Thinking beyond silos:
Impacts to the natural environment

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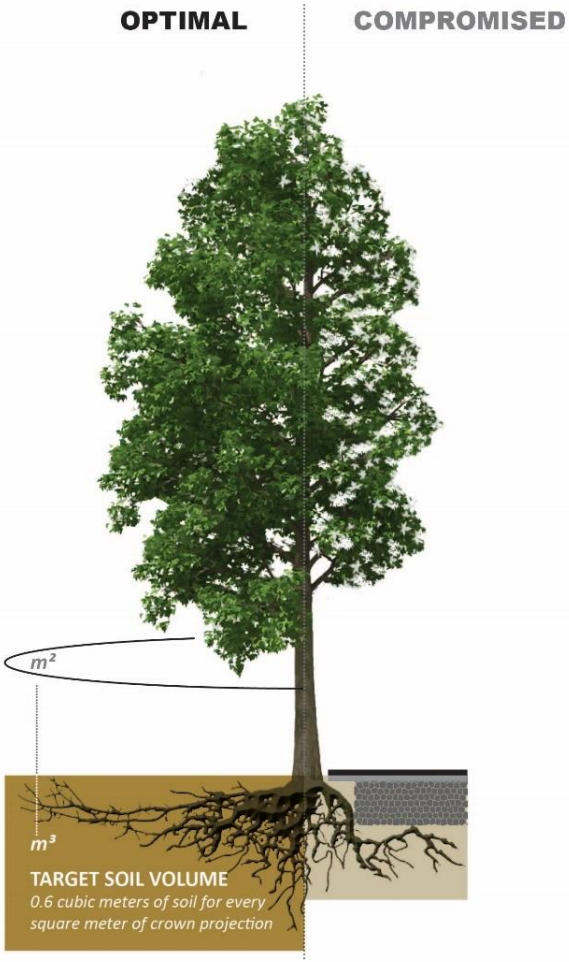
A system already under stress

Sources of continuous stress

- Below ground
  (e.g., soil volume, soil quality, utilities)
- At ground
  (e.g., permeability)
- Above ground
  (e.g., utilities, structures)



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A system already under stress

Sources of transient stress

Transient stressors include: seasonal moisture deficit, drought and heat; extreme wind and rainfall; urban activity and air pollution; pests and disease; and wildfire and flood events

Impacts on the urban forest

Negative Positive Uncertain

↓ Water
↑ Wildfire
↑ Heat
↑ Fresh-water flooding
↑ Insects, disease and invasive plants
↑ Air pollution
↑ Maladaptation
↑ Saltwater inundation

