



PROJECT REPORT

Wildfire and watershed hydrology workshop

Post-workshop evaluation survey summary and results



FORREX Forum for Research and
Extension in Natural Resources

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Kevin D. Bladon



FORREX Forum for Research and Extension in Natural Resources

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INTRODUCTION

FORREX Forum for Research and Extension in Natural Resources, with support from FIA–FSP, organized a 2-day workshop entitled “Wildfire and Watershed Hydrology” in Kelowna, BC on June 3–4, 2009. The workshop focused on the hydrologic and geomorphic effects of wildfire and post-fire land management activities (e.g., salvage harvesting). The broad intent of the workshop was to present results of ongoing and recently completed research projects on the hydrologic and geomorphic effects of wildfire. The primary goal of the workshop was to provide new information/knowledge to assist decision making and to provide feedback to researchers that would help refine research plans and interpretation of results. A secondary goal was to provide participants with a forum for discussion and sharing of ideas to help deal with the increased challenges associated with shifting natural disturbance regimes.

Rapid communication of relevant research results is needed in order to incorporate the most current and best available knowledge into BC’s forests land management response to the likely increase in frequency and severity of wildfire in coming decades due to climate change. Presentation and panel discussion topics covered the current state of knowledge on the effects of wildfire and post-fire salvage harvesting on the magnitude and timing of water yield and peak flow, soil moisture, snow and rain interception, erosion, channel morphology, in-stream wood, water quality (temperature, sediment, nutrients, heavy metals), aquatic ecology, post-fire rehabilitation, and drinking water treatment. The workshop handbook with 2-page summaries provided by each presenter can be downloaded from:

http://www.forrex.org/program/water/PDFs/Workshops/Wildfire_Handout.pdf

This document summarizes the results of the post-workshop evaluation survey for the Wildfire and Watershed Hydrology Workshop. A brief summary of the survey results and responses is provided, followed by the raw survey data.

SUMMARY OF POST-WORKSHOP EVALUATION SURVEY RESULTS

The post-workshop evaluation survey was completed by 48 of the 79 event participants, which is a response rate of 61%.

Overall, the responses to the evaluation were very positive. The following are brief summary points based on the survey results, for additional details please see the full results and written response sections.

- 94% of respondents agreed that the workshop increased their knowledge of the potential hydrological impacts of wildfire and associated forest management activities.
 - In a related question, respondents were asked to rate their level of knowledge of the potential hydrological impacts of wildfire and associated forest management activities on a scale of 7 (1 = low level of knowledge, 7 = high level of knowledge) before and after the workshop.
 - 27 of 48 respondents (~56%) increased their level of knowledge by 1 increment, 14 of 48 respondents (~29%) indicated an increase in knowledge by 2 increments, and 1 of 48 respondents (~2%) noted an increase in knowledge of 3 increments on the 7 point scale after attending the workshop.
 - 6 of 48 respondents (~13%) indicated no change in level of knowledge; however, all of these individuals had a high level of knowledge prior to attending the event.
- 96% of respondents agreed that the workshop increased their awareness of current research that is investigating the potential effects of wildfire on hydrology, geomorphology, and watershed management.
- 92% of respondents agreed that they had increased knowledge of the key hydrologic processes affected by wildfire and related salvage harvesting, and how they affect stand or watershed hydrological and geomorphic response to disturbance.
- 98% of respondents said that their expectations for the workshop were met.
- 67% of respondents rated the workshop as “excellent,” while the remaining 33% rated the workshop as “good.”
- 56% of respondents learned of the workshop through direct FORREX email contact, 35% through the WM Listerv, and 2% learned of the workshop through the FORREX website events listing. Alternatively, 27% of individuals learned of the workshop by notification from a colleague.
- Many respondents indicated that the knowledge or information presented at the workshop will be useful in addressing potential hydrological and geomorphic effects of wildfire and associated forest management activities (e.g., salvage harvesting).
- There were generally positive comments related to the length of the coffee breaks and lunch. Overall, they were viewed as excellent opportunities to catch up with colleagues and make new contacts.
- The major criticism was the distracting noise from the road construction which coincidentally occurred throughout the event, but was beyond the control of the workshop organizing committee. A secondary criticism was the difficulty in seeing the

presentations from the back of the room; several efforts were made throughout the event to address this concern.

