NORTH SHORE STREAMKEEPERS

IMPACT OF CLIMATE CHANGE ON NORTH SHORE FISH

FEBRUARY 6, 2016

LYNN VALLEY LIBRARY, COMMUNITY ROOM

SPEAKERS

NORTH SHORE STREAMKEEPERS CLIMATE CHANGE WORKSHOP FEBRUARY 6, 2016

Dr. Ken Ashley

Director of the Rivers Institute at BCIT, an Instructor in BCIT's Ecological Restoration Program and is an Adjunct Professor in Civil Engineering at UBC

Dr. Stewart Cohen

Senior Researcher with the Climate Data Analysis Section of Environment and Climate Change Canada, and an Adjunct Professor with the Department of Forest Resources Management, at UBC

Opening Remarks by:

- Mayor Richard Walton
- MLA Jane Thornthwaite

Workshop Organizers:
Glen Parker, Janet Dysart

CONCLUSIONS: BOTH ADVOCACY & ACTION IS NEEDED

NORTH SHORE STREAMKEEPER CLIMATE CHANGE WORKSHOP FEBRUARY 6, 2016

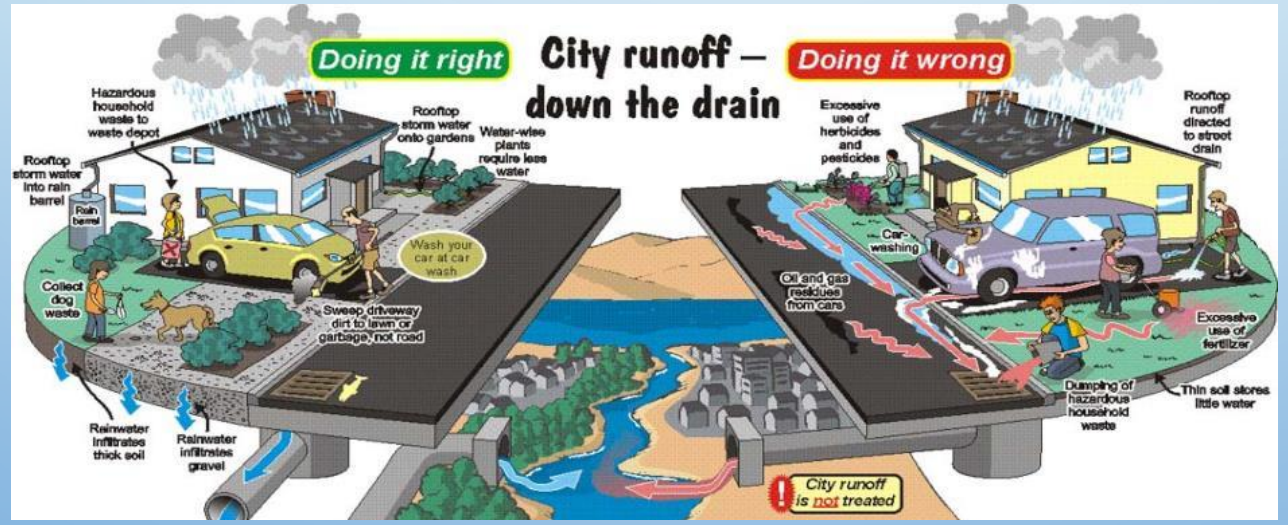
- ADVOCACY
  1. SUPPORT INTEGRATED STORMWATER MANAGEMENT PROGRAMS TO IMPROVE STREAM CHARACTERISTICS
  2. ENGAGE WITH PORT METRO VANCOUVER TO PRESERVE AND EXPAND ESTUARIES & STREAM COMPLEXITY
  3. PLAN AND BUILD CONSERVATION AREAS IN PARKS, ESPECIALLY ALONG RIPARIAN AREAS
  4. ADDRESS TRAIL BUILDING AND ENSURE TRAIL STANDARDS THAT PROTECT RIPARIAN AREAS
  5. SUPPORT COHEN COMMISSION RECOMMENDATIONS: #46 IN PARTICULAR
- ACTION
  1. PROJECTS TO ADD COMPLEXITY TO EXISTING ESTUARIES AND STREAMS
  2. PROJECTS TO COOL AND CLEAN THE STREAMS
  3. PROJECTS FOR ECOLOGICAL RESTORATION
  4. WHISTLE BLOWERS AGAINST STREAM CHANNELIZATION AND ENCROACHMENT ON SETBACKS
  5. EDUCATE, EDUCATE, EDUCATE: ESPECIALLY THE YOUNG