↑ Growing season

↑ Atmospheric CO_2
-- Windstorms

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Water

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Wildfire

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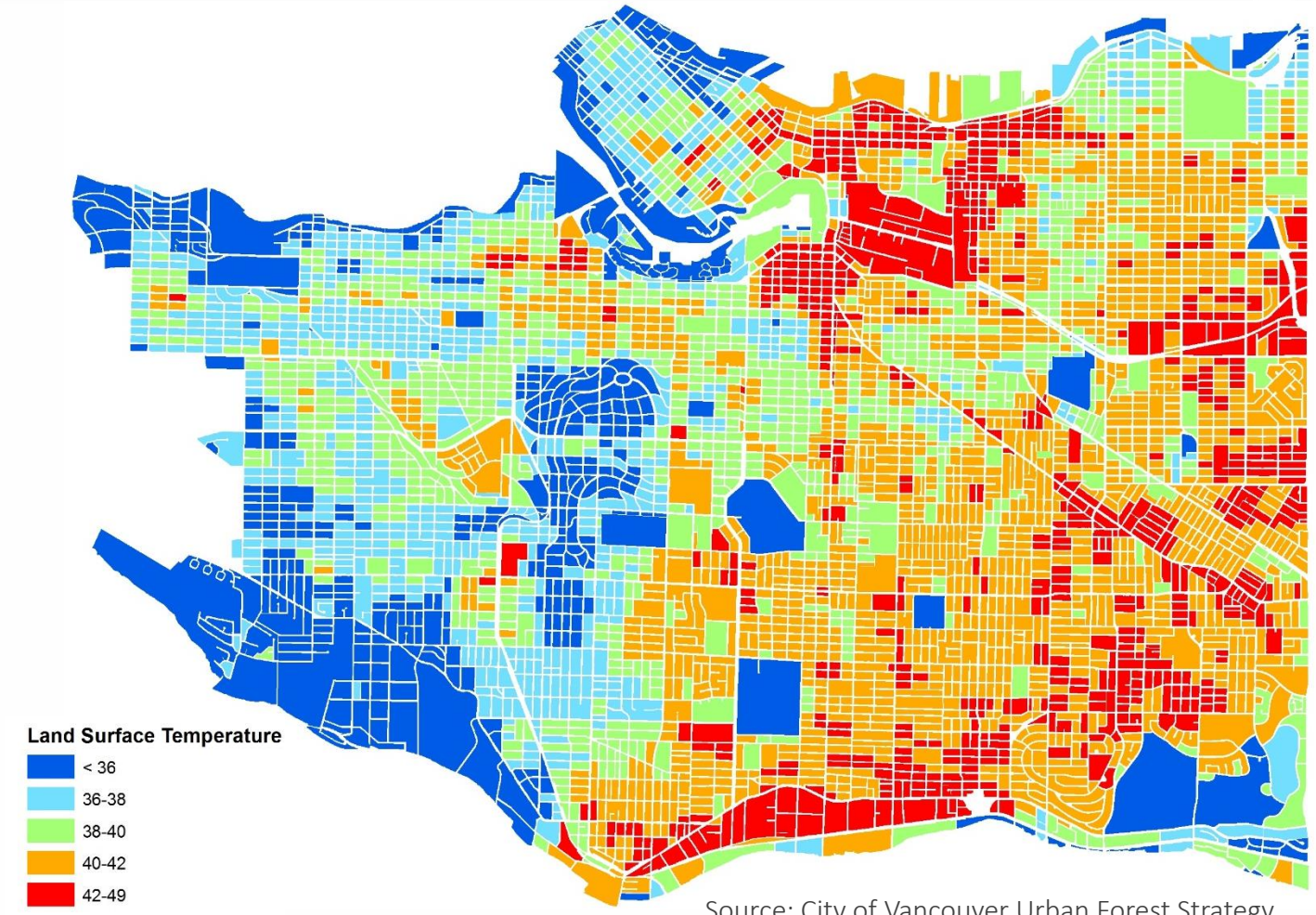
Heat



Source: City of Vancouver Urban Forest Strategy

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Fresh-water flooding

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Insects, disease and invasive plants

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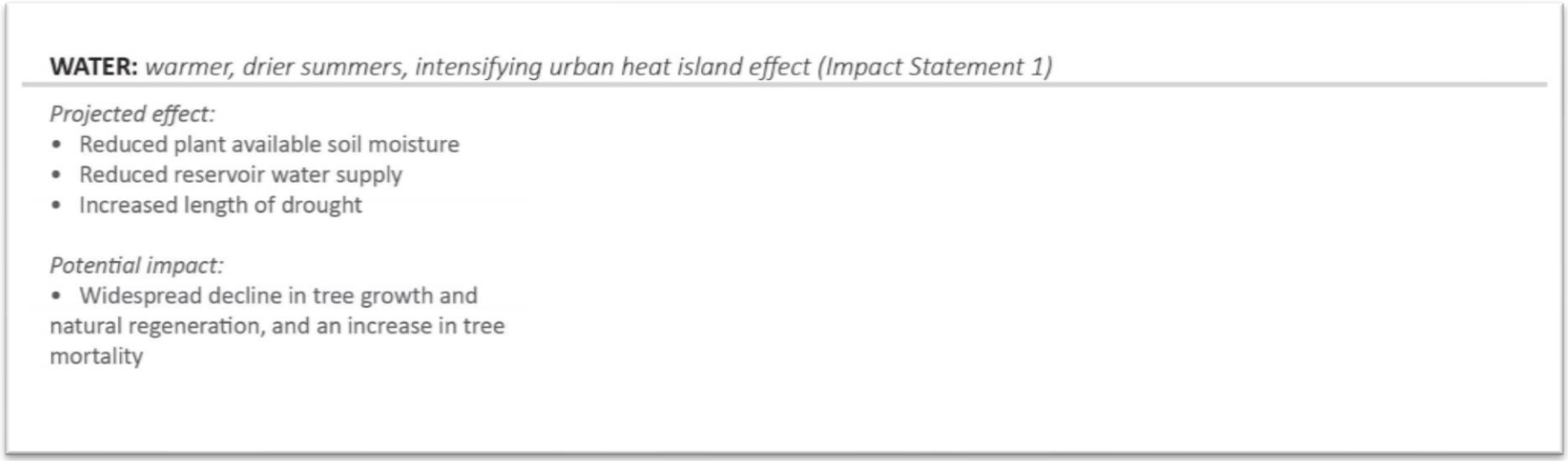
An example of collaborative work

