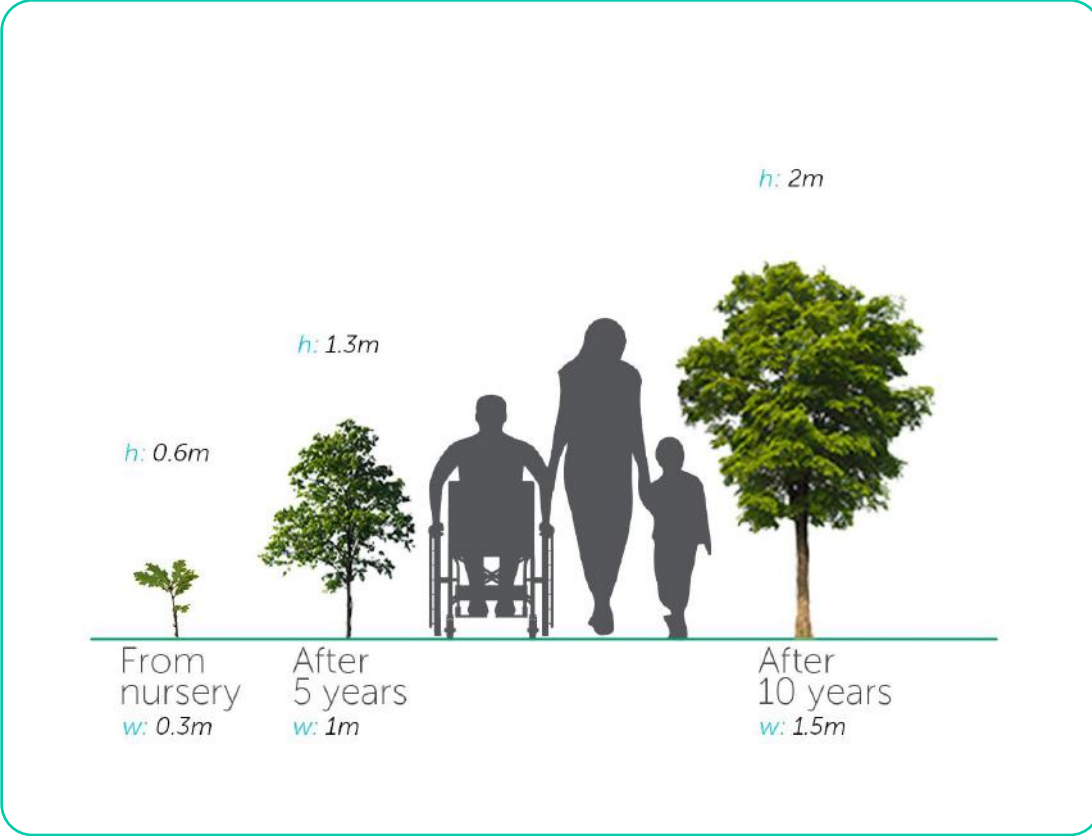
**Cultural Value** Garry oak is native to BC, and it is BC’s only native oak. Indigenous peoples used acorns as a food source.

**Play Value** Due to Garry oak’s very slow growth rate, a newly planted tree has limited play value, but it’s a great tree to plant as there is much to learn about this special tree and its ecosystem in BC.

**Maintenance/Care** Not much maintenance is needed, very suitable to the current and projected future climate in the Metro Vancouver region, irrigation in summer could cause root rot due to deep tap roots.

**Ecological Value** Garry oak acorns provide an important source of food for some native bird species and other small mammal species. Listed as a BC Firesmart fire-resistant plant.

**Fun Fact** Garry oak is considered endangered and is a protected oak tree in BC.



**Phases of maturity**  
Photo Credit: UBC SALA



**Full view of plant**  
Photo Credit: UBC SALA



**Shade pattern type - UV Protection Heavy**



**Actual shade pattern**  
Photo Credit: UBC SALA



**Cultural value**  
Photo Credit:



**Ecological value**  
Photo Credit:



# OAK, BAMBOO-LEAF

Common Name	Oak, bamboo-leaf
Scientific Name	<i>Quercus myrsinifolia</i>
UV Protection	Heavy
Hardiness Zone	6 – 8
Growth Rate	0.15m / year
Type	Broad-leafed evergreen tree
Site Conditions	Full sun or partial shade, dry, well-drained soil

Landscape Use	Small residential gardens, play areas, parks
Maintenance/Care	Young trees need irrigation in summer. The seeds are edible, but due to the tannin content, they taste bitter

Cultural Value	Bamboo-leaf oak trees are considered exotic to BC, however, this species withstands and even craves summer heat, and has proven somewhat drought tolerant.
Ecological Value	Bamboo-leaf oak trees provide food resources and habitat for birds and small mammals.

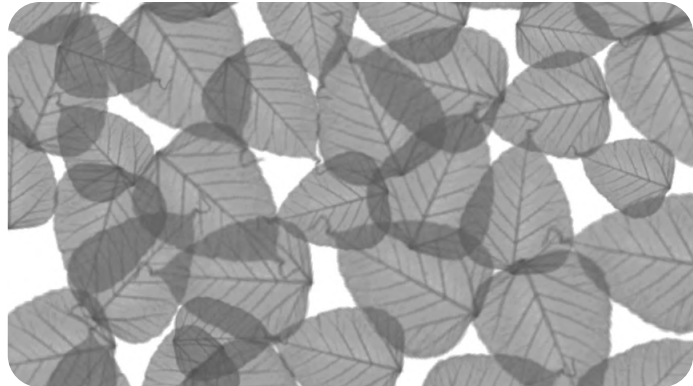
Play Value	The caps on the seeds (acorns) have 3-6 concentric rings and look like a striped beanie hat, and these can serve as a play props.
Fun Fact	In China and other countries where this species is native, the wood is used to make drumsticks.



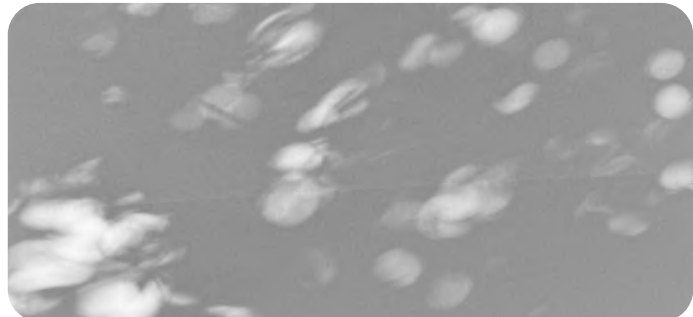
Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Heavy



Actual shade pattern  
Photo Credit: UBC SALA



Play value  
Photo Credit: Kenpei



Ecological value  
Photo Credit: Phil Winter



# OAK, PIN

Common Name	Oak, Pin
Scientific Name	<i>Quercus palustris</i>
UV Protection	Heavy
Hardiness Zone	5 – 8
Growth Rate	0.6m / year
Type	Deciduous tree
Site Conditions	Grows commonly on saturated clay and sand, in moist, well-drained conditions.

Landscape Use	Residential yards, street trees, parks, institutional settings
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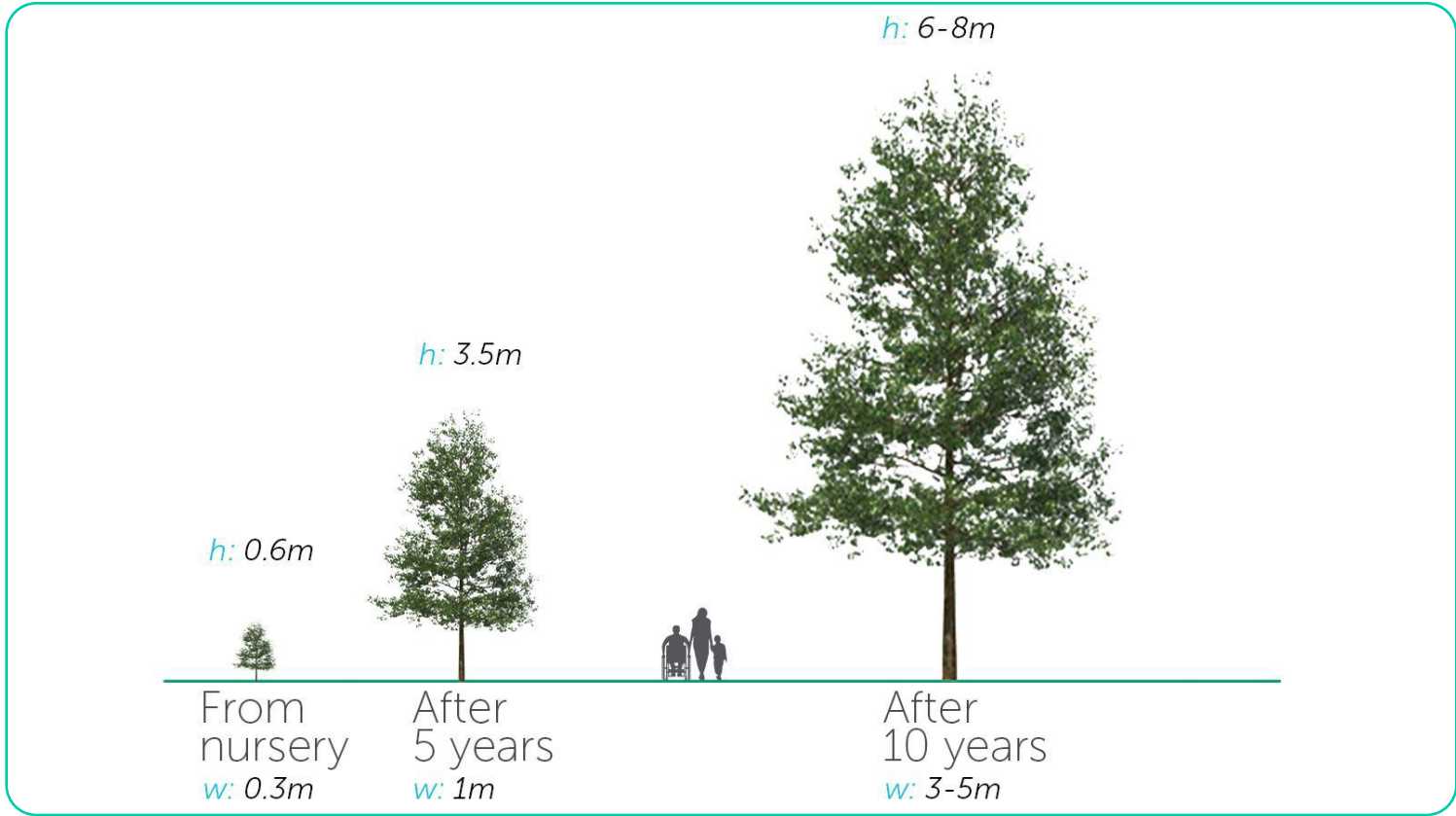
Maintenance/Care	Medium water use and full sun, prune in late winter, anticipated to be restricted to moist sites under future climate in the Metro Vancouver region, toxic to horses for its acorns, young leaves, twigs
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Cultural Value	Some Indigenous people utilize pin oak bark to make a drink that is known to relieve digestive pain. They also use acorns for making coffee and soup. Acorn powder serves as a thickener, which is important in soups and stews.
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Ecological Value	Pin oak nuts offer food for many birds and mammals, including deer, squirrels, and ducks. Listed as a BC Firesmart fire-resistant plant.
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Fun Fact	While pin oaks are deciduous, they hold on to their leaves well into spring of the following year, which makes them a great shade tree almost year around.
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Play Value	The acorns of the pin oak can be used as play props.
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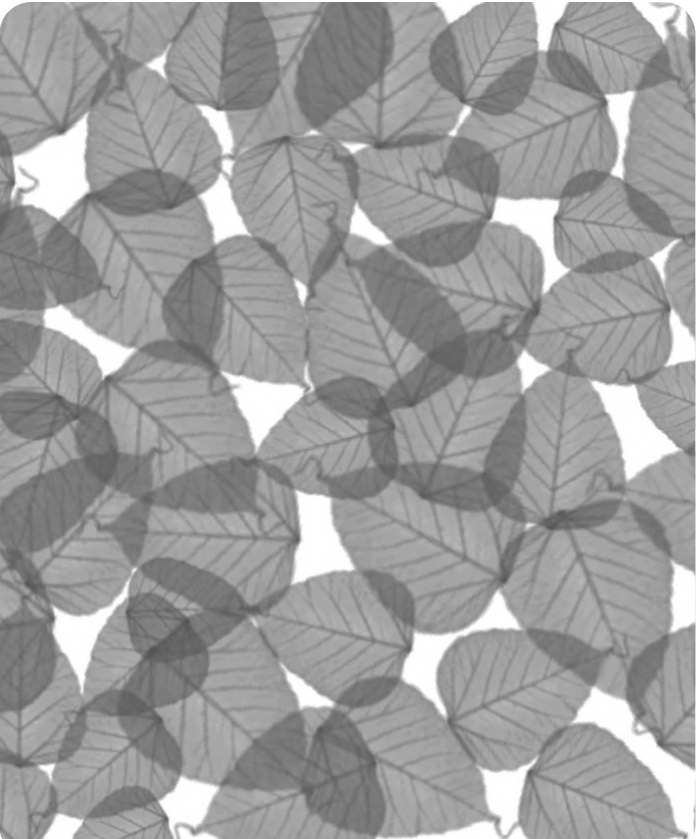
Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Play value  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Heavy  
Photo Credit: UBC SALA



