



ĆEN, IŁĆ (Garry oak)
and the urban forest

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- **Tree grower**
- **Consulting Arborist/Urban Forester**
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- **GOMPS - President**
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- **ISA Test Committee member**



Level 1

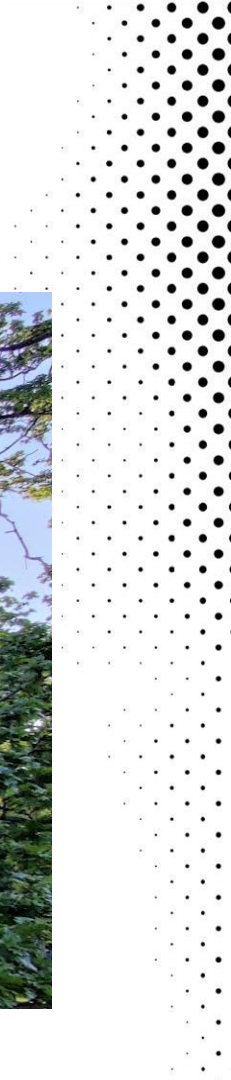
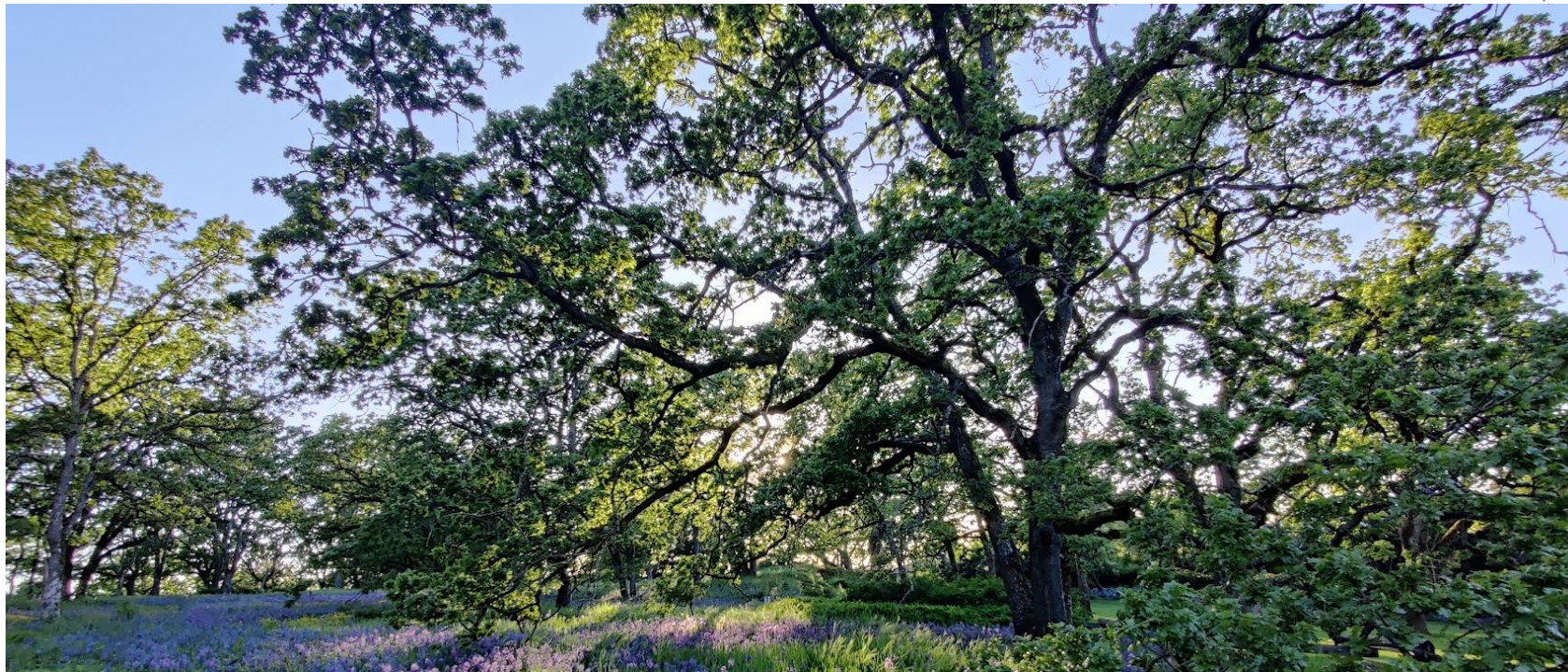