Advisory Panel

Name	Organization	Name	Organization
Alison Evely	Metro Vancouver	**Kimberly Armour**	City of Richmond
Angela Danyluk	City of Delta	**Kristie Goodman-Rendall**	Metro Vancouver
Bill Stephen	City of Vancouver	**Lanny Englund**	City of Coquitlam
Conor Reynolds	Metro Vancouver	**Lillian Zaremba**	Metro Vancouver
Debora Harford	Simon Fraser University	**Neal Aven**	City of Surrey
Erika Mashig	City of New Westminster	**Rod Stott**	City of Maple Ridge
Gordon Jaggs	City of Richmond	**Sara Barron**	University of British Columbia
Jason Emmert	Metro Vancouver	**Sinead Murphy**	District of North Vancouver
Jonathan Budgell	City of North Vancouver	**Stephen Sheppard**	University of British Columbia
Josephine Clark	Metro Vancouver	**Tamsin Mills**	City of Vancouver
Julie Pavey	District of North Vancouver	**Tom Lancaster**	Metro Vancouver

An example of collaborative work



WATER: *warmer, drier summers, intensifying urban heat island effect (Impact Statement 1)*

Projected effect:

- Reduced plant available soil moisture
- Reduced reservoir water supply
- Increased length of drought

Potential impact:

- Widespread decline in tree growth and natural regeneration, and an increase in tree mortality

Advisory panel's role: assess…

- Adaptive capacity
- Sensitivity
- Consequence
- Probability

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An example of collaborative work

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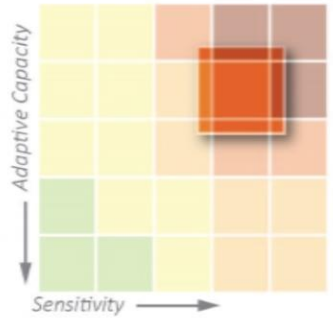
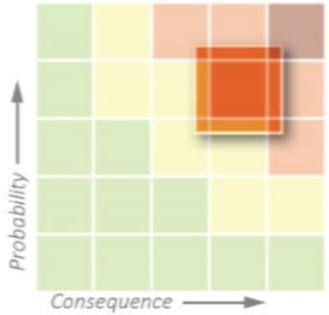


VULNERABILITY
medium-high



RISK
high

Scientific literature:
Robust evidence

Models:
Medium agreement

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Impact, risk and vulnerability

Impacts…….. Risk + Vulnerability

Negative Positive Neutral/uncertain

Highest Medium Low

Impacts	Risk + Vulnerability
↓ Water	↓ **Water**
↑ Wildfire	↑ **Wildfire**
↑ Heat	↑ **Heat**
↑ Fresh-water flooding	↑ **Fresh-water flooding**
↑ Insects, disease and invasive plants	↑ **Insects, disease and invasive plants**
↑ Air pollution	↑ **Air pollution**
↑ Maladaptation	↑ **Maladaptation**
↑ Saltwater inundation	↑ **Saltwater inundation**
↑ Growing season	
↑ Atmospheric CO_2	
-- Windstorms	

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Video

https://metrovancouverblog.org/2018/08/02/urban-trees-climate-adaptation/

A step further

- Species database expansion

See the ‘Urban Forest Climate Adaptation Project’ page on Metro Vancouver’s website

www.metrovancouver.org/services/regional-planning/conserving-connecting/urban-forests

Thank you!

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