Actual shade pattern  
Photo Credit: UBC SALA



# OAK, SAWTOOTH

Common Name	Oak, Sawtooth
Scientific Name	<i>Quercus acutissima</i>
UV Protection	Medium
Hardiness Zone	5 – 8
Growth Rate	1m / year
Type	Deciduous tree
Site Conditions	Full sun, well-drained soil

Landscape Use	Large residential yards, play areas, parks, median strips
Maintenance/Care	Prune dead or weak branches for stronger growth, water regularly in early establishment years, very suitable to the current and projected future climate in the Metro Vancouver region, toxic to horses.

Cultural Value	Historically, sawtooth oak leaves were fed to silkworms and played an important role in maintaining Asia’s silk exports.
Ecological Value	The acorns serve as a food source for various wildlife.

Play Value	Male catkins can be pleasing to touch for sensory play or as a prop such as a “magic wand” in a fantasy roleplay.
Fun Fact	Sawtooth oak wood was used to make charcoal for Japanese tea ceremonies!



Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Medium  
Photo Credit: UBC SALA



Actual shade pattern  
Photo Credit: UBC SALA



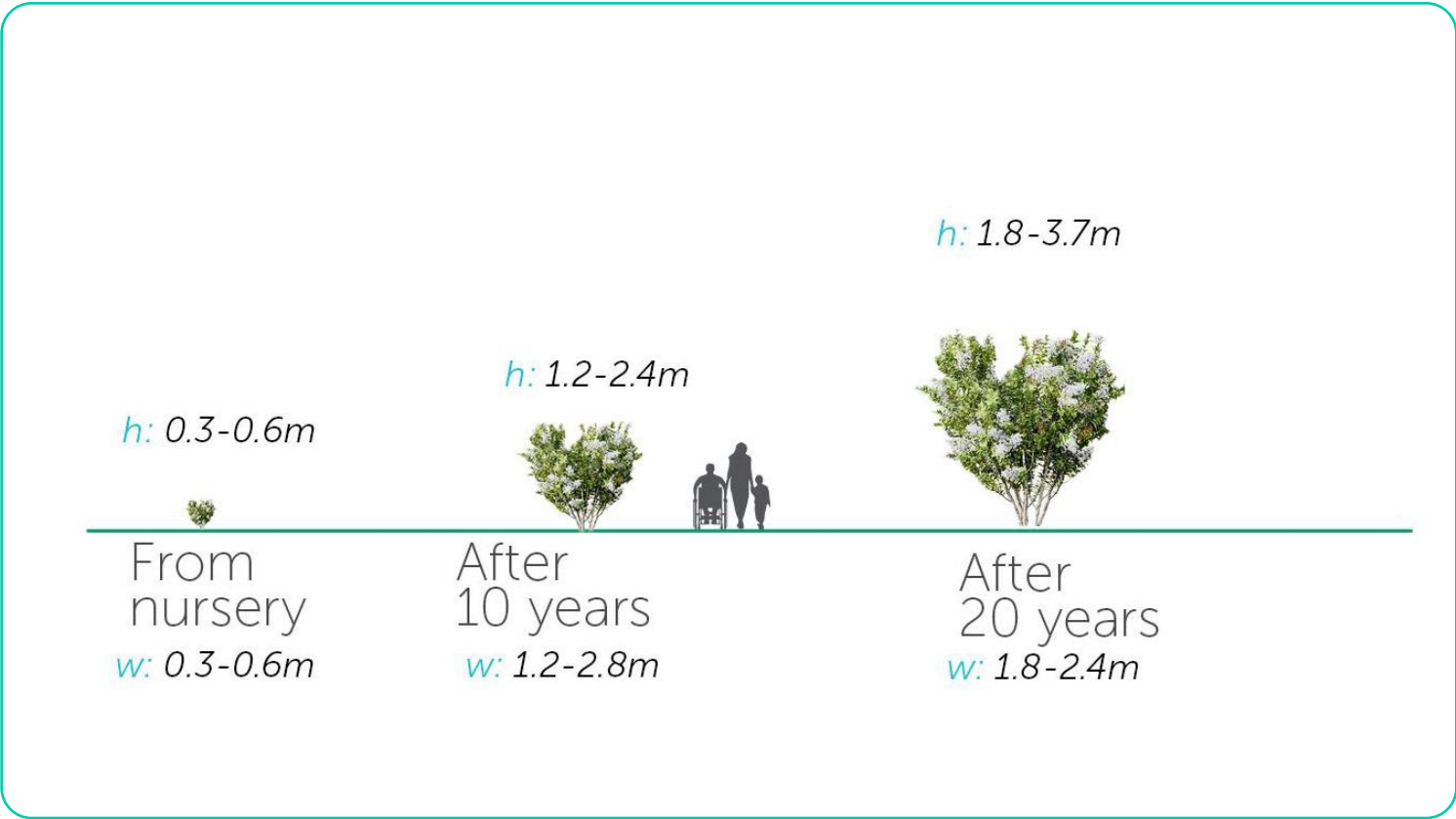
# OCEAN SPARY

Common Name	Ocean Spray
Scientific Name	<i>Holodiscus discolor</i>
UV Protection	Heavy
Hardiness Zone	5 – 9
Growth Rate	0.1 – 0.3m / year
Type	Deciduous shrub
Site Conditions	Full sun/partial sun, well-drained, acidic soils

Landscape Use	Small residential yards, mixed shrub borders, native plant gardens
Maintenance/Care	Proper pruning and maintenance practices, such as removing dead or diseased branches, can promote healthier growth and potentially increase the growth rate

Cultural Value	It is native in southern British Columbia. Indigenous people use various parts of the ocean spray plant for medicinal purposes, including treatments for colds, sore throats, and digestive issues. The flowers are also used to make a fragrant tea.
Ecological Value	Ocean spray provides food and habitat for a variety of wildlife, including birds, butterflies, and pollinators. Listed as a BC Firesmart fire-resistant plant.

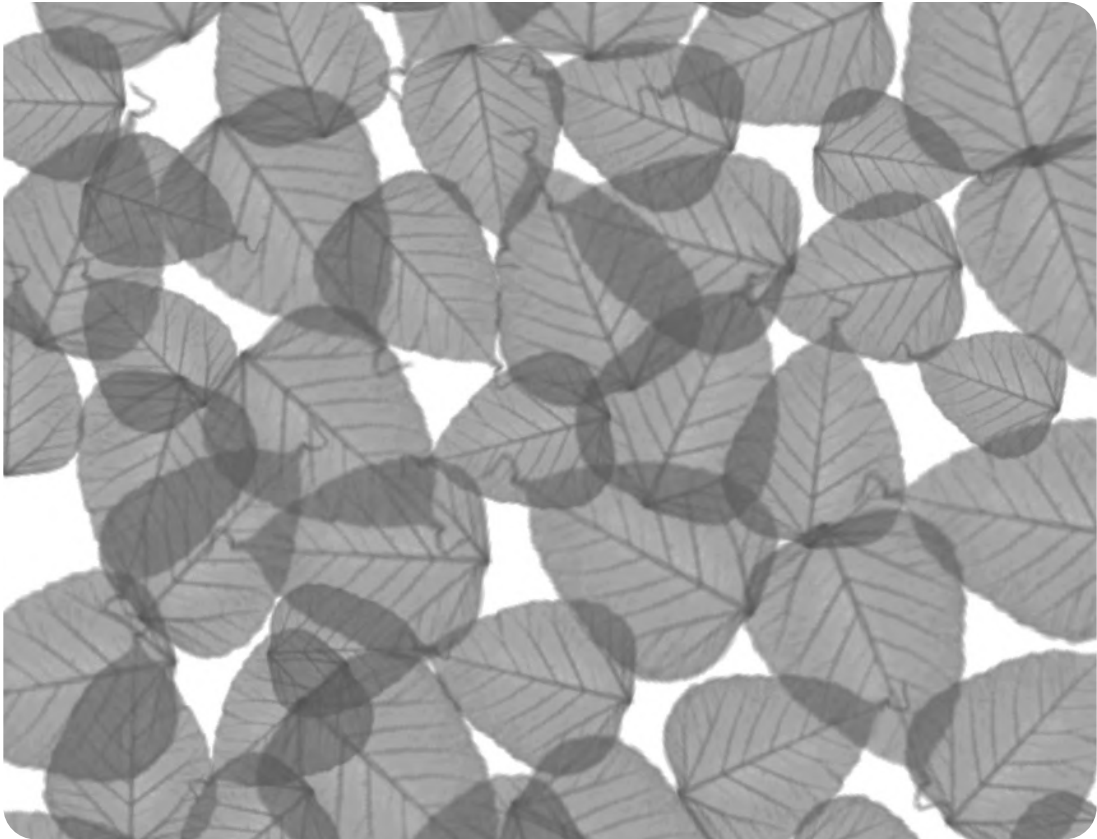
Play Value	Ocean spray’s arching branches and dense foliage can create hidden nooks and crannies for imaginative play, and hide-and-go-seek.
Fun Fact	Its name, “Ocean Spray,” name comes from the frothy cascade of its delicate flowers, which resemble the spray of ocean waves.



Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Medium  
Photo Credit: UBC SALA



Actual shade pattern  
Photo Credit: UBC SALA



# PINE, JACK

Common Name	Pine, Jack
Scientific Name	<i>Pinus banksiana</i>
UV Protection	Heavy
Hardiness Zone	0 – 9
Growth Rate	0.6m / year
Type	Coniferous evergreen tree
Site Conditions	Dry soils, full sun, considered 'cold tolerant' and great for tough sites

Landscape Use	Large residential yards, parks, shelterbelts and screens
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Maintenance/Care	Moderate to low water use, full sun, low maintenance, sunshine is important for this tree
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Cultural Value	Indigenous people used Jack pine wood as frames for their canoes.
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Ecological Value	Jack pine trees provide food for a variety of species, including White-tailed deer, porcupines, and snowshoe hares. Young Jack pine trees also provide shelter and nesting spaces for birds.
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Play Value	If children are creating a campfire with adults, they can put the cones on the fire with care and watch the seeds jump out of the cones!
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Fun Fact	Blueberries like to grow under stands of mature Jack pine trees.
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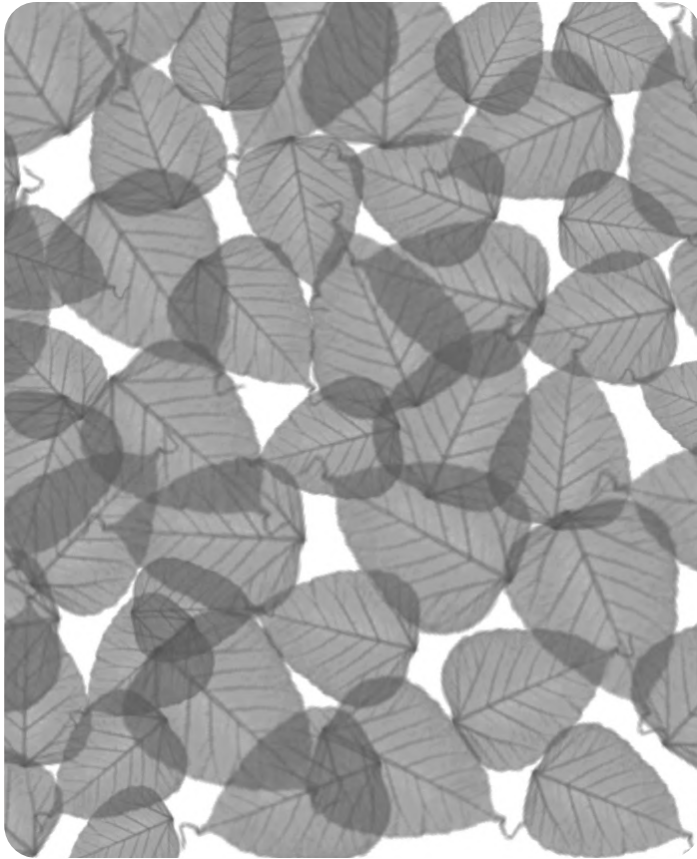
Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Play value  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Heavy  
Photo Credit: UBC SALA

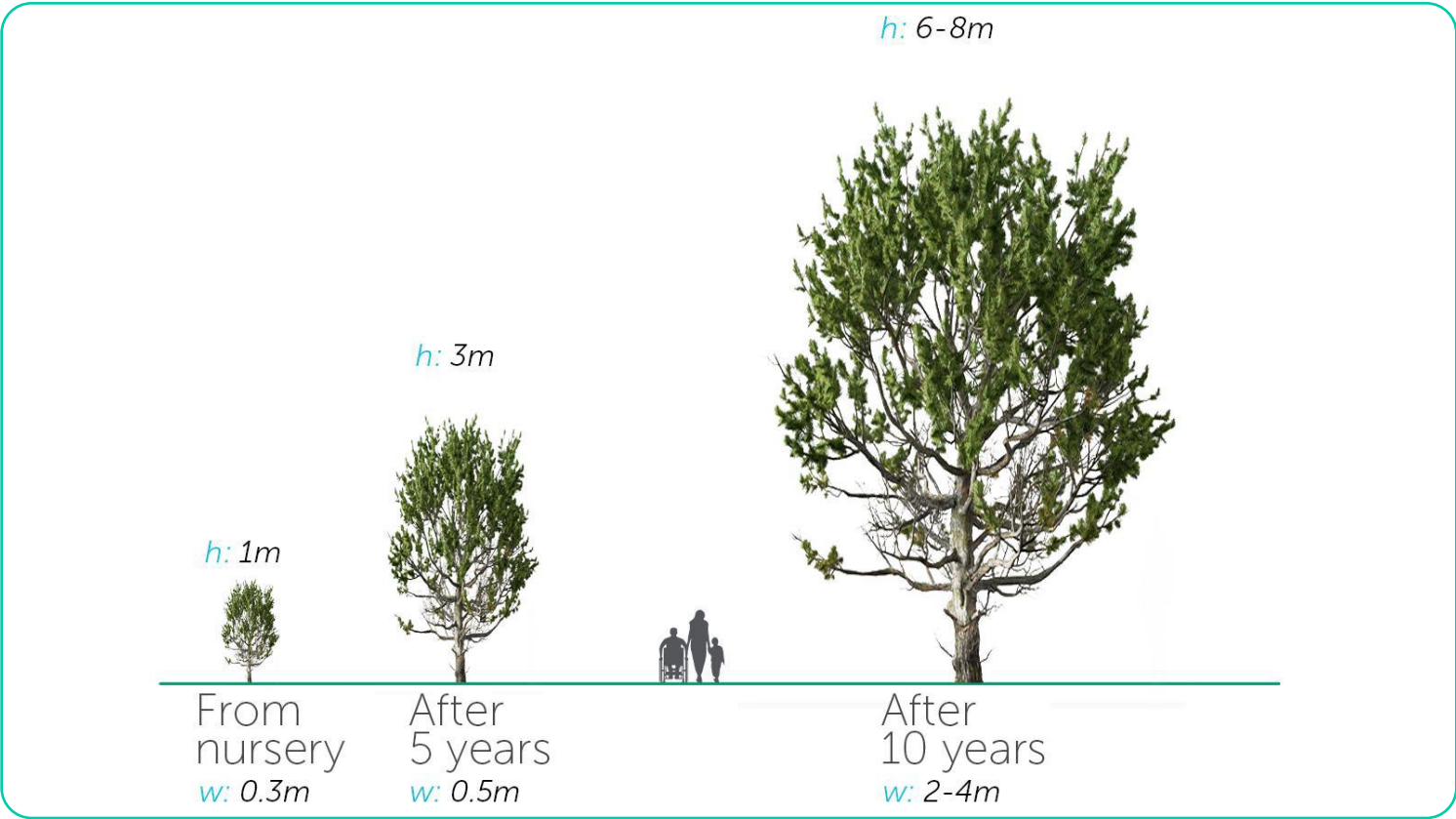


Actual shade pattern  
Photo Credit: UBC SALA



# PINE, LIMBER

<b>Common Name</b>	Pine, Limber	<b>Landscape Use</b>	Large residential yards, shelterbelts and screens	<b>Cultural Value</b>	The seeds were roasted and hulled, and occasionally crushed and consumed as a food source by Indigenous people.	<b>Play Value</b>	The pinecones of the limber pine can be used as play props or in arts and crafts projects.
<b>Scientific Name</b>	<i>Pinus flexilis James</i>						
<b>UV Protection</b>	Heavy						
<b>Hardiness Zone</b>	1 – 4	<b>Maintenance/Care</b>	Low maintenance, needs full sun	<b>Ecological Value</b>	Limber pine seeds provide a high-fat food source for mammals and birds. Squirrels store entire cones for their winter food source. Pine species are listed by BC Firesmart as best to avoid.	<b>Fun Fact</b>	The little ermine moth, which is rare in Canada, feeds only on limber pine needles.
<b>Growth Rate</b>	0.3m / year						
<b>Type</b>	Evergreen tree						
<b>Site Conditions</b>	Dry sites with full sun, high elevations, withstands winds						



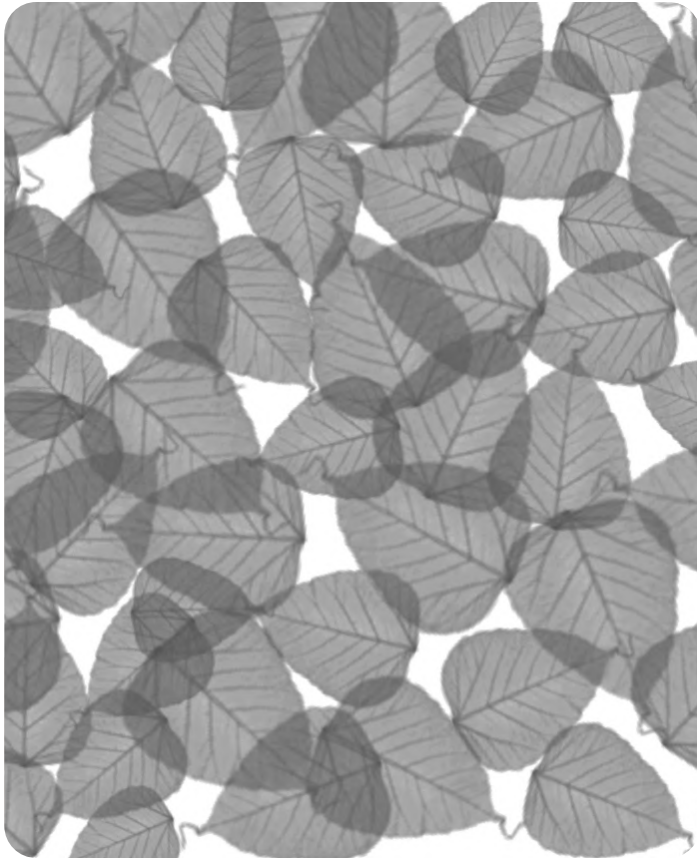
**Phases of maturity**  
Photo Credit: UBC SALA



**Full view of plant**  
Photo Credit: UBC SALA



**Play value**  
Photo Credit: UBC SALA



**Shade pattern type - UV Protection Heavy**  
Photo Credit: UBC SALA



**Actual shade pattern**  
Photo Credit: UBC SALA



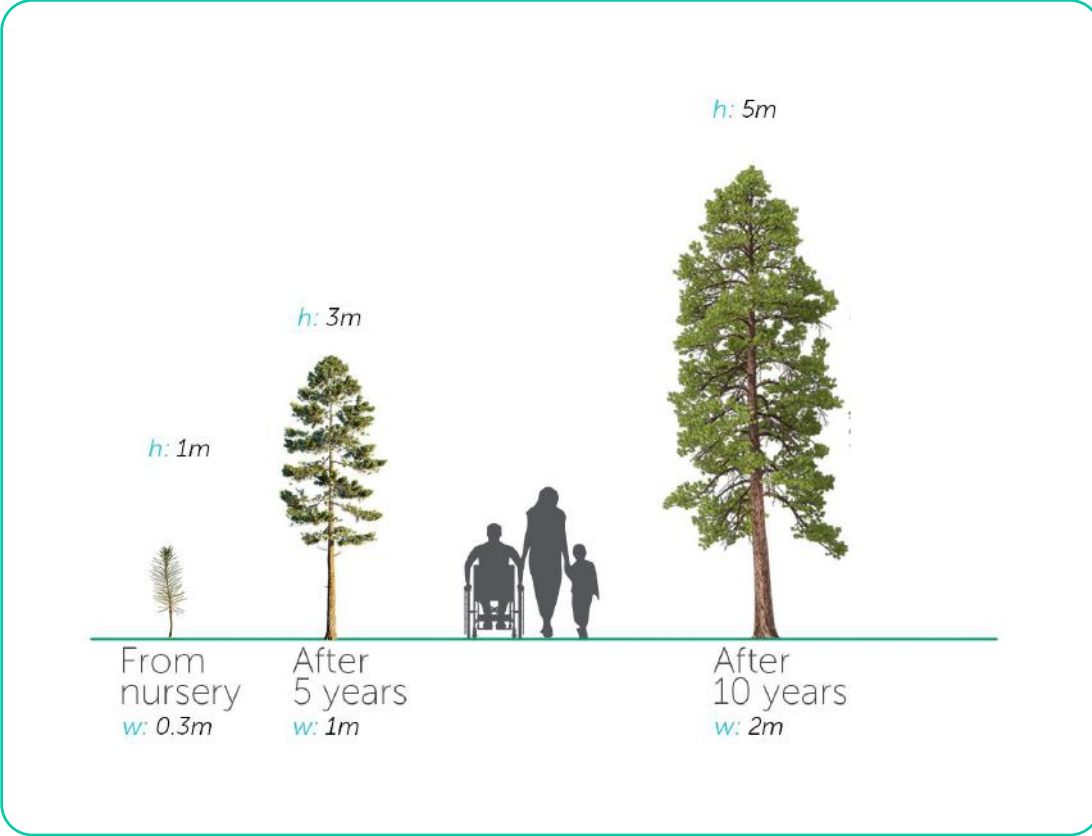
# PINE, PONDEROSA

Common Name	Pine, Ponderosa
Scientific Name	<i>Pinus ponderosa</i>
UV Protection	Heavy
Hardiness Zone	1 – 8
Growth Rate	0.2m / year
Type	Coniferous evergreen tree
Site Conditions	Full sun or partial shade, well-drained soil preferred, could grow in a wide range of conditions

Landscape Use	Large residential yards, parks, butterfly gardens, native plant gardens
Maintenance/Care	Young trees grow quickly, little maintenance is needed, tolerant to climate change, scales of the cones are tipped with a stiff prickle

Cultural Value	Ponderosa pine is native to BC. Indigenous people use the inner bark and seeds as a source of food. It serves as an important timber tree for building log cabins.
Ecological Value	Ponderosa Pine seeds are an extremely valuable food source for birds and squirrels. It is also a host plant for some butterflies. Pine needles are a favourite material for making nests. This tree species is on the BC Firesmart best to avoid list.