Outline

- » Garry Oak Meadow Preservation Society Background
- » Garry oak and Garry oak ecosystem facts
- » Measuring the urban forest (City of Victoria)
- » Trees and development



GOMPS Background





Garry Oak Meadow Preservation Society

- » 100% volunteer-run registered society (charitable status)
- » Dedicated to the preservation, protection and restoration of Garry oak stands and their natural habitats (since 1992)
- » Improving the availability of local ecotype seedlings for replanting efforts
- » Sharing knowledge and providing support for all matters related to Garry oaks and Garry oak ecosystems



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Board of Directors

Carollyne Yardley

Ryan Senechal

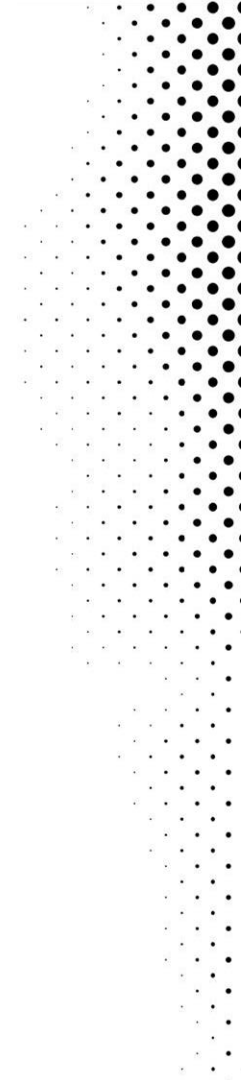
Susan Grant

Michael Meagher

Judith Carder

Hal Gibbard