FULL RESULTS

1. Within which of the following categories does your involvement with issues around wildfire and water resources occur (select more than one if applicable)		
Water Purveyor	6	12%
Local/Regional Government	3	6%
First Nations	0	0%
Community or Stewardship Group	0	0%
Consulting	7	15%
Federal Government	2	4%
Provincial Government	14	29%
Academic	17	35%
Forest Industry	5	10%
Other, please specify	4	8%

2. Please indicate your level of agreement / disagreement with the following statements where 1 = agree, 2 = disagree and 3 = no comment			
Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	Agree	Disagree	No Comment
My knowledge of the potential hydrological impacts of wildfire and associated forest management activities was increased.	45	1	2
	94%	2%	4%
The workshop increased my awareness of current research that is investigating the potential effects of wildfire on hydrology, geomorphology and watershed management.	46	0	2
	96%	0%	4%
I have increased knowledge of the key watershed processes affected by wildfire and related salvage harvesting and how they affect stand or watershed hydrological and geomorphic response to disturbance.	44	2	2
	92%	4%	4%

3. In the 3 questions below, please rate the workshop in terms of the information presented, the venue, and networking opportunities:					
Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	Excellent	Good	Average	Poor	N/A
Overall, how practical or useful would you consider the information and ideas presented at this workshop to your work?	27	19	2	0	0
	56%	40%	4%	0%	0%
How suitable was the venue?	14	23	11	2	0
	29%	48%	23%	4%	0%
To what extent were the coffee and lunch breaks effective in enhancing your personal network and collaborative opportunities?	26	12	7	1	0
	54%	25%	15%	2%	0%

4. Were your expectations for the workshop met? If not, please briefly describe why.		
Yes	47	98%
No (please provide comment)	1	2%
Total	48	100%

5. Where did you hear about the workshop?		
FORREX Direct Email Contact	27	56%
FORREX Watershed Management LISTSERV	17	35%
FORREX Website Event Listing	1	2%
Professional Organization Web Listing (e.g. ABCFP, BCIA)	5	10%
Notification from colleague	13	27%
Other, please specify	2	4%

6. Overall, please rate the workshop

Excellent	32	67%
Good	16	33%
Average	0	0%
Substandard	0	0%
Not worthwhile	0	0%
Total	48	100%

WRITTEN RESPONSES

- The response number is the number of each individual respondent, and is consistent between questions.
- A numeric code was developed for each of the affiliation categories, and these are consistent between questions.
- The written results for each question have been sorted by affiliation.
- Blank responses or those giving answers of “no” or “not at this time” have been removed
- Responses have not been edited except to save space (deletion of blank lines). Otherwise, the written work is as entered in the survey site

Affiliation Codes (Used Below)

- 1 Water Purveyor
- 2 Local/Regional Government
- 3 First Nations
- 4 Community or Stewardship Groups
- 5 Consulting
- 6 Federal Government
- 7 Provincial Government
- 8 Academic
- 9 Forest Industry
- 10 Other