Fun Fact	On a hot day, the bark smells like vanilla, and if you break a young twig, it smells like oranges!
Play Value	The cinnamon-coloured bark that breaks apart in large jigsaw puzzle-like pieces, can be used in arts and crafts projects.



Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Heavy



Actual shade pattern  
Photo Credit: UBC SALA



Play value  
Photo Credit: Katherine Court



Cultural value  
Photo Credit: Jennifer Hanson



Ecological value  
Photo Credit: gardenia.net



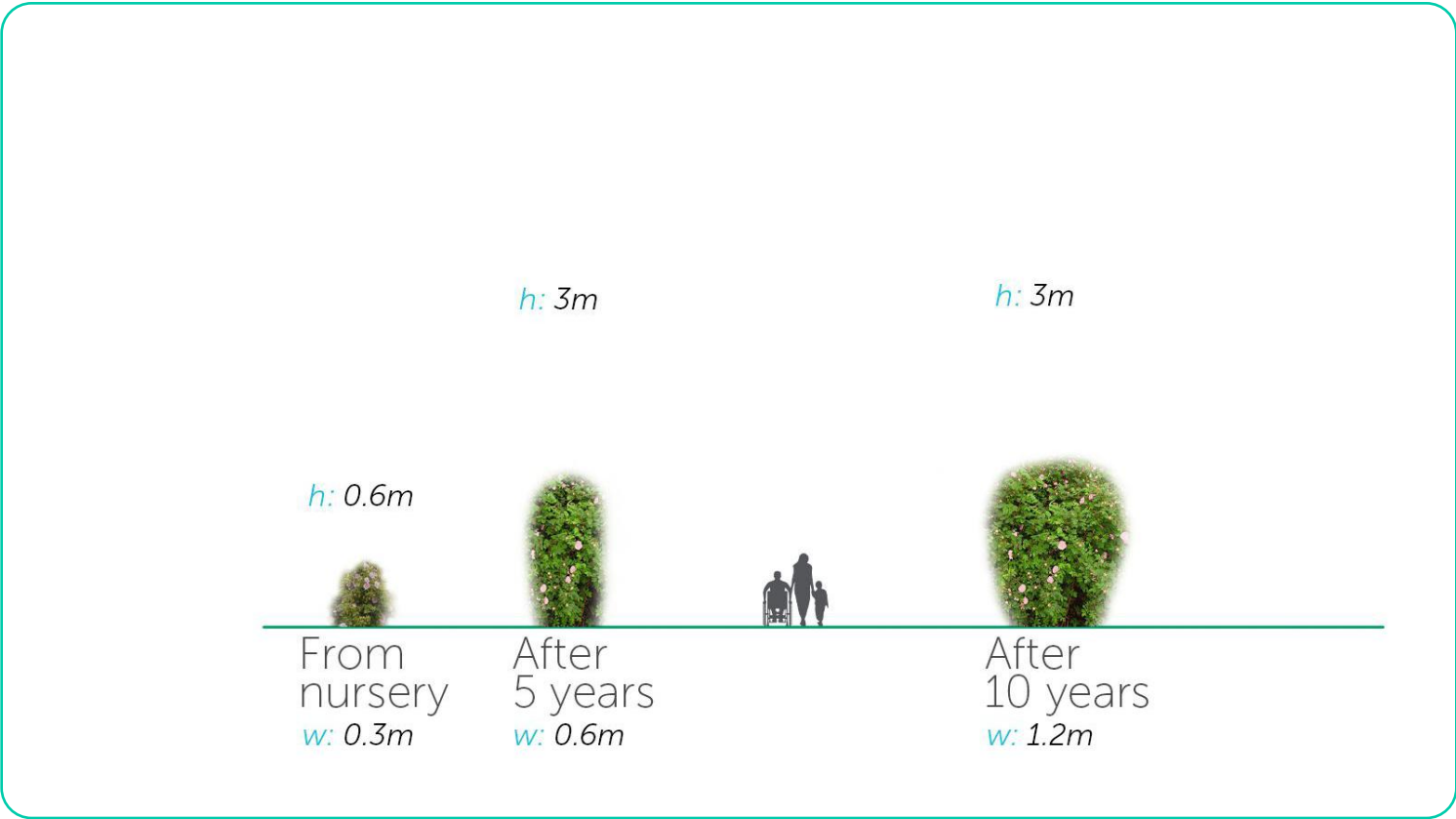
# ROSE, NOOTKA

Common Name	Rose, Nootka
Scientific Name	<i>Rosa nutkana</i>
UV Protection	Heavy
Hardiness Zone	5 – 9
Growth Rate	0.3m / year
Type	Deciduous shrub
Site Conditions	Moist and well-drained sites, in acid or neutral soil

Landscape Use	Balconies in containers, large residential yards, used to control soil erosion on hillsides, spiky hedge for barrier
Maintenance/Care	Fast-growing shrub with wide rhizomes, can be cut back, be careful of thorns

Cultural Value	The Nootka rose is native to BC. Indigenous people use the plant for medicinal and spiritual uses. The rose hips contain high amounts of vitamin C and are used to make jams, jellies, syrups, and tea.
Ecological Value	The Nootka rose fruits are consumed by tiny mammals, birds, and insects. It is a significant food source for Rocky Mountain elk in summer. Deer eat leaves and new shoots.

Play Value	The Nootka rose’s pink flowers have a sweet cinnamon-like aroma that children can smell in May and July.
Fun Fact	The open-faced blossoms of this native rose attracts more pollinators than non-native cultivars with multiple flowers.



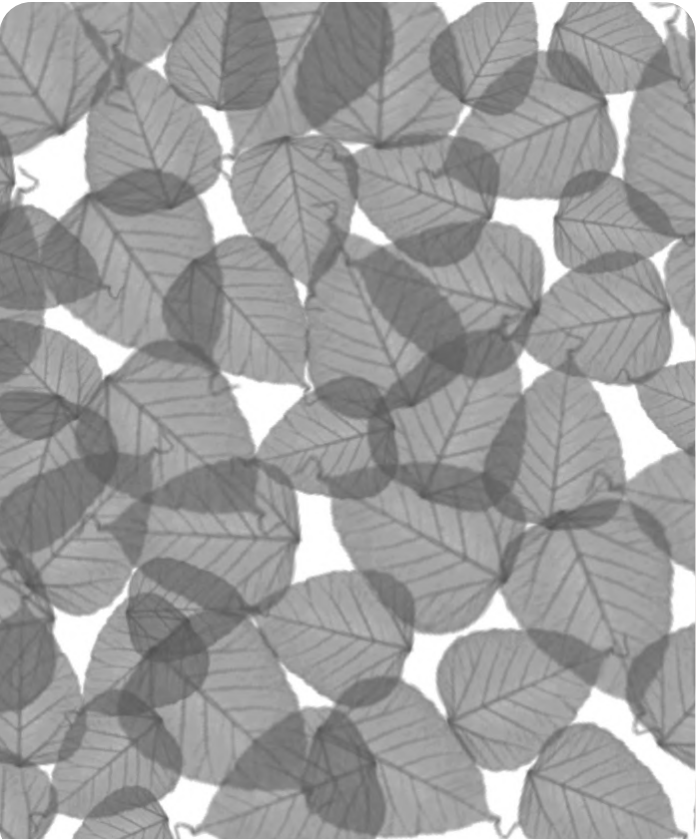
Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Play value  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Heavy  
Photo Credit: UBC SALA

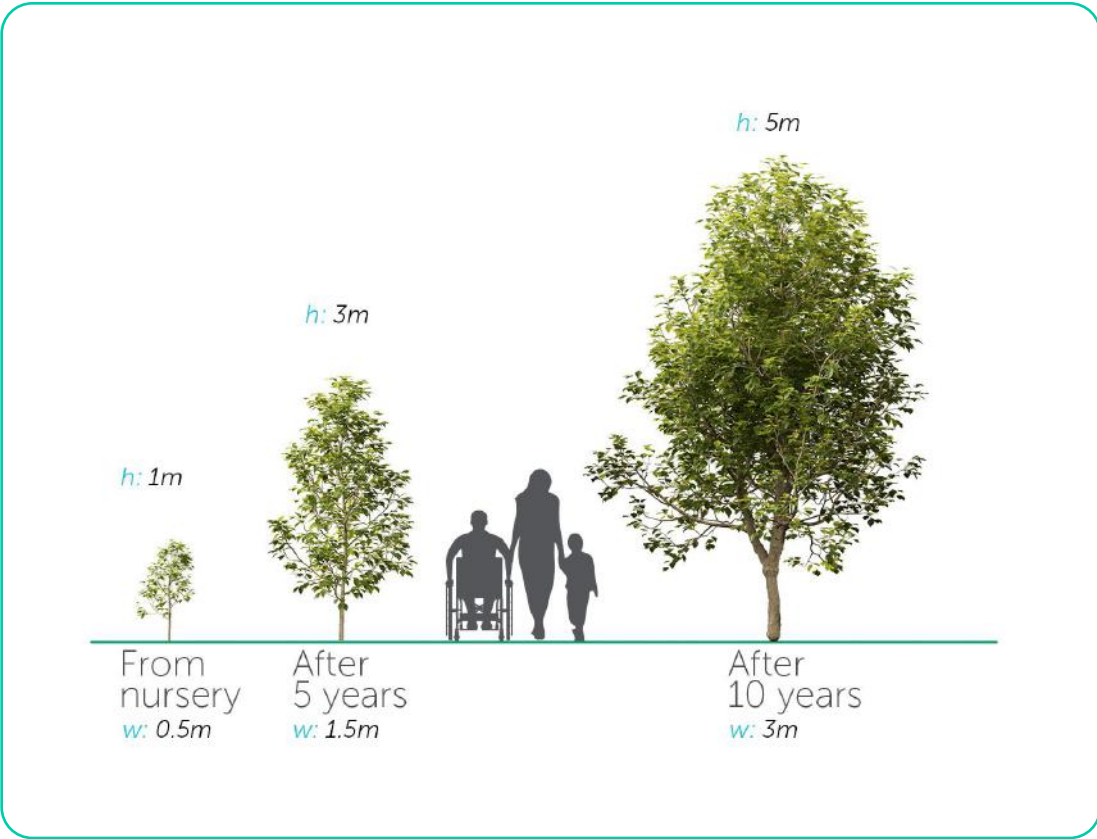


Actual shade pattern  
Photo Credit: UBC SALA



# RUBBER TREE, HARDY / CHINESE

<b>Common Name</b>	Rubber tree, hardy / Chinese	<b>Landscape Use</b>	Small residential yards, street trees, parks, institutional settings	<b>Cultural Value</b>	Hardy rubber trees are considered an exotic in BC, however, this species is great for bringing high UV protection into your environment without any significant problems!	<b>Play Value</b>	Hardy rubber trees have high latex content, when you pull apart a leaf, the latex inside will form thin gummy strings that can harden in the air!
<b>Scientific Name</b>	<i>Eucommia ulmoides</i>	<b>Maintenance/Care</b>	Low maintenance, drought tolerant, very suitable to the current and projected future climate in the Metro Vancouver region, and resistant to insect and disease problems. This species can provide highly dense shade when fully leafed out.	<b>Ecological Value</b>	This species native to China where it is considered threatened in the wild, but it is widely cultivated for its high economic value and medicinal value.	<b>Fun Fact</b>	The word “Ulmoides” in the scientific name means like Ulmus, which is Elm. The seeds and leaves look like Elm tree’s!
<b>UV Protection</b>	Heavy						
<b>Hardiness Zone</b>	4 – 7						
<b>Growth Rate</b>	0.2m / year						
<b>Type</b>	Deciduous tree						
<b>Site Conditions</b>	Full sun, well-drained soil						