Judy Spearing





Nursery Location



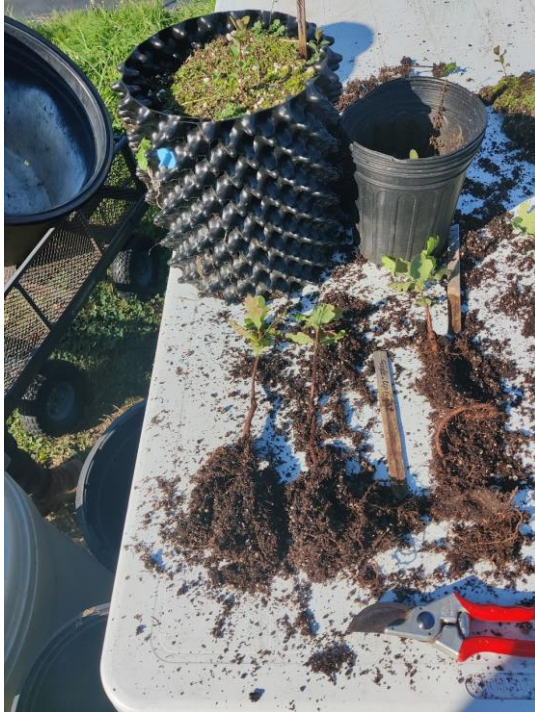


Acorn Collection



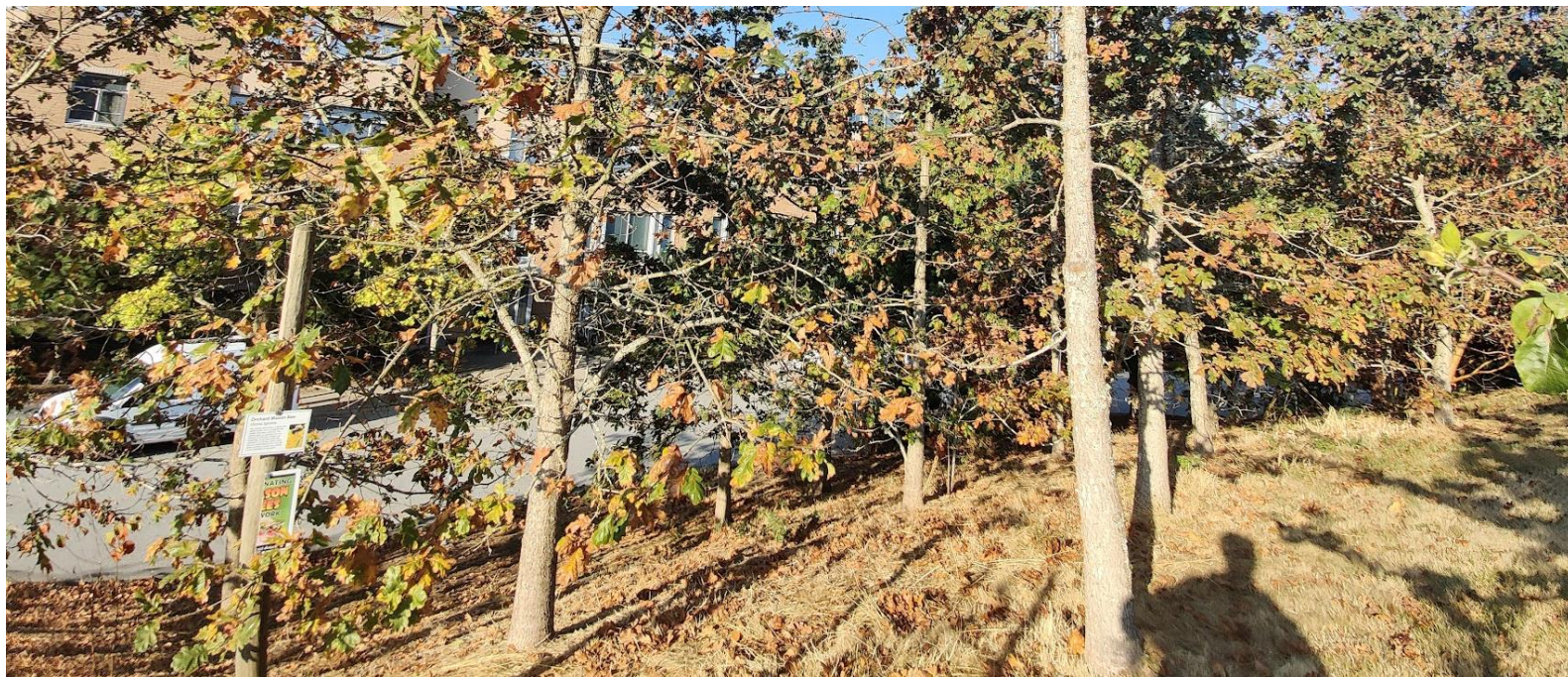


Nursery Volunteering





Oak and GOE Facts





ĆEN_IŁĆ, Garry oak

- » SENĆOTEN word for Garry oak: Chung-ae-th-ch
- » Garry oak ecosystems shaped by Indigenous agroecological management over thousands of years (Beckwith, 2005; Barlow et al, 2021; Fuchs, 2001)
- » This population of oaks connects lək^wəŋən and W_SÁNEĆ people with their lands, traditions, foods, medicines, cultural practices, and ancestors.



Oak facts

- » Of the family Fagaceae, and the genus Quercus
- » Inflorescence of inconspicuous male flowers (catkins) and female flowers that are separate but on the same tree and pollinated by wind
- » The largest urban oak in the region is on Falkland Rd. near Beach Dr in Oak bay