Response #	Affiliation	Can you comment how the new knowledge or information you received will be used in addressing potential watershed management impacts of wildfire and associated forest management activities?
15	1	Expect to have fire management plan prepared in next year or so, will try to tie pine beetle response to it.
18	1	will continue to work with major licences and Small Scale Salvage ie comments on referrals etc. but with more knowledge on topics such as ECA, leaving dead pine standing in mngt zones, requesting logging (select for purpose of fire protection zones)near infrastructure & within sesitive or high impact zones, today discussed Fire Protection/deviation response plan in high risk zones (with respect to Water Quality) would like offical plan.
31	1	No, but I will comment that I will be collecting more water quality samples during the first year after any fires that may affect the watershed that I sample.
48	1	Focus on proven erosion control techniques,will require post-fire assessment of drainage potential to increase drainage structures or water management measures, consider effects of burned area on snowmelt/water equivalency
38	2	We were already taking watershed management impacts into account
1	5	Since I provide advice to the forest sector, water suppliers and local governments on the impacts of the beetle and fire risks, knowing the state of research in this area is very important.
21	6	The information presented expnads my thinking about snow-dominated runoff and how both wildfire and logging, including salvage logging, affect the hydrologic cycle and the biogeochemistry of elements like nitrogen.
24	6	Will certainly influence my thinking about future research on fire impacts.
16	7	Curently we are heavily invested in Source assessments and threat analysis for our larger water systems. Understanding the threat potential for each water system will help us to make informed decisions that benefit the consumers serviced by the water system.
17	7	Assessments and research related to post-wildfire erosion and flooding
22	7	Reference for ongoing consulting issues
26	7	I'll be trying to understand how coastal processes will differ from the results presented at the conference
29	7	There has been an increased need to perform post-wildfire risk assessments, and the knowledge gained in the workshop will be applied to these.
32	7	Improved ability to provide advice
36	7	The information will be used to assist management decision making and support policy development
37	7	My advice will be improved - for example, less emphasis on water repellency effects, more on loss of forest floor, streambank erosion.
45	7	Better able to respond to requests for advice regarding potential impacts of fires and subsequent salvage harvesting plans.
11	8	My knowledge before the workshop was from Fishtrap and general literature, so work that was presented from the Alberta group and the Ontario folks associated with the Alberta fires was new and valuable knowledge. We will incorporate some of their ideas and outcomes into our work and maintain contact wth these people.
19	8	Planning of research
43	8	This workshop will help develop collaborations for future research
44	8	I can now better integrate biological effects of fire with hydrological effects.
46	8	The differences in location was one of the key factors, not only do streams and hydrology react differently, but each fire has its own characteristics making wildfire and watershed studies more complex. Also the knowledge base of the larger picture will assist in the foundation of research.
35	9	Using with involvement with source water protection planning and salvage harvesting designs for both MPB and Fire.
10	1 & 9	educate the public and the funding sources in govt
20	2 & 7	Ready with new knowledge of current research to apply to various situations.
47	5 & 9	Lobbying PwC and MOFR to allow for a more comprehensive watershed assessment to be eligible under the FIA LBIP.

Response #	Affiliation	Overall, how practical or useful would you consider the information and ideas presented at this workshop to your work? Comments:
18	1	Very good; organization to content. We have meeting this week to discuss our watershed assesment & protection plans - our consultant was at workshop and we will be considering MPB & Fire Mngt in our assesments/mitigation plans
48	1	Would have liked some more information on waterhsed-scale effects rather than specific effects on streams.
1	5	Very useful, very well done. Excellent mix of topics and presenters.
21	6	The scope of the presentations was broad and therefore enhanced my understanding of a range of topics.
29	7	Presentation topics were well "themed", and covered a broad range of topics that were all very relevant, and flowed in a good progression. There was a good mix of both the academic/research background behind the different topics, but the applied and practical sides of this information were also brought to the fore.
45	7	Very practical from both an operational perspective and building of my knowledge base.
4	8	In general the speakers were quite good, however since most of the focus was TSS, debris flows and mitigation, most of the talks were outside my area of interest. Mind you, they were still very good and very interesting.
11	8	good exchange of data and linking together of some large projects
43	8	Excellent workshop with excellent people attending and presenting - better than expected
46	8	I really like how the workshop was laid out with each section having a theme and how well it ended up relating to one another giving a sense of flow to the workshop.