**Phases of maturity**  
Photo Credit: UBC SALA



**Full view of plant**  
Photo Credit: UBC SALA



**Shade pattern type - UV Protection Heavy**



**Actual shade pattern**  
Photo Credit: UBC SALA



**Play value**  
Photo Credit: Jan De Langhe – Arboretum Wespelaar



**Ecological value**  
Photo Credit: Madison Mitchell



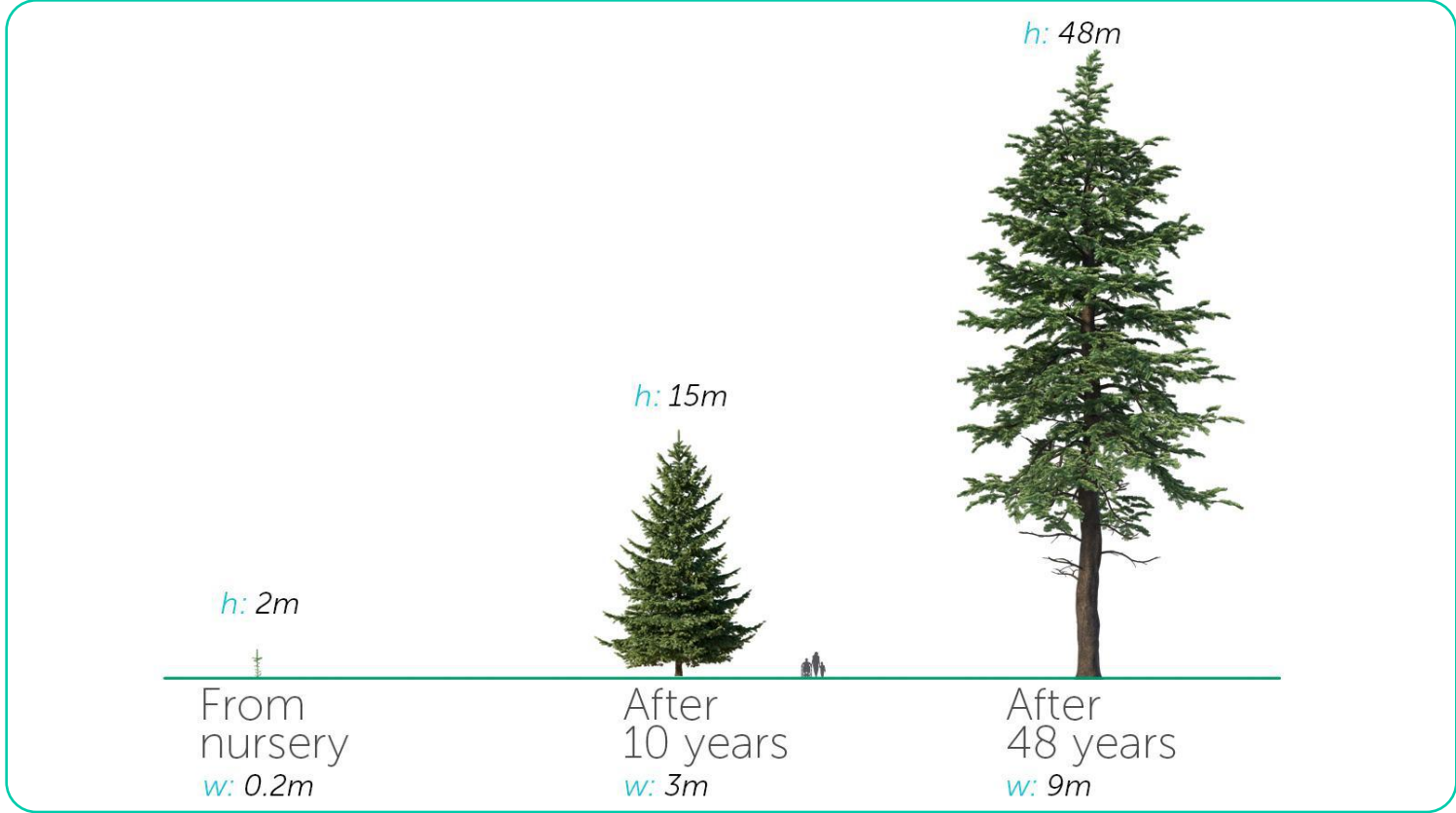
# SPRUCE, SITKA

Common Name	Spruce, Sitka
Scientific Name	<i>Picea sitchensis</i>
UV Protection	Heavy
Hardiness Zone	6 – 8
Growth Rate	1.5m / year
Type	Coniferous evergreen tree
Site Conditions	Full sun, well-drained moist soil

Landscape Use	Large residential yards, windbreaks or screens, parks, native plant gardens
Maintenance/Care	No pruning required, but the soil should be consistently moist, be careful of sharp needles

Cultural Value	The Sitka spruce tree is a BC native tree. Indigenous people have used Sitka spruce roots to weave baskets and rain hats, while the tree resin was used for medicinal purposes. The trees were also used in WWI and WWII in aircraft construction.
Ecological Value	Sitka spruce forests serve as an important habitat for many mammals, game and nongame birds, along with reptiles and amphibians. This tree species is on the BC Firesmart best to avoid list.

Fun Fact	Sitka Spruce are considered pioneer trees along BC's coastline!
Play Value	The Sitka spruce tree can produce numerous cones that can be used as play props or in arts and crafts projects.



Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Heavy  
Photo Credit: UBC SALA



Actual shade pattern  
Photo Credit: UBC SALA



# STAR JASMINE

Common Name	Star Jasmine
Scientific Name	<i>Trachelospermum jasminoides</i>
UV Protection	Heavy
Hardiness Zone	8 – 10
Growth Rate	1 – 2m / year
Type	Evergreen shrub / climber
Site Conditions	Full sun, partial shade, well-drained soil, drought-tolerant

Landscape Use	Billowy climbing vine for arbors, trellises, fences or other structures
Maintenance/Care	To train, gently tie the plant to the support, prune in early spring

Ecological Value	It provides shelter and nesting sites for birds and small animals. Additionally, the flowers attract pollinators such as bees and butterflies.
Cultural Value	Star jasmine is native to China and Japan It grows up fences, walls and overhead structures to provide privacy and define outdoor spaces.

Play Value	The flowers of this jasmine are very fragrant and smell like vanilla.
Fun Fact	Star jasmine provides a valuable perfume oil and is used in perfumery.



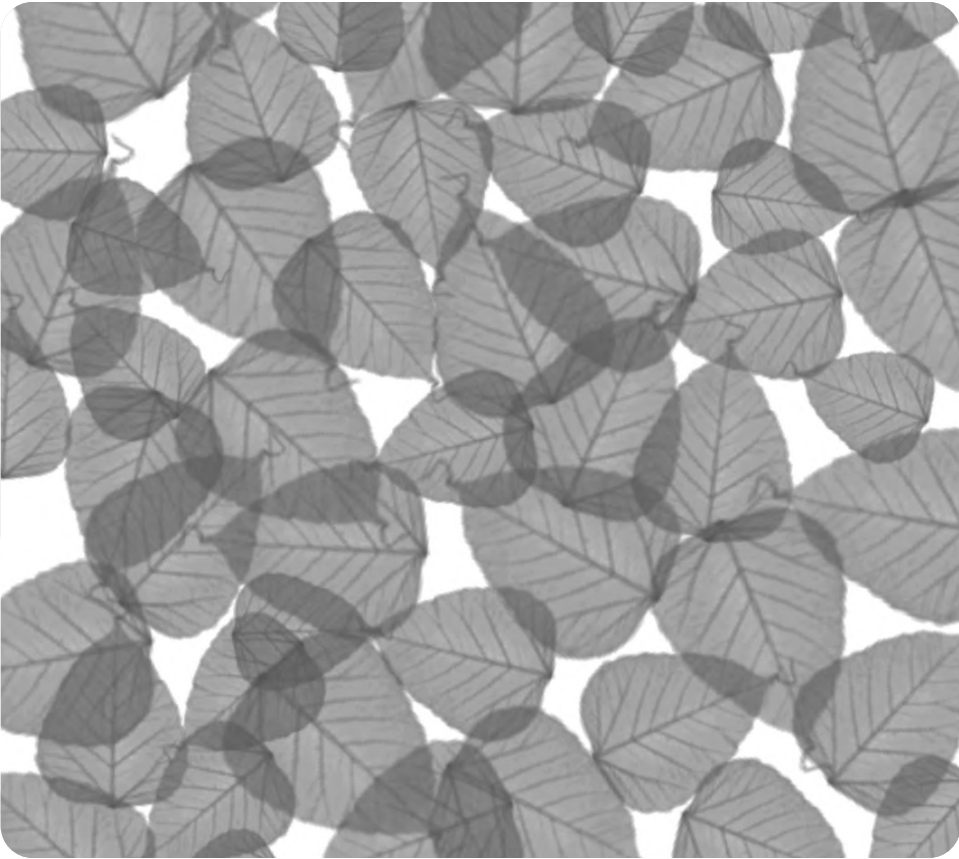
Phases of maturity  
Photo Credit: UBC SALA



Full view of plant  
Photo Credit: UBC SALA



Play value  
Photo Credit: UBC SALA



Shade pattern type - UV Protection Heavy  
Photo Credit: UBC SALA



# SWEETGUM

<b>Common Name</b>	Sweetgum	<b>Landscape Use</b>	Large residential yards, parks, and institutional settings	<b>Cultural Value</b>	The resin, which is sticky and sweet, was used as chewing gum.	<b>Play Value</b>	The female flowers give way to spherical, spiny fruiting heads, known as gumballs that children can use as play props.
<b>Scientific Name</b>	<i>Liquidambar styraciflua</i>						
<b>UV Protection</b>	Heavy						
<b>Hardiness Zone</b>	5 – 9	<b>Maintenance/Care</b>	Low-If you must prune, only remove dead, diseased, or damaged branches, intolerant of pollution. Caution the gumballs are spiky!	<b>Ecological Value</b>	Sweetgum provides shelter and nesting for birds and small mammals. The seeds of sweetgum trees are consumed by birds and squirrels. Their deep root systems help stabilize soil, preventing erosion in riparian zones and other areas prone to erosion. Listed as a BC Firesmart fire-resistant plant.	<b>Fun Fact</b>	Its fall foliage provides a diversity of colours in yellow, orange, purple, and red.
<b>Growth Rate</b>	0.3 – 0.6 m / year						
<b>Type</b>	Deciduous tree						
<b>Site Conditions</b>	Moist, well-drained soils and full sunlight						