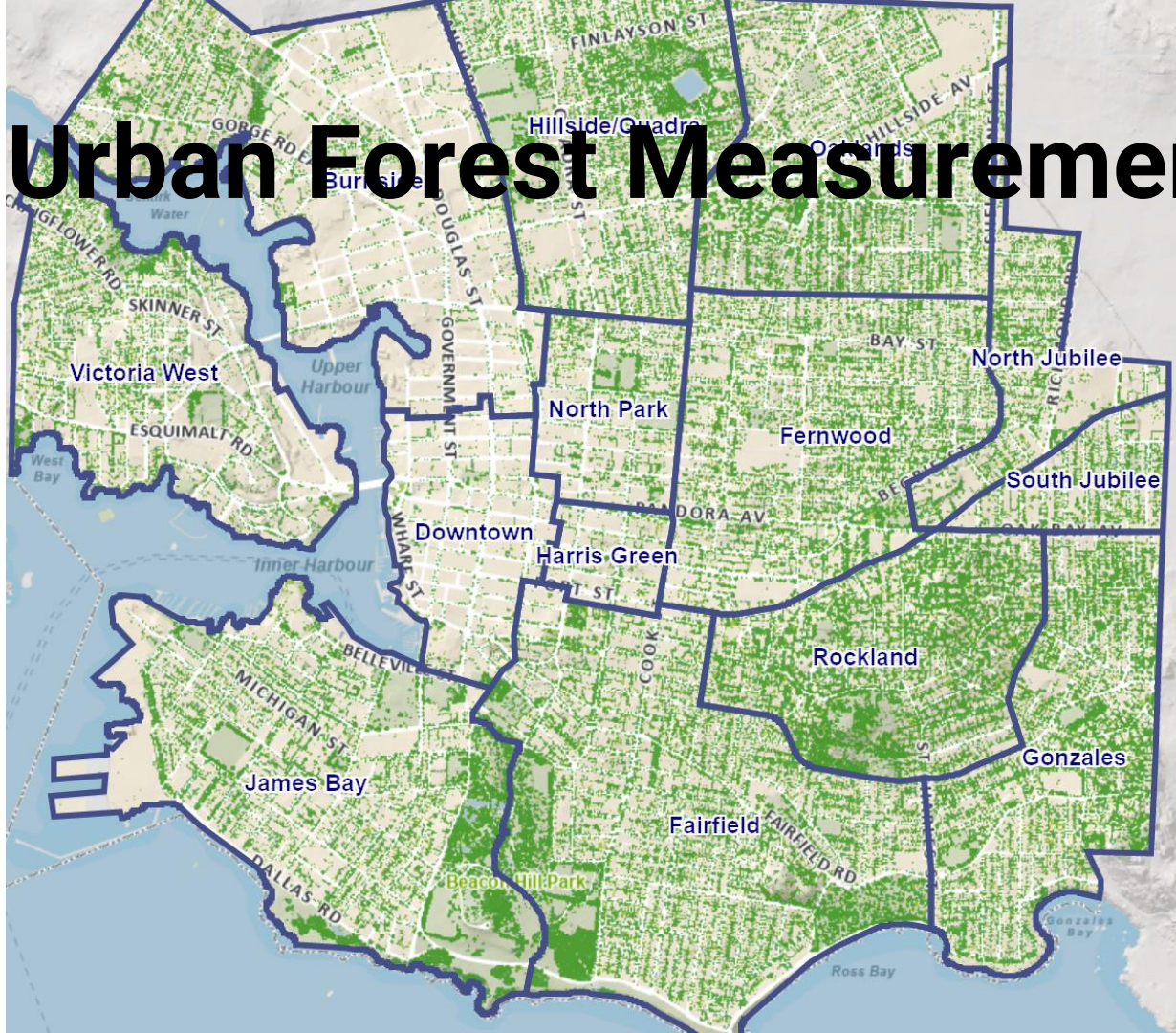


Ecosystem

- » Garry oak ecosystems arrived after the glacial retreat approximately 10,000 years ago
- » Garry oak ecosystems in Canada are some of the rarest, and the area they occupy is declining in large part due to development (Fuchs, 2001)
- » At least 1,645 organisms (plants, insects, amphibians, reptiles, birds, mammals, etc.) have co-evolved with GOE.