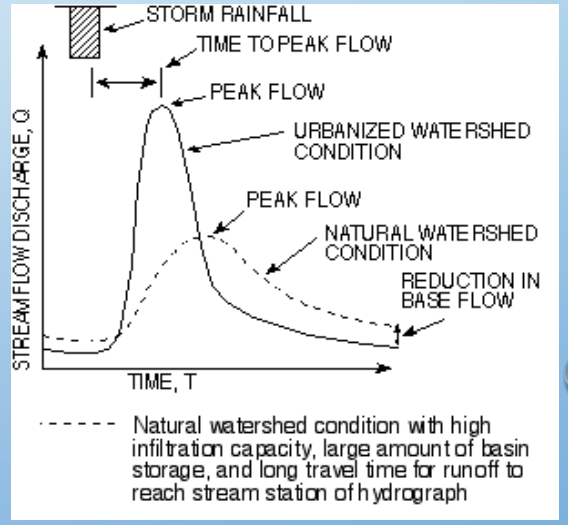
CONCLUSIONS: ADVOCACY

NORTH SHORE STREAMKEEPER CLIMATE CHANGE WORKSHOP FEBRUARY 6, 2016

1. SUPPORT INTEGRATED STORMWATER MANAGEMENT PROGRAMS TO IMPROVE STREAM CHARACTERISTICS

Adaptation of stormwater infrastructure for climate change should be **an opportunity to improve** riparian areas and stream complexity.





CONCLUSIONS: ADVOCACY

NORTH SHORE STREAMKEEPER CLIMATE CHANGE WORKSHOP FEBRUARY 6, 2016

2. ENGAGE WITH PORT METRO VANCOUVER TO PRESERVE AND EXPAND ESTUARIES & STREAM COMPLEXITY

- Stream channelization has caused significant loss of salmonid habitat on the North Shore.
- Rising sea levels will SQUEEZE shorelines and adaptation of shoreline infrastructure for climate change should be **an opportunity to preserve and expand** estuaries and stream complexity.

CONCLUSIONS: ADVOCACY

NORTH SHORE STREAMKEEPER CLIMATE CHANGE WORKSHOP FEBRUARY 6, 2016

3. PLAN AND BUILD CONSERVATION AREAS IN PARKS, ESPECIALLY ALONG RIPARIAN AREAS

Natural streams and their flood plains are dynamic ecosystems that **perform valuable ecosystem services** critical to managing climate change. They convey water and sediment; temporarily store excess flood water; filter and entrap sediment in overbank areas; recharge and discharge ground water; naturally purify instream flows, and provide supportive habitat for diverse plant and animal species.

CONCLUSIONS: ADVOCACY

NORTH SHORE STREAMKEEPER CLIMATE CHANGE WORKSHOP FEBRUARY 6, 2016

4. ADDRESS TRAIL BUILDING AND ENSURE TRAIL STANDARDS THAT PROTECT RIPARIAN AREAS

- There's more to building a trail than moving rocks and dirt. Trails are part of larger systems and need careful and diligent planning and collaboration. Trail systems must serve the needs of multiple user groups and take environmental and geographical factors into account.
- **Enforcement of standards and rehabilitation of sub-standard trails is needed** as climate change will increase erosion.