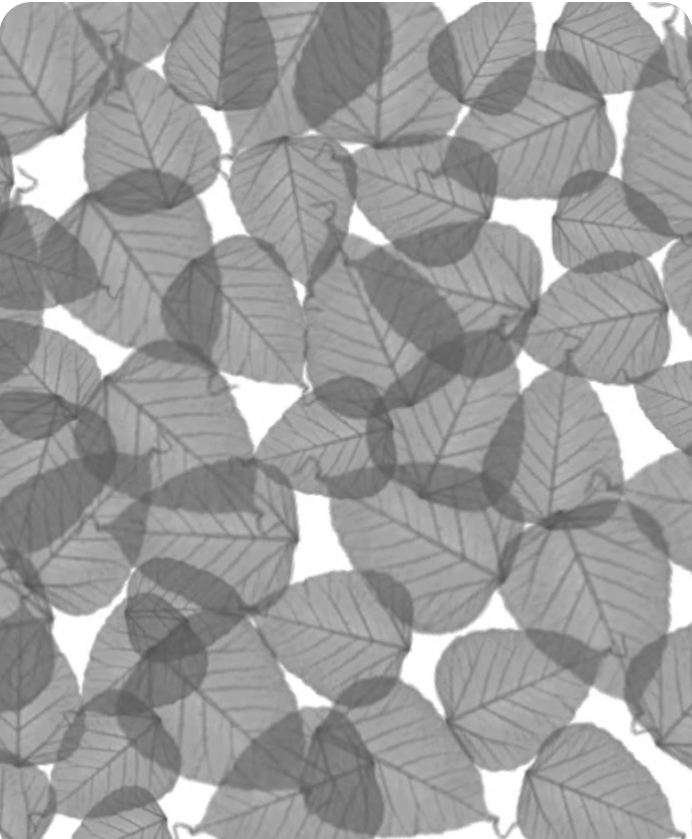
**Phases of maturity**  
Photo Credit: UBC SALA



**Full view of plant**  
Photo Credit: UBC SALA



**Play value**  
Photo Credit: Unsplash



**Shade pattern type - UV Protection Heavy**  
Photo Credit: UBC SALA

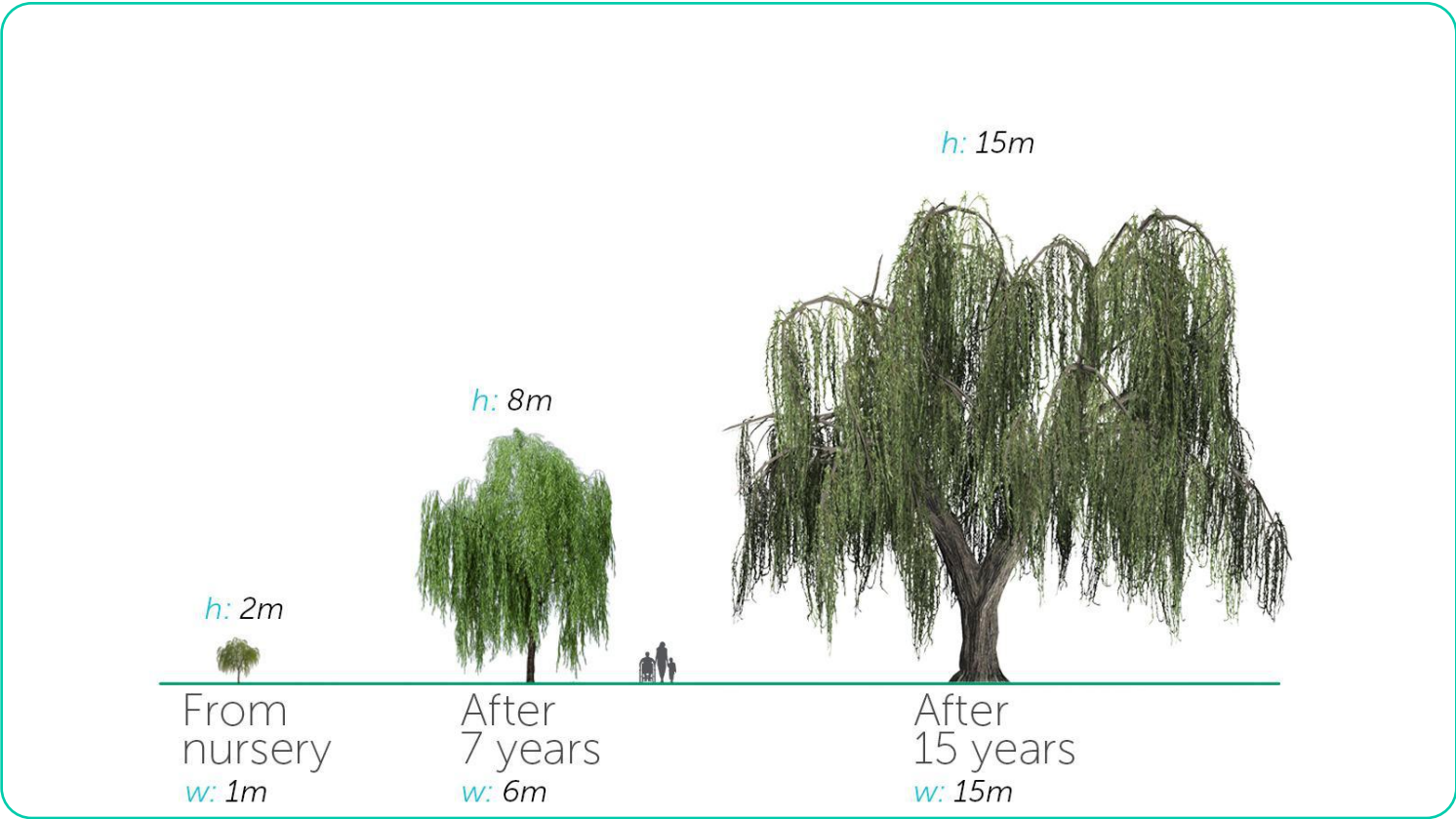


**Actual shade pattern**  
Photo Credit: UBC SALA



# WILLOW, WEEPING

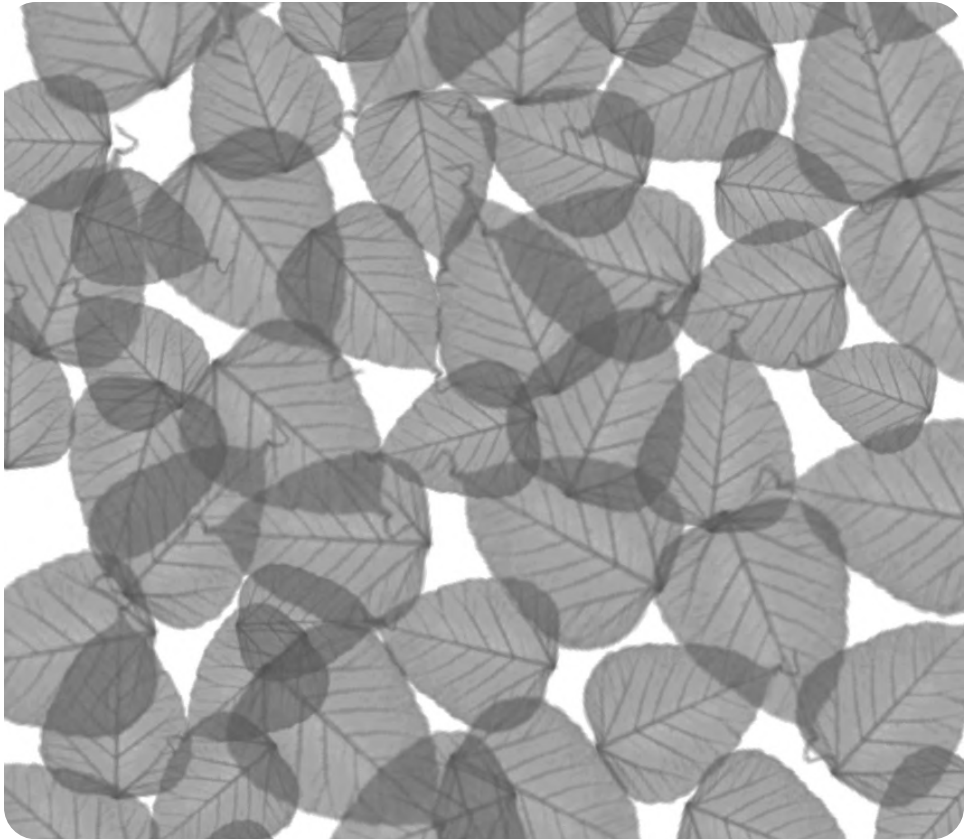
<b>Common Name</b>	Willow, Weeping	<b>Landscape Use</b>	Large residential yards, parks, play spaces, along streams, ponds and other water bodies	<b>Ecological Value</b>	Since willows are often near bodies of water, they add to the biodiversity of riparian ecosystems. They also help stabilize the soil and prevent soil erosion. Listed as a BC Firesmart fire-resistant plant.	<b>Fun Fact</b>	Weeping Willows were believed to ward off evil spirits!
<b>Scientific Name</b>	<i>Salix babylonica</i>	<b>Maintenance/Care</b>	Prune dead and damaged branches to maintain appearance and health, water amply if not planted near water. Species anticipated to be restricted to moist sites under future climate in the Metro Vancouver region, toxic to animals if ingested in large quantities.	<b>Cultural Value</b>	Historically, people chewed the tree's twigs and bark to relieve headaches. Weeping Willow contains salicin, which, when metabolized by enzymes in the body, it transforms into salicylic acid, eventually contributing to compounds like aspirin.	<b>Play Value</b>	Children can run through the drooping leaves for sensory play and hide-and-go-seek! They also make great climbing trees.
<b>UV Protection</b>	Heavy						
<b>Hardiness Zone</b>	6 – 8						
<b>Growth Rate</b>	1.2m / year						
<b>Type</b>	Deciduous tree						
<b>Site Conditions</b>	Full sun, well-drained moist soil						



**Phases of maturity**  
Photo Credit: UBC SALA



**Full view of plant**  
Photo Credit: UBC SALA



**Shade pattern type - UV Protection Heavy**  
Photo Credit: UBC SALA



**Actual shade pattern**  
Photo Credit: UBC SALA





# BUILT SHADE LOOKBOOK



# OVERVIEW

Built shade structures, whether standalone or attached to existing buildings, are generally comprised of two parts: a supporting structure and a primary shading element such as fabric, flexible material, or roofing. Examples include permanent structures like pergolas and gazebos, demountable structures like tents and shade sails, adjustable structures like awnings and umbrellas, and do-it-yourself (DIY) options like textile shade, parachutes, and window coverings.

Compared to natural shade, built shade offers advantages such as predictability, waterproofing, quick installation, and additional functions like shelter. However, factors such as structure mass, wind resistance, site compatibility, budget, and vandalism risks should be considered. Seeking professional advice, potentially involving certification from a structural engineer, and obtaining organizational or municipal approval are important for ensuring structural integrity, safety, and compliance with regulations.

## Using Existing Shade

Think creatively about ways to take advantage of existing natural or built shade. For example, move a picnic table under a large, shady tree, relocate activities to shady areas, trim low branches to allow for a shady picnic spot, add side covers to existing shade structures, or plant trees and shrubs around existing shade to absorb scattered ultraviolet radiation (UVR).

## Considerations for Design

When planning built shade placement, consider shading frequently used activity zones, like play equipment. Ensure shade is positioned to the south and west sides of the area and divide the play structure into smaller pieces/zones to bring shade closer. Break up tarmac and plant trees throughout using tree pits or utilize interim shade structures like sails while waiting for trees to mature.

Additionally, prioritize vandalism-resistant and durable structures, and consider thermal comfort by allowing for airflow or creating adjustable shade. Choose surface materials that are textured and not shiny to reduce reflective UVR, and phase in built structures based on budget. When selecting material, also ensure metal is treated and plastics have low sun exposure for safety. Use lighter colours on materials to minimize hot surface temperatures.



Photo Credit: Unsplash



Photo Credit: iStock



Photo Credit: Unsplash



# BUILT-SHADE — PERMANENT

## Overview

Permanent shade systems, intended to last for a minimum of 10 years, include structures like pergolas, verandas, and covered patios.