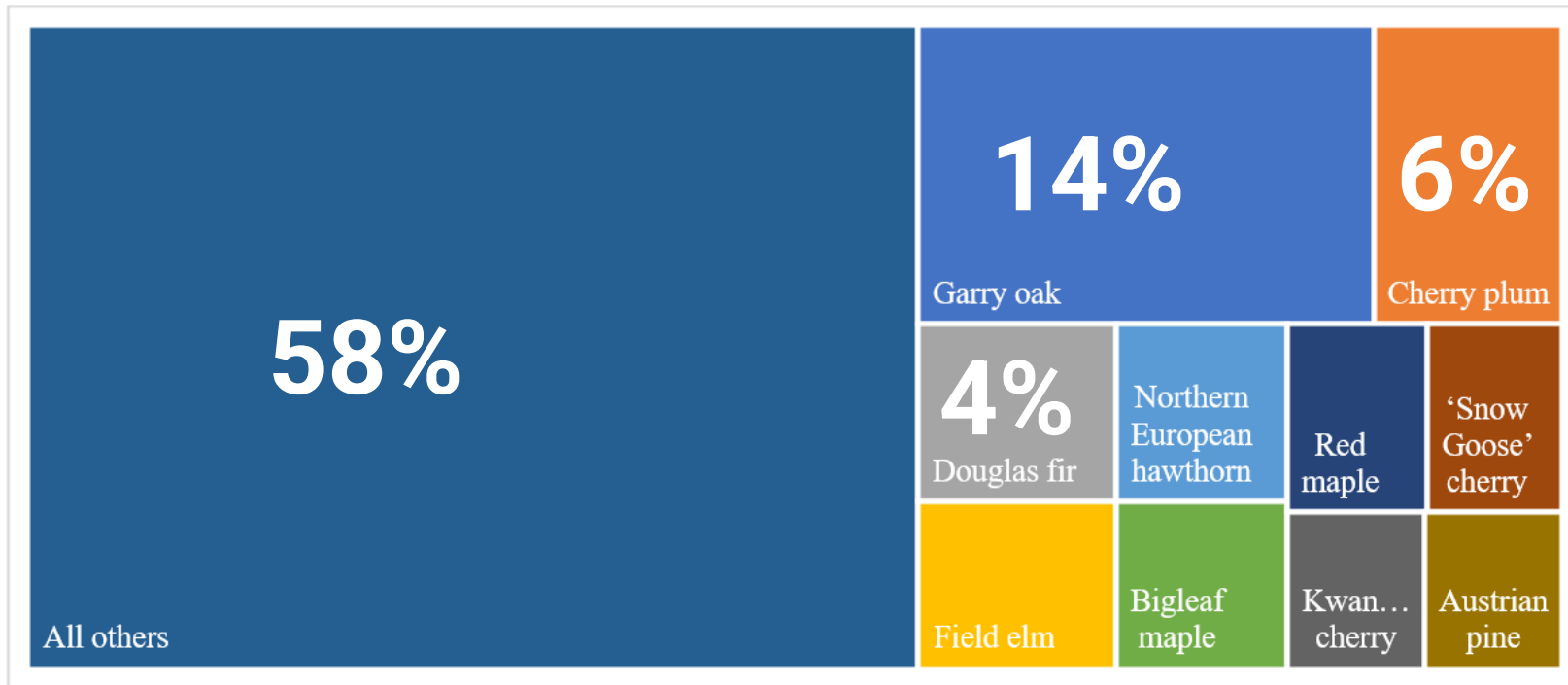


Urban Forest Measurement





Victoria Public Trees



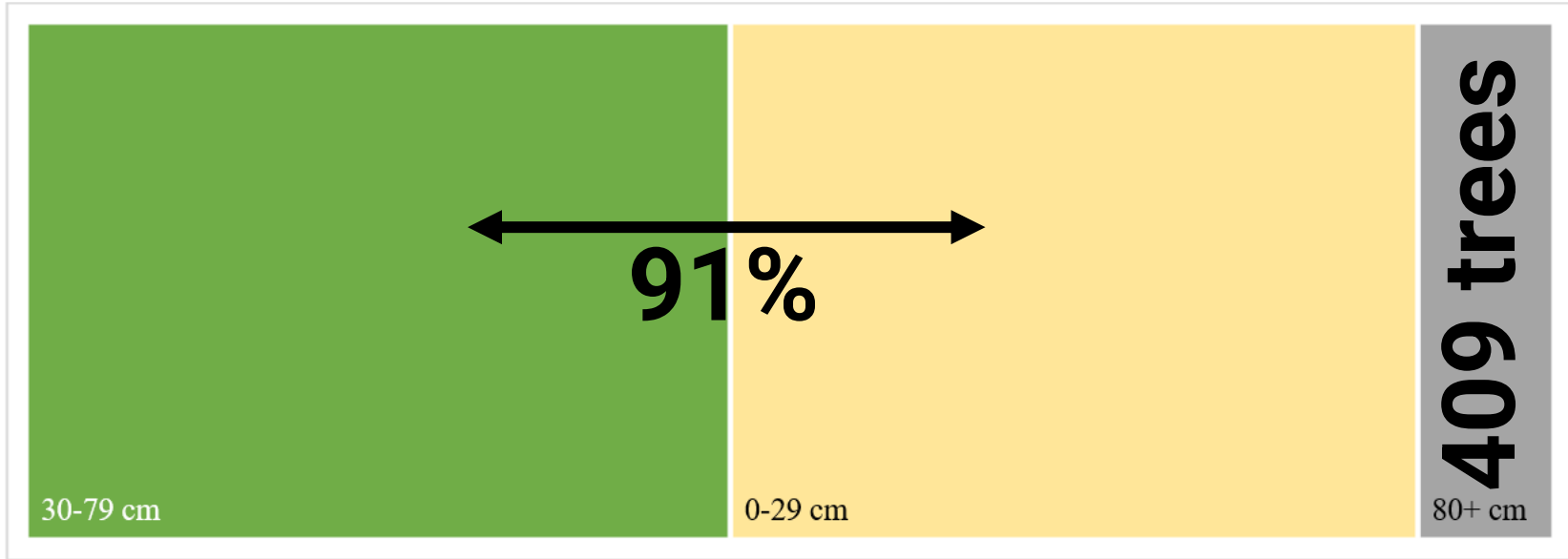


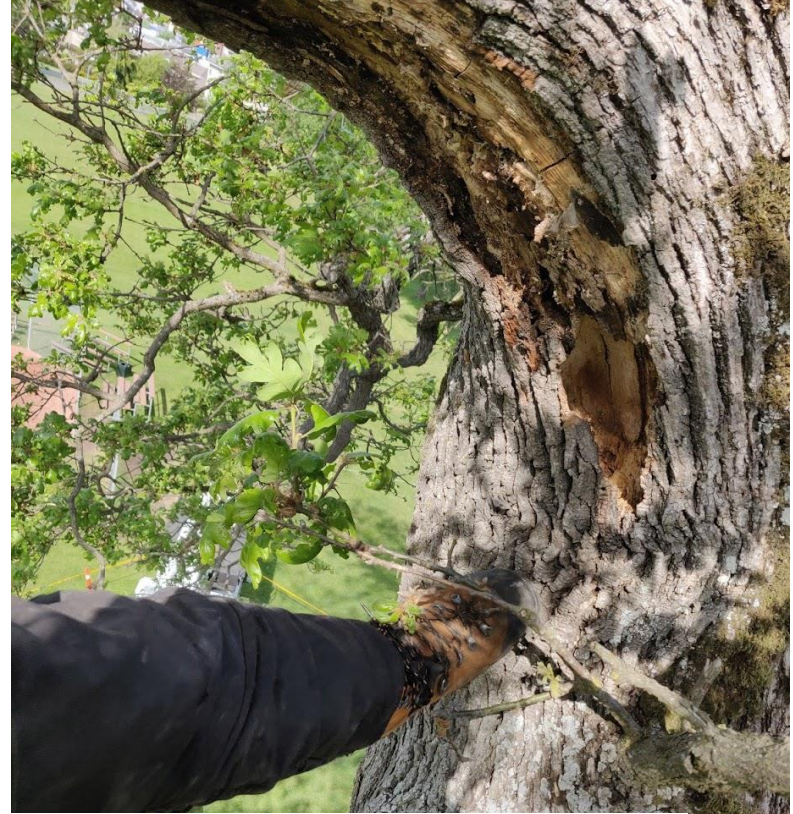
Victoria Public Trees





Victoria Public Trees



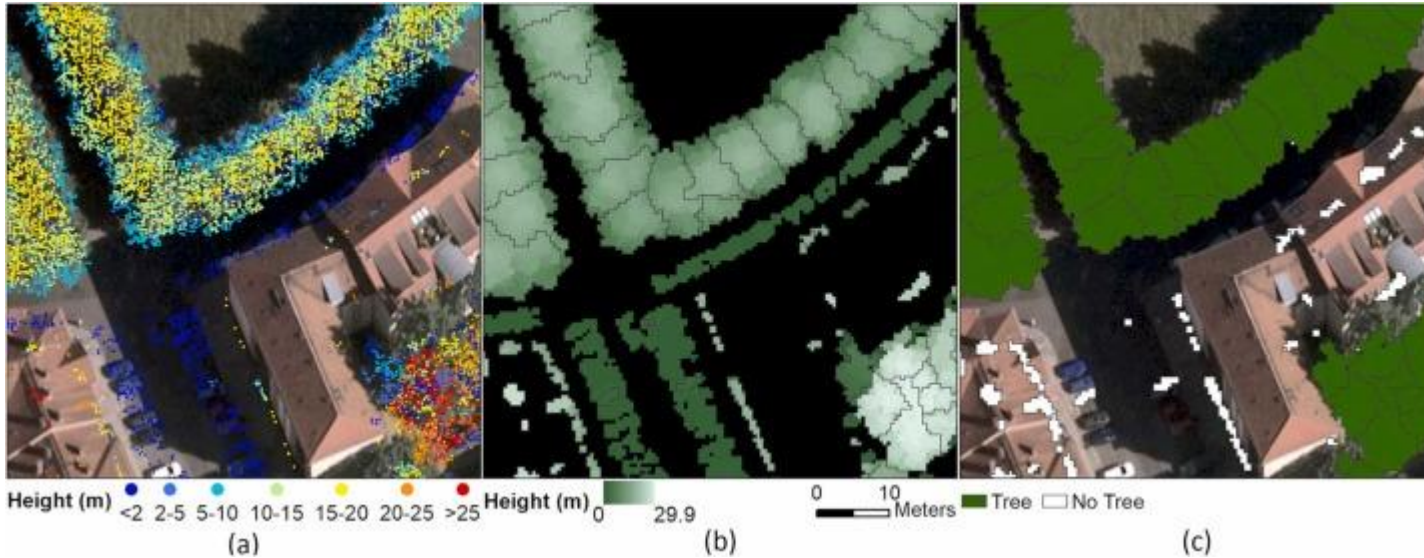


Larger, old oaks are a strong source of cavities and dead branches, and may be favoured for cavity excavation (Fuchs, 2001)





LiDAR Canopy Analysis



Mapping the urban forest in detail: From LiDAR point clouds to 3D tree models
(Münzinger et al, 2022)



Victoria Public/Private Trees

- » Victoria's urban forest grew across all neighbourhoods measured between 2013-2018
- » Overall density was measured at ~28% (559 ha)
- » Total public and private trees: ~150,000
- » ~75% of tree on private land, ~25% on public lands
- » Maximum potential canopy is ~38%



Victoria Public/Private Trees