CONCLUSIONS: ADVOCACY

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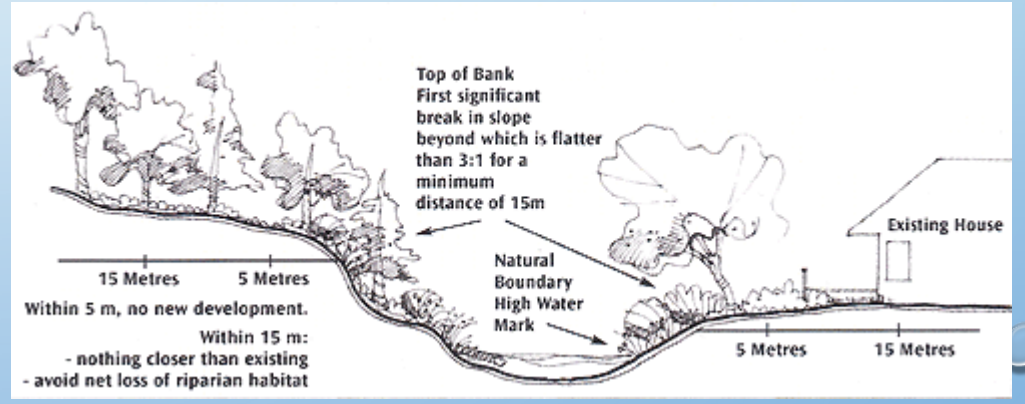
5. SUPPORT COHEN COMMISSION RECOMMENDATIONS: #46 IN PARTICULAR

Recommendation 46:
Fisheries and Oceans Canada should encourage the Province of British Columbia to amend the Riparian Areas Regulation: to require provincial approval of setback variances; and to require local governments to enforce compliance with the assessment reports on which development proposals are approved.

BC Response: Accept intent of the Recommendation.
Variance approval is an obligation that Fisheries and Oceans Canada has agreed to in the inter-governmental cooperation agreement. The Province has included mechanisms in the various Riparian Areas Regulation implementation tools for Fisheries and Oceans to meet these obligations. **Where a variance results in an impact to fish habitat <u>only</u> the Minister of Fisheries and Oceans or a regulation under the Fisheries Act (Canada) can authorize that impact.** The Riparian Areas Regulation currently requires local government use their tools to protect riparian fish habitat and to accomplish this local government can enforce their bylaws.



CONCLUSIONS: ACTION

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1. PROJECTS TO ADD COMPLEXITY TO EXISTING ESTUARIES AND STREAMS

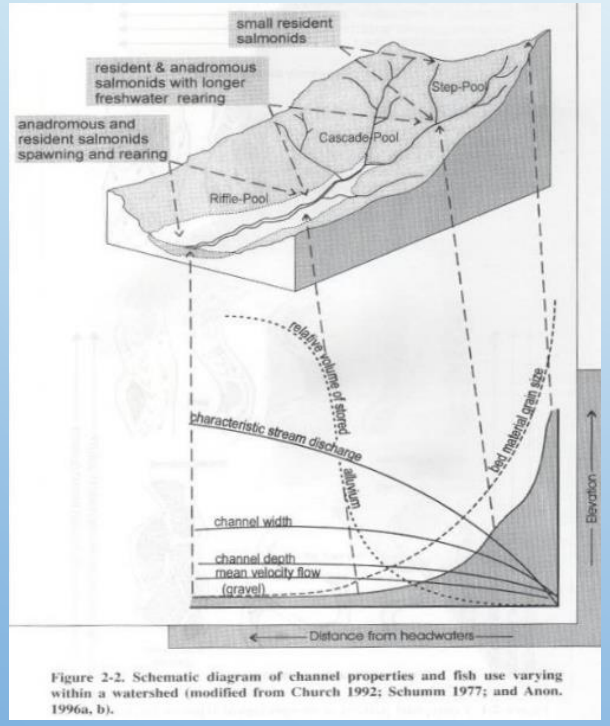

Figure 2-2. Schematic diagram of channel properties and fish use varying within a watershed (modified from Church 1992; Schumm 1977; and Anon. 1996a, b).