Permanent build shade are durable and can withstand diverse weather conditions. Consistent maintenance is crucial for prolonging their lifespan, so sourcing components designed for easy replacement is recommended. Permanent built shade is typically the most expensive shade solution to build, and usually requires installation and maintenance by a professional.

### ADVANTAGES

- Durable
- Weather resistant
- Intended to be long lasting
- Can serve as shelter

### FACTORS TO CONSIDER

- High-cost option
- Immovable
- Installation and maintenance to be performed by a professional

## PERMANENT BUILT SHADE

### PERGOLAS



Photo Credit: [www.gcfoundation.ca/burnaby-bc](http://www.gcfoundation.ca/burnaby-bc)



Photo Credit: BC Cancer



Photo Credit: Home Depot

### Structure & Design

Pergolas consist of sturdy columns supporting a roofing grid and rafters.

### Installation & Maintenance

Durable and permanent shade option that is freestanding or attached to a building. May require installation by a professional.

### Application & Benefits

Open roof, allowing for incorporation of greenery such as vines. Versatile in design and aesthetics to suit different architectural preferences. Lattice-like structure allows for growing climbing plants, forming a canopy that further enhances shade capabilities.

### Cost & Sustainability

Medium- to high-cost. Available in various materials including wood, metal, or vinyl.



GAZEBOS



Photo Credit: covapp.vancouver.ca/parkfinder



Photo Credit: BC Cancer



Photo Credit: Unsplash



Photo Credit: Unsplash

Structure & Design

Gazebos are closed roof structures with side walls, distinguishing them from pergolas. They have a rounded shape, such as hexagonal or octagonal design. Gazebos typically have a raised built floor.

Installation & Maintenance

Installation by a professional is likely required. Special maintenance requirements associated with wooden gazebos.

Application & Benefits

A charming and practical option for those seeking built shade with added privacy.

Cost & Sustainability

High-cost. Made of durable materials like wood or metal.



PATIO COVERINGS



Photo Credit: icebluesteeltd.com/canopy-vancouver



Photo Credit: Unsplash



Photo Credit: homelane.com/blog/veranda-design



Photo Credit: BC Cancer

Structure & Design

Patio coverings, also known as verandas, are open-air porches that wrap around one or more sides of a building, serving as a transition area between the indoors and outdoors. They are typically enclosed and feature a roof.

Installation & Maintenance

Installation and maintenance to be done by a professional. Raised from ground level, could be constructed on upper building levels. Can opt for railings for added safety.

Application & Benefits

Shades exterior walls of attached buildings from direct sunlight. Effective at cooling interior spaces. Can extend outdoor activity spaces while providing shelter. Often includes seating areas such as sofas, chairs, or dining sets.

Cost & Sustainability

High-cost due to size, weighty materials, and extra labour/equipment.



# BUILT-SHADE — DEMOUNTABLE

## Overview

Demountable shade structures, such as tents, marquees, and shade sails, offer easy setup and takedown, making them suitable for occasional or temporary shade needs across different locations, or in cases where permanent structures are not suitable.

These systems must withstand frequent transportation and assembly. Their temporary nature also reduces the risk of vandalism.

### ADVANTAGES

- Adaptable to various ground surfaces and settings
- Modular designs
- Removable walls for airflow
- Portability

### FACTORS TO CONSIDER

- Medium- to high-host, can be rented or purchased
- Limited lifespan compared to permanent built shade structures
- Less stable than permanent shade structures in windy conditions

## DEMOUNTABLE BUILT SHADE

### TENTS



Photo Credit: Unsplash



Photo Credit: Unsplash



Photo Credit: Free Images

### Structure & Design

Tents are composed of a light frame covered by a material, with a lowered roof compared to marquees. They are suitable for small spaces.

### Installation & Maintenance

Quick to install and takedown, and easily transportable. They come in a range of sizes and shapes, accommodating a large range of users. May lack durability compared to marquees.

### Application & Benefits

Moderate shelter from rain, wind, and low temperatures. Suited for various outdoor activities and emergency situations. Can be personalized with light decorations.

### Cost & Sustainability

Convenient and cost-effective, with rental options. Constructed from lightweight materials such as canvas, nylon, or polyester.



MARQUEES



Photo Credit: bondfabrications.co.uk



Photo Credit: bondfabrications.co.uk



Photo Credit: kelliestents.com

Structure & Design

Marquees are large tent-like structures, often serving as an alternative to indoor venues. Unlike smaller tents, marquees use heavier aluminum frames and higher apex roofs. Interconnected structures are available with clear roofs/sides.

Installation & Maintenance

Installation by a professional may be required depending on size. More durable and stable than tents.

Application & Benefits

Provides reliable shelter, space, and flexibility for group activities and special occasions. Tailored configurations can accommodate specific group sizes, with provisions for heating and air conditioning. Can support heavy decor and lighting.

Cost & Sustainability

Higher-cost than tents due to size, weighty materials, and extra labour/ equipment, and can be rented. Made of sturdy materials like PVC, aluminum, or steel.



SHADE SAILS

Shade sails have emerged as a popular choice for providing sun protection in various settings, offering both aesthetic appeal and functionality.

These textile sun protection devices, inspired by the technology of ship sails, are tensioned between multiple anchor points to create a flexible membrane that blocks harmful UV rays. Whether used as permanent fixtures or temporary installations, shade sails can cover large gathering spaces like seating areas and playgrounds. A key advantage lies in it’s customization, allowing for various shapes and sizes to suit specific needs. Connection points typically range from 3- 10, so shade sails can be strategically positioned to maximize coverage while maintaining structural integrity.



A shade sail at Djavad Mowafaghian Child Care Centre  
Photo Credit: UBC SALA



Photo Credit: oakanaganrailtrail.ca



Photo Credit: Unsplash

Structure & Design

UV inhibitors in shade fabrics block up to 95% of harmful UV rays, providing effective sun protection. However, the UV rating doesn’t consider reflection from the ground surface.

Installation & Maintenance

Proper tensioning and installation by a professional is essential to prevent pooling water and damage from high winds. Once fixed in position, they cannot be easily repositioned.

Application & Benefits

Offer an unobstructed shade solution for localized activities within an outdoor space, such as playgrounds.

Cost & Sustainability

Lower-cost and installation time compared to other large canopy structures.



# BUILT-SHADE — ADJUSTABLE

## Overview

Adjustable shade systems, often affixed to buildings, include canvas awnings, louvres, and umbrellas. They provide flexibility to adapt to changing sun positions and seasons with retractable elements.

Choose durable, rust-resistant components like stainless steel for easy long-term maintenance.

When considering adjustable shade options, assess whether the product includes supporting structures or if additional support is required on-site.

### ADVANTAGES

- Quick and affordable
- Ideal for areas lacking traditional shade options, like beaches
- Easy retraction or removal during windy conditions preserves longevity

### FACTORS TO CONSIDER

- Proper installation is crucial to maintain building integrity
- Limited protection from indirect UVR with umbrellas
- Ensure optimal coverage through correct orientation

## ADJUSTABLE BUILT SHADE

### AWNINGS

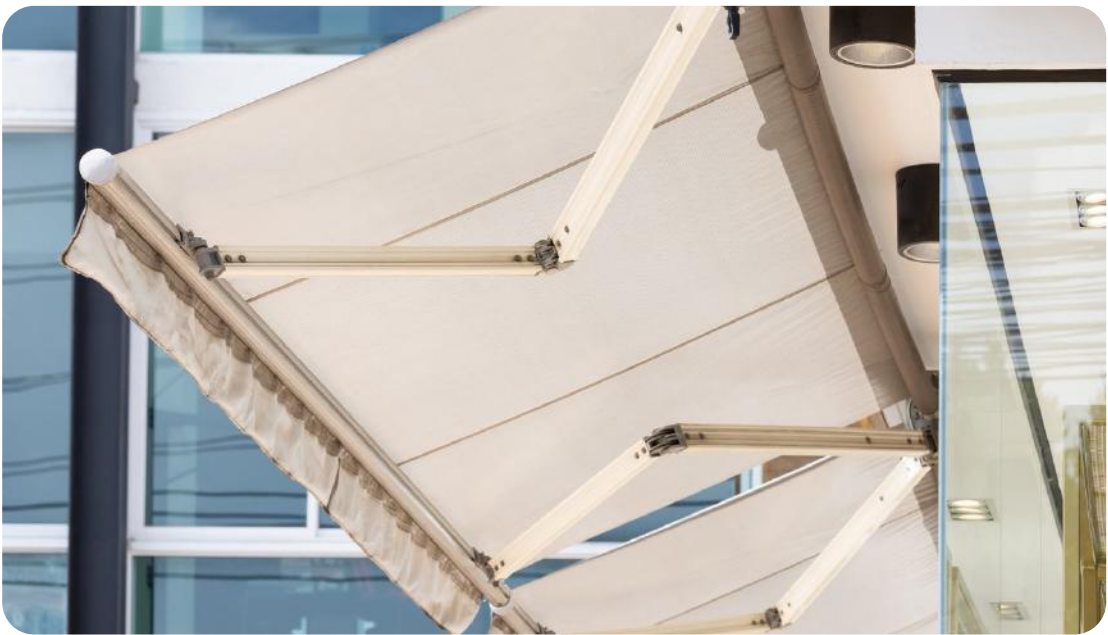


Photo Credit: iStock

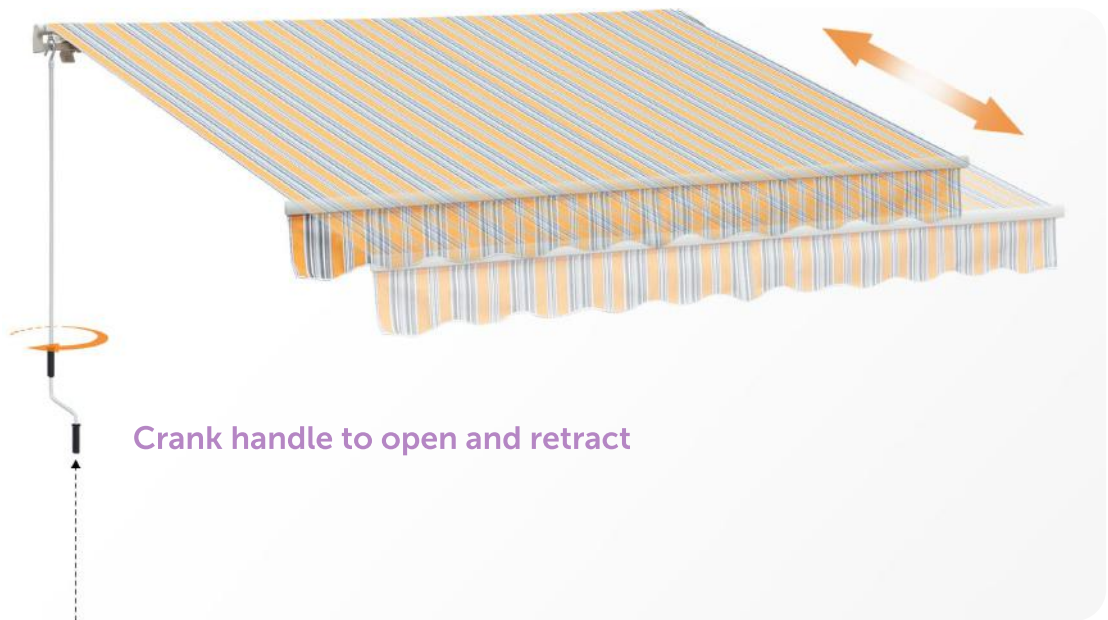


Photo Credit: aosom.ca

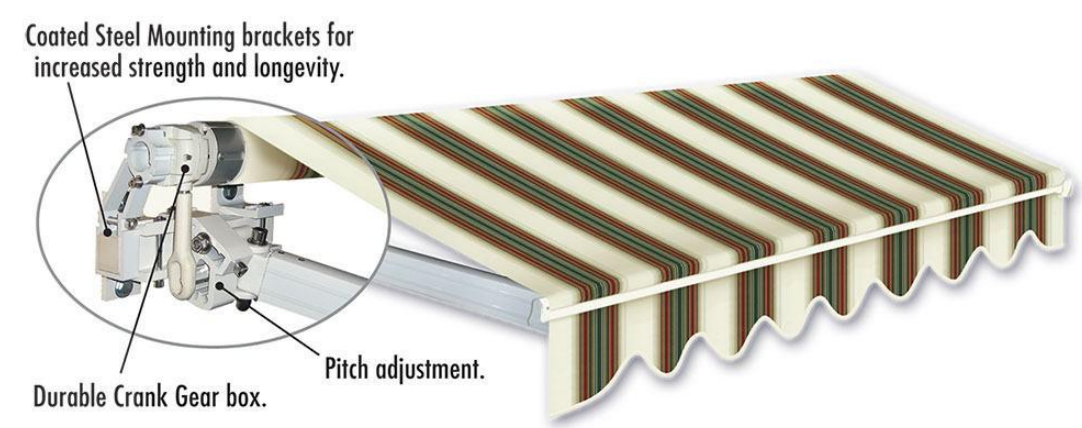


Photo Credit: valor.ca/awnings

### Structure & Design

Rectangular or square in shape, awnings are attached to a horizontal surface on the side of a structure. They feature a gear system that smoothly rolls in and out along a track. When retracted, the awning integrates into the building's facade.