“This analysis demonstrates we can continue to develop and grow as a city while also protecting and growing the urban forest necessary for public enjoyment and to address climate change and long-term resilience.” – Lisa Helps



Canopy Density Comparison

Year	2m+ Vegetation Area (ha)	% of City Area	Comment
2007	512	26.41%	Measured at 2m cell size
2013	513	26.46%	Measured at 1m cell size
2019	559	28.83%	Measured at 1m cell size

“the horizontal growth of existing vegetation offsets the effect of vegetation loss from urban development or die off.” (Terra Remote Sensing, 2021)



Canopy Density Gain

Table 3

Neighbourhood	Vegetation Cover 2013 (ha)	Vegetation Cover 2019 (ha)	% change from 2013-2019
Burnside	31.24	34.48	10.37%
Downtown	5.76	7.13	23.78%
Fairfield	87.78	92.06	4.88%
Fernwood	51.40	55.92	8.79%
Gonzales	50.28	53.27	5.95%
Harris Green	3.91	4.16	6.39%
Hillside Quadra	50.45	57.15	13.28%
James Bay	55.19	62.88	13.93%
North Jubilee	17.11	18.90	10.46%
North Park	10.58	11.56	9.26%
Oaklands	49.29	53.82	9.19%
Rockland	57.49	60.02	4.40%
South Jubilee	9.87	10.68	8.21%
Victoria West	30.49	36.22	18.79%
Total	510.82	558.24	9.28%



Canopy Density Gain

“It will be of importance to monitor the continual changes in the city’s vegetation canopy to assess whether the fill in growth of existing and new plantings will continue to outstrip the vegetation loss.”

“Further to on-going monitoring, determining age class, distribution, and species composition will help to forecast vegetation growth trends and potentially predict when vegetation growth will cease to offset losses.”



Canopy Density Threats

- » Development as currently practiced
- » Climate change: higher heat, longer droughts, increasingly likely severe weather events
- » Destructive insect populations and pathogen
- » Poor age and species composition
- » Loss of plantable space