Fish thrive when there is:

- Large woody debris
- Boulders
- Bedrock outcrops
- Cobbles
- Riffles

CONCLUSIONS: ACTION

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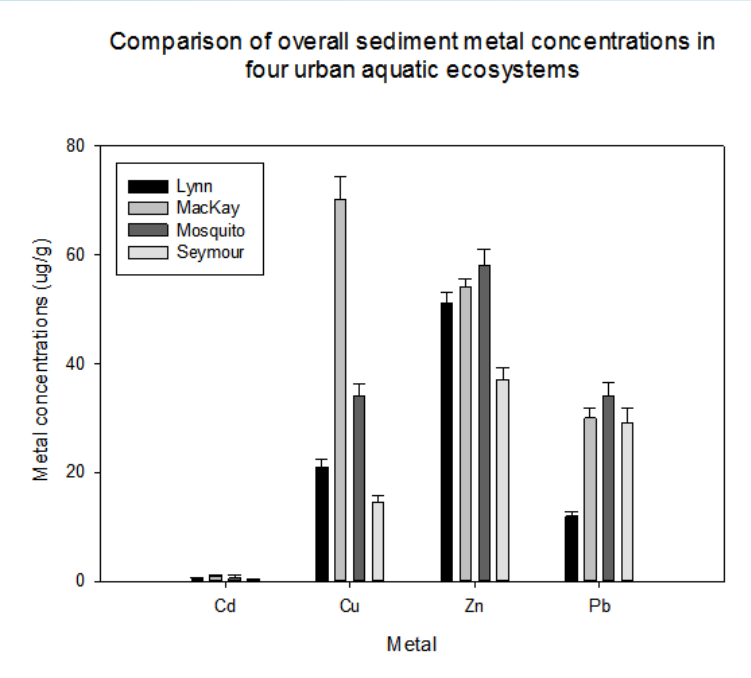
2. PROJECTS TO COOL AND CLEAN THE STREAMS



Ecotoxicology Research Group (ERG), Department of Biological Sciences
Faculty of Science, Simon Fraser University

Fish thrive when there is:

- Adequate vegetation
- Groundwater infiltration
- Minimal contamination

CONCLUSIONS: ACTION

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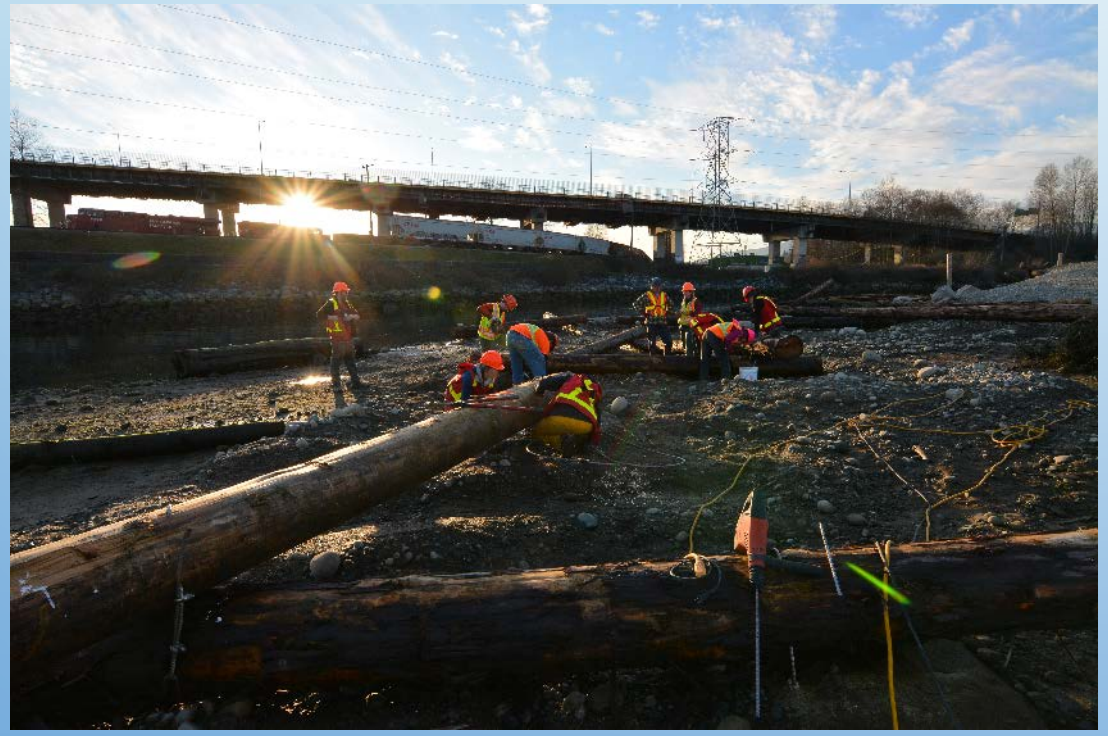
3. PROJECTS FOR ECOLOGICAL RESTORATION