### Installation & Maintenance

Typically installed and maintained by a professional. Available in automatic and hand-crank options, and in multiple fabrics.

### Application & Benefits

Designed to retract to adapt to changing sunlight and weather conditions. Provides flexible retraction in inclement weather. Suited for small spaces, and can easily be angled for optimal coverage, preserving views.

### Cost & Sustainability

Medium- to high-cost, due to installation required to fix the awning onto the building's facade.



LOUVRES



Photo Credit: shadfactor.co/au



Photo Credit: timbertown.ca



Photo Credit: profil.gr

Structure & Design

Louvres are roofs with slanted horizontal slats that can be opened or closed using a motorized system, providing customizable sun protection.

Installation & Maintenance

Typically installed by a professional. Can be fixed to a building or freestanding.

Application & Benefits

Beyond shading, louvres can also shield against rain. Its design adds definition to outdoor spaces.

Cost & Sustainability

Medium- to higher-cost. Common materials include aluminum, metal, wood, or glass, with aluminum favoured for durability and lightweight properties.



UMBRELLAS

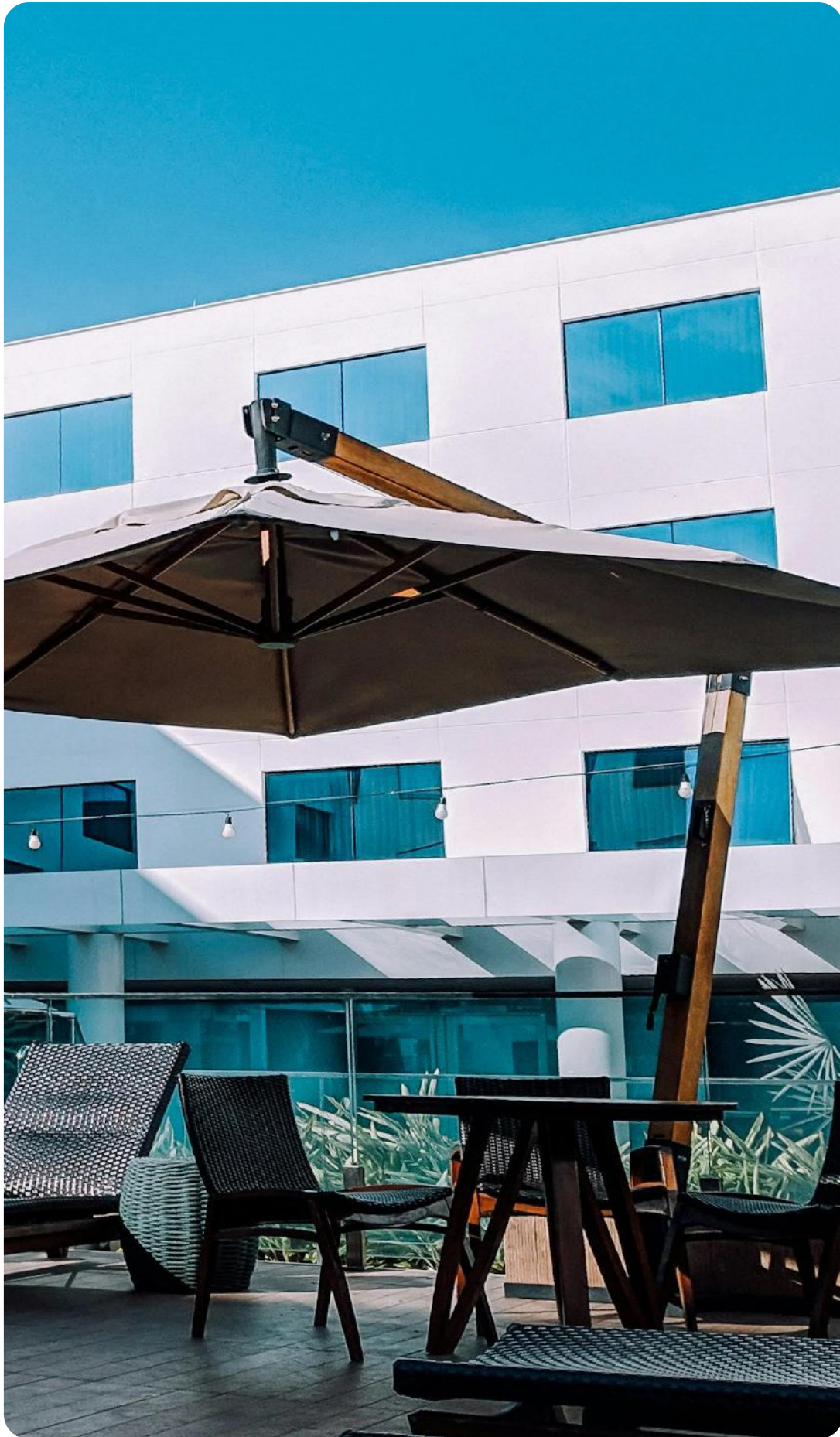


Photo Credit: Pexels



Photo Credit: Unsplash



Photo Credit: Unsplash

Structure & Design

Supported by a single steel post, umbrellas have a modular design that allows for easy deployment and retraction, providing flexibility in sun protection. Versatile and practical built shade option.

Installation & Maintenance

Easy installation and maintenance, while keeping in mind storm precautions. Portable and easy to replace. Some models can tilt or rotate for optimal shade coverage, while others can be positioned in cantilever form, minimizing interference and maximizing space.

Application & Benefits

While covering less space than shade sails, umbrellas offer more individualized shade. Effective and affordable for small spaces like outdoor dining areas, poolside, and childcare activity areas.

Cost & Sustainability

Low-cost and accessible shade option. Wide range of materials, colours, patterns and branding options that can be swapped out.



# BUILT-SHADE — DO-IT-YOURSELF (DIY)

## Overview

Do-It-Yourself (DIY) structures are pre-made shading systems available for immediate installation on any site, offering a cost-effective solution for various shade needs. Examples are textile shade, playful shade like parachutes and forts, and window and fence coverings.

Before purchasing, consider the costs of installation and replacement, and compare offerings from different suppliers. If possible, consult or obtain certification for your shade solution from a qualified engineer.

### ADVANTAGES

- Cost-effective
- Quick to purchase and install
- Allows for creative and customizable designs
- Environmentally friendly when using second-hand materials

### FACTORS TO CONSIDER

- Ensure correct orientation for optimal shade coverage
- Clarify inclusion of supporting elements in the structure
- Inspect supplier's previous work and client feedback

DIY BUILT SHADE

## TEXTILE SHADE



Photo Credit: hgtvhome.sndimg.com



Photo Credit: Alhaurin de la Torre

### Structure & Design

Textile shade provides a budget- and environmentally-friendly option for overhead canopy shade. Opt for durable, UV resistant fabrics.

### Installation & Maintenance

Easy installation and maintenance. Whether mounting or attaching using tension hooks, strings, or PVC pipes, textile shades can be easily put up and stowed away as needed. Check local regulations and obtain permits as necessary if installing on public property.

### Application & Benefits

Offers an eco-friendly DIY solution, allowing for creativity and flexibility in design. If textile shade produces dappled light, minimize time spent in the sun. Variable durability compared to permanent shade options.

### Cost & Sustainability

By utilizing recycled fabrics or sourcing multiple textile samples, shade solutions can be tailored to any budget.



PLAYFUL SHADE



Photo Credit: Canva



Photo Credit: Woohoo Toys



Photo Credit: BC Cancer

Structure & Design

Playful shade structures, such as parachutes, forts, playhouses, and tunnels, offer imaginative and interactive DIY shade solutions for outdoor play areas. Typically constructed of lightweight frames and colourful fabrics.

Installation & Maintenance

Easy installation and maintenance. When installing, ensure proper ventilation within the shade structure for thermal comfort. Also prioritize safety features such as sturdy frames, secure anchoring, and using non-toxic materials.

Application & Benefits

Parachutes provide colourful and dynamic overhead cover, while fabric forts and tents create cozy hideaways for children to explore. Playhouses offer shade for imaginative play, and add excitement to outdoor environments.

Cost & Sustainability

Lower-cost shade type, with options to source playful shade structures that are second-hand or made of recycled fabric.



WINDOW & FENCE COVERINGS



Rainbow window privacy film  
Photo Credit: hidbea.com



Flagging tape art on Fence in Christchurch, New Zealand  
Photo Credit: spiderontheice.wordpress.com



Camouflage netting with hanging gourds  
Photo Credit: UBC SALA

Structure & Design

Window and fence coverings, including camouflage netting, flagging tape, and UV-blocking film, offer practical DIY solutions for shading and privacy needs. They come in a variety of sizes, styles, and materials.

Installation & Maintenance

Easy installation and maintenance. When installing, assess visibility levels of the covering material - from partial to complete privacy.

Application & Benefits

Camouflage netting provides natural-looking shade for outdoors, while flagging tape is colorful and inexpensive. UV-blocking film can be applied to windows and fences to reduce heat and glare while protecting against harmful UV rays.

Cost & Sustainability

Low-cost shade option. When purchasing, consider the credibility of the manufacturer by consulting reviews. Also take into account UV-blocking ability and longevity.



# VI

## FUNDING OPPORTUNITIES



# FUNDING OPPORTUNITIES

- Two Billion Trees - 2 Billion Trees (2btrees.ca)
- Shade Structure Grant Program - Canadian Dermatology Association
- Community Tree Grants - Tree Canada
- Community Gaming Grants - Province of British Columbia (gov.bc.ca)
- Parent Advisory Council (PAC) and District Parent Advisory Council (DPAC) Grants - Province of British Columbia (gov.bc.ca)
- Capital Project Grants - Province of British Columbia (gov.bc.ca)
- Grantmaking Process | The Bullitt Foundation
- Community Branch Grants - Vancity

- PlanH Grants Application Guide – BC Healthy Communities
- AFC Grants Application Guide – BC Healthy Communities
- Canada Healthy Communities Initiative – Community Foundations of Canada
- Kal's Replay enhancing community with recycled rubber products | Kal Tire
- Community Development Grants | Jumpstart (canadiantire.ca)
- Community Spaces Funding | Co-op
- Community Foundation | Our company | Canada Post (canadapost-postescanada.ca)
- Playground Grants & Funding for Your Project – KOMPAN



Photo Credit: Unsplash



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