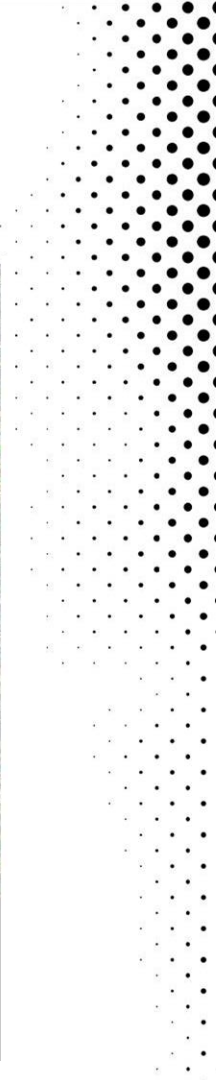


Plantable Area

Neighbourhood	Plantable Area 2013 (ha)	Plantable Area 2019 (ha)	% change from 2013-2019
Burnside	6.62	10.88	64%
Downtown	0.99	0.84	-15%
Fairfield	25.33	29.81	18%
Fernwood	9.75	14.86	52%
Gonzales	9.73	15.90	63%
Harris Green	0.48	0.38	-21%
Hillside Quadra	14.82	18.96	28%
James Bay	25.82	30.81	19%
North Jubilee	2.28	3.92	72%
North Park	3.81	4.62	21%
Oaklands	9.73	16.26	67%
Rockland	8.71	11.17	28%
South Jubilee	1.42	2.21	56%
Victoria West	12.02	19.08	59%
Total	131.52	179.70	37%



Plantable Area





Plantable Area

“It should be noted that these numbers do not take into account plantable areas that would likely be unsuited to tree planting due to competing land uses such as recreation sports fields, underground or above ground utilities corridors”



Plantable Area Threats

- » Current status-quo development practices
- » Above ground and below ground utilities, transportation infrastructure, engineering specifications (required setbacks)
- » Cost burdens to high density development
- » Competing with other user groups' desires for public space
- » Public greenspace is not growing proportionally to offset the loss of private greenspace



Private Trees/Development

- » Victoria Tree Protection Bylaw implemented in 2021
- » BC Community Charter Part 3 Division 7 regulates municipal “Authority in Relation to Trees”
- » Trees of any species/size may be removed within proposed building and over-excavation footprint allowable by zoning
- » Replacement requirements that lack physical space to accommodate can be offset with a cash-in-lieu fee to the City



Private Trees/Development

- » \$2000 Cash in lieu per required development replacement tree
- » No data on how funds are spent, how many trees are planted, or where trees are planted
- » Replacing trees proximate to the location of their removal is a significant challenge to cash-in-lieu schemes

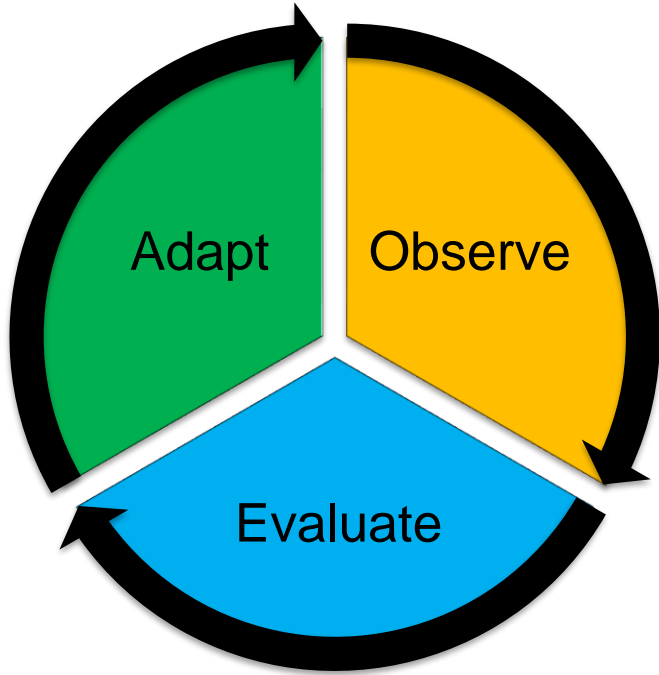


Private Trees/Development

- » Victoria's Bylaw is the most robust, well-resourced, protective of private trees in the CRD.
- » The rules of the game have changed, the devil is in the details.
- » Where do we go from here?



Urban Forest Participation



Is the urban forest vulnerable?

Case studies: Hemlock, EAB

Can residents do more?

Group think, community participation, research, analysis



Urban Forest Participation

- » Bring your skills in support of community urban forestry causes
- » Show up for trees and the benefits for livable communities
- » Connect with case studies, avoid being caught in public policy framing traps (i.e., housing vs. trees)
- » Get political



Recommended Groups



YOUR LOGO HERE





Thank You!



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