

STRESSORS AT MAPLEWOOD FLATS CONSERVATION AREA

SFU

BCIT

SFU-BCIT MSc in Ecological Restoration Program

Maplewood Flats

Traditional territory of Tsleil-Waututh Nation

Land owned by the Port of Vancouver and the District of North Vancouver

Managed by the Wild Bird Trust



Site Stressors

- plant community composition
- altered landscape connectivity
- increasing public use
- climate change effecting temperature, precipitation



Non indigenous species

Results of plant survey: frequency

Table 1: Ten most frequent species found sample quadrats (NIS species identified with star).

VFPA (n=40)		DNV East (n=27)		Reference Transect (n=6)	
Species		Species		Species	
Rubus Armeniacus *	95%	Hedera helix *	81%	Polystichum munitum	100%
Alnus rubra	80%	Rubus Armeniacus *	74%	Rubus ursinus	100%
Moss spp.	65%	Alnus rubra	63%	grass (no i.d.) *	67%
Populus balsamifera	58%	Rubus spectabilis	63%	Oemleria cerasiformis	67%
Equisetum arvense	50%	Oemleria cerasiformis	59%	Populus balsamifera	67%
Oemleria cerasiformis	43%	Ilex aquifolium *	56%	Rubus spectabilis	67%
Ranunculus spp. *	40%	Polystichum munitum	52%	Acer macrophyllum	50%
Hedera helix *	38%	Malus Fusca	48%	Spiraea douglasii	50%
Agrostis capillaris *	35%	Lonicera involucrata	44%	Gautheria Shallon	50%
Geranium robertianum *	35%	Rubus ursinus	44%	Prunus spp. *	50%

Plant survey results: plant diversity and % cover

Mean results of species count and percent cover, upland landscape

Category	VFPA (n=40)	DNV East (n=27)	Reference (n=6)
Species count (mean)	12.5 (SD= 5)	14.5 (SD = 4)	14.2 (SD= 4.6)
Indigenous species	6.1 (SD= 2.6)	10.1 (SD= 3.6)	9.7 (SD= 2)
Indigenous shrub species	1.8 (SD=1.4)	4 (SD= 1.8)	3.8 (SD= 0.8)
Indigenous shrub (% Cover)	20% (SD=25%)	48% (SD= 29%)	85% (SD= 17%)
<i>R. armeniacus</i> (% Cover)	51% (SD=36%)	9% (SD=16%)	3% (SD=4%)
<i>H. helix</i> (% Cover)	5% (SD=15%)	51% (SD=37%)	5% (SD=10%)

Plant diversity/structural complexity decreases as invasive species cover increases



Native Plant Composition

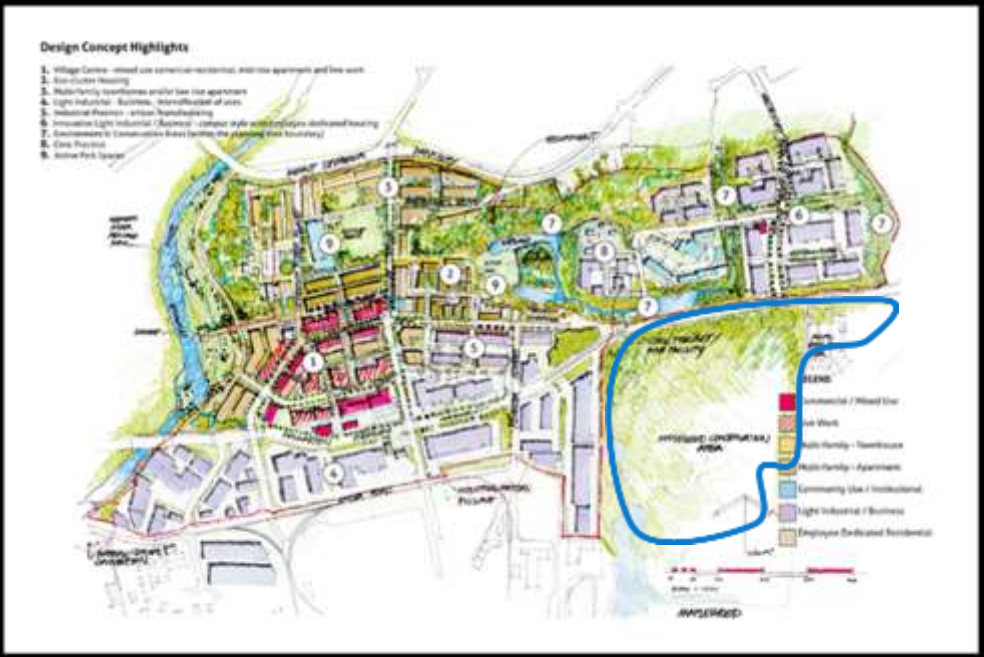
- Bleeding heart : 3 of 70 sites
- False Lily of the valley: 7 of 70 sites
- Piggy-back plant: 4 of 70 sites
- Red huckleberry: 8 of 70 sites
- Salal found on 4 of 70 sites

- Not found:
- Foam flower, Queen's cup, twisted stalk, False Solomon's seal, goatsbeard, honeysuckle....

Altered connectivity, fragmentation



DNV Planned Development



Google earth 2017

Effects of increased public use

- Impacts on Infrastructure
- Wildlife Disturbance

Interrupts feeding (Belanger and Bedard 1989)

-snow geese disturbed ≥ 2 per hour

= 50% fewer the next day

Dogs disturb birds (Banks and Bryant 2007)

-humans alone = 20% reduction in birds

-leashed dog on trail = 40% reduction

-birds not habituated



Increased Public Use Positive Impacts

- higher profile for site
- educational opportunities
- reconciliation opportunities
- potential increased funding from land owners
- upgrades to infrastructure

Climate Change:

- Wetter winters and springs, hotter drier summers
- sea level rise
- ocean acidification
- effects on mudflats
- effects on plants
- effects on wildlife

Stress to mudflats

- climate Change: ocean acidification
- calcium based shells: bivalves, mollusks, crustaceans (prawns, crabs), isopods, (gribbles), ship worms are harmed by ocean acidification
- sewage, nutrients, acid rain (from refineries and car exhaust) lower pH
- shore birds, waterfowl, herons, wildlife forage on the mud flats

Climate Change: Sea level rise



<https://seeing.climatecentral.org>