CONCLUSIONS: ACTION

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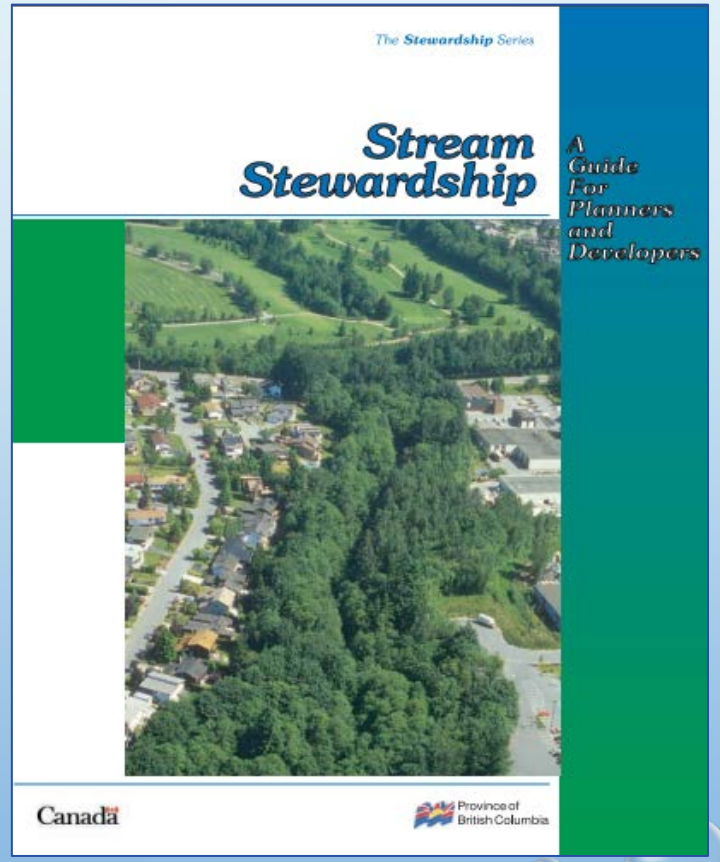
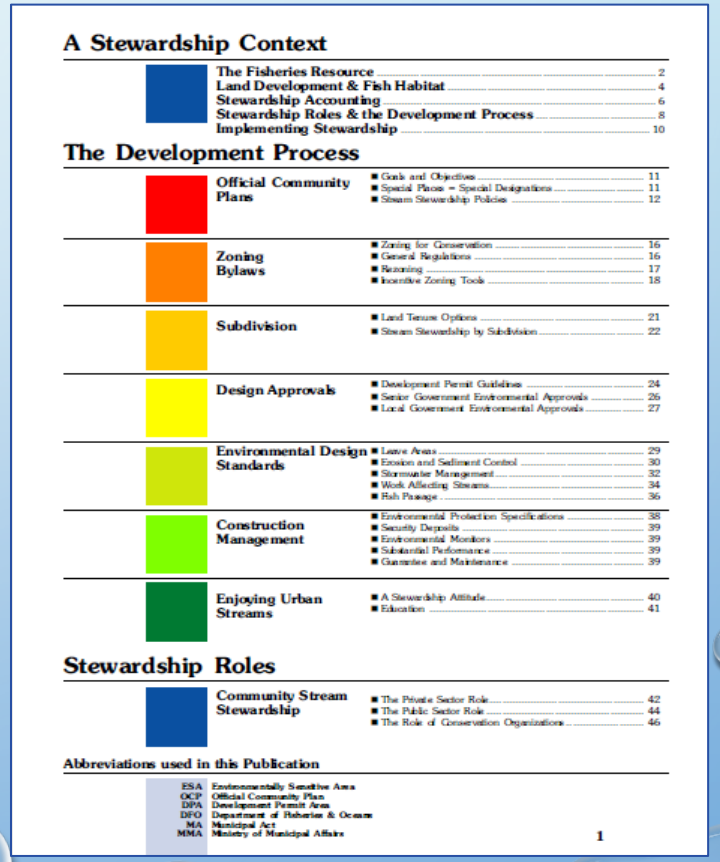
4. WHISTLE BLOWERS AGAINST STREAM CHANNELIZATION AND ENCROACHMENT ON SETBACKS
   - SEEK TRAINING ON WHAT IS ALLOWED





CONCLUSIONS: ACTION

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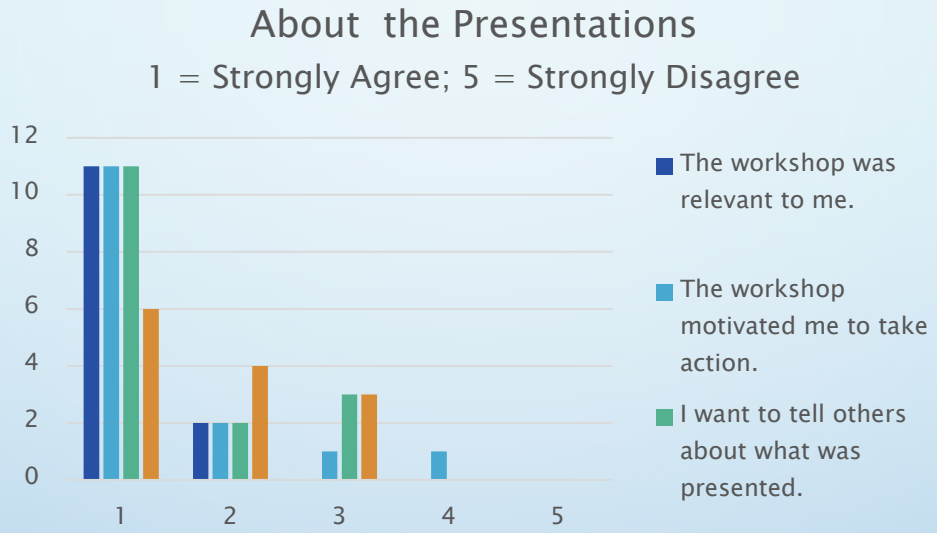
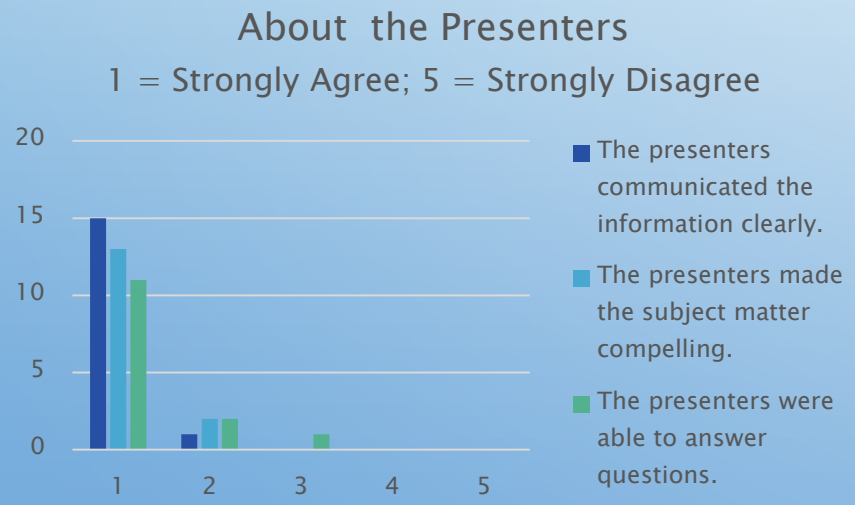
5. EDUCATE, EDUCATE, EDUCATE: ESPECIALLY THE YOUNG

FEEDBACK

What was the best aspect of the workshop? Excellent speakers; snowpack visualization model; passion of presenters; excellent up to date info; excellent organization; lectures well done; the integration of research and practitioner work; watershed info; not all doom & gloom, showed that actually possible to do things; knowledgeable speakers; the opportunity to learn and exchange ideas; positive ideas to work; the speakers; really liked all of it; next time put up a sign for "outsiders" looking in so they could learn about future events; thank you for having a free event especially for students;

What aspect of the workshop needs improvement? Couldn't hear speakers or members of audience due to poor acoustics, a microphone is essential in this room; poor acoustics; microphone didn't work; maybe more political; discussion portion wasn't really "discussion" hard to describe; Q & A could have been longer, and break into small groups; venue hard to find; everything was great; none;





Would you attend a larger forum expanding the topics on Climate Change & Streamkeeping? Yes; yes; yes; yes should be in Burnaby; yes; yes; yes; yes; yes; yes; yes; yes; yes; yes;

	Ideas from the NSSK Climate Change Workshop February 6, 2016	Comments
1	Request new Fed government for Infrastructure funding	Leverage new attitude of Fed government
2	Streamkeepers work to be involved with Integrated stormwater management programs	Stakeholder meeting in March (from DNV rep)
3	Understand how to advocate for Protection of habitat vs densification	Need to discuss with Metro Vancouver
4	Habitats need to be 'climate proofed' - less impervious to allow runoff to soak in	Disconnect streams from watershed
5	Discuss shoreline squeezing with North Vancouver	City of Vancouver is considering this now
6	Need to educate the general population about impact of climate change (i.e. parents!)	Get a 'monthly' page in the NS News to improve environmental awareness - Advocacy
7	Enable and support people networks for the long term to promote research, policies, and communication	Build long term sustainable networks, beyond just funding grants
8	Streamkeepers to push that the Cohen report be acted upon	
9	Use every infiltration situation as an opportunity to educate	
10	Lobby that Development charges/amenity charges to developers being used for streams	Monetize 'nature' - In US, selling various aspects (Fish, insects, etc.) of property
11	Build conservation areas into our parks	Nature Deficit Disorder
12	Tax storm water runoff from private property	
13	Address trail building and ensure linkage with Streamkeepers	
14	Leverage AVAAZ - political lobby group by email -	AVAAZ now allows people to create surveys, own petitions to monitor attitudes
15	Remove copper from brake shoes	
16	Get engaged in Port Development planning to preserve or expand estuaries and stream complexity	
17	Remove culverts or other infrastructure that impedes fish passage	
18	Watch for stream channelization and encroachment on setbacks and work against it	
19	Identify projects for Ecological Restoration program	
20	WarrenMcKay - FRAMEWORK institute -helps to frame issues - not try to change values	

Summary
Region & Time
Temperature
Precipitation
Snowfall
Growing DD
Heating DD
Frost-Free Days
Impacts
Notes
References

Summary of Climate Change for Greater Vancouver in the 2050s

Climate Variable	Season	Projected Change from 1961-1990 Baseline	
		Ensemble Median	Range (10th to 90th percentile)
Mean Temperature (°C)	Annual	+1.7 °C	+1.0 °C to +2.5 °C
Precipitation (%)	Annual	+7%	-2% to +11%
	Summer	-15%	-25% to +3%
	Winter	+6%	-4% to +15%
Snowfall* (%)	Winter	-36%	-56% to -19%
	Spring	-56%	-73% to -17%
Growing Degree Days* (degree days)	Annual	+415 degree days	+250 to +609 degree days
Heating Degree Days* (degree days)	Annual	-589 degree days	-853 to -360 degree days
Frost-Free Days* (days)	Annual	+22 days	+14 to +33 days

The table above shows projected changes in average (mean) temperature, precipitation and several derived climate variables from the baseline historical period (1961-1990) to the **2050s** for the **Greater Vancouver** region. The ensemble median is a mid-point value, chosen from a PCIC standard set of Global Climate Model (GCM) projections (see the 'Notes' tab for more information). The range values represent the lowest and highest results within the set. Please note that this summary table does not reflect the 'Season' choice made under the 'Region & Time' tab. However, this setting does affect results obtained under each variable tab.

* These values are derived from temperature and precipitation. Please select the appropriate variable tab for more information.