Response #	Affiliation	How suitable was the venue? Comments:
15	1	Road work outside was distracting.
38	2	The construction noise outside was a distraction and made things difficult to hear at back of room
1	5	Hopefully no construction next time!!
5	5	Quite noisy during one of the days (outside construction) otherwise good
21	6	The accoustics were a little difficult during the social breaks (too loud) but mostly pleasant venue overall.
17	7	low lying lights, low screen making it hard to see bottom of slides and noisy construction outside
26	7	Difficult to see the bottom of the screen from the back of the room
29	7	The construction was annoying at times, but not your fault
30	7	a little noisy with the construction outside. Due to the size of the conference room the screen was a little low and made it hard to see the bottom of the slides.
36	7	The workshop participants who sat at the far back of the hall had difficulty seeing the presentations, especially the last few lines at the bottom of each slide.
37	7	Only small problem was difficulty of seeing the bottom portion of slides from back of room.
45	7	excellent venue
2	8	Convenient, but those fans on the roof of the building were incredibly distracting on Wednesday.
3	8	Not having an elevated screen made it difficult to see the projected slides from the back half of the room.
4	8	The venue was OK, but the construction outside was a fairly major distraction and it also made it difficult to hear the speakers. Also, I was disappointed that during the mixer, the Ramada did not promote local wines and beers.
11	8	fine room for the talks and service for the breaks, only drawback was the construction which was noisy
43	8	Very good although some noise due to construction outside
44	8	I liked the room, arrangement of tables, and proximity of hotel rooms. Construction outside was distracting.
46	8	With the Kelowna fire in 2003 threatening the town and the work being done in the city and local area, the location of the choosen city represented the topic nicely. The venue was easy to find and get to.
35	9	a bit loud with the construction outside at times.
10	1 & 9	construction nearby was noisy

To what extent were the coffee and lunch breaks effective in enhancing your personal network and collaborative opportunities? Comments:		
Response #	Affiliation	
15	1	The breaks were rather long.
18	1	Was good to have that bit extra time to talk to different people
48	1	Not a lot of water purveyors to discuss issues with, researchers in specific areas tended to network with each other rather than water purveyors.
1	5	Excellent oportunites to catch up with colleagues and make new contacts.
21	6	Excellent opportunities to discuss scientific issues and to network. Food was quite good and coffee never ran out!
29	7	There was good opportunities for networking, but didn't not feel like we were sacrificing time on the presentations in order to accomodate it. Well balanced. As someone who is likely to be more involved in the future in wildfire issues, but not currently focusing much attention, at times I found that limited my engagement.
45	7	Lots of time to network
11	8	lots of time given to this and the space allowed easy mixing
43	8	Great and to be recommended
46	8	With people being members of larger groups I found a lot of the time was spent for the groups to meet with each other and talk, as more of an outsider to the groups it was more difficult to meet people and network.

Based on the information recieved at the Wildfire - Watersheds workshop, do you have any further questions or information needs related to wildfire and hydrology/geomorphology/water management issues that you feel need to be addressed?		
Response #	Affiliation	
31	1	The short time (hours) that water purveyors have to react to changes in water quality due to fire impacts.
48	1	Would be good to have another workshop in a couple of years to present latest info on subject.
1	5	Keep up the good work by offering follow up workshops next year.
5	5	Many - but to good see lots of research attempting to address some of the questions
21	6	More information on fate and transformation of chemicals from wildfire runoff and implications for drinking water treatability. Monica Emelko's presentation with tantalizing; we need more information!
24	6	Doesn't seem to be as much work going on at the larger watershed or basin scale.
16	7	not yet. I will have many in the future.
17	7	Knowledge foundation talks like hydrologic cycle effects, and particularly the soil effects would have made a better start to the workshop and these continueto be knowledge gaps
22	7	sampling stratagies on a budget
36	7	None at this time. But the participant list provided in the workshop proceedings offer a means to make contacts on future questions and information needs.
11	8	yes the issue of recovery time for western Canadain watersheds is still uncertain but is being worked on by several projects in BC and Alberta over the next while
43	8	be useful to have this information and presentations available to all post workshop
44	8	Need for funding for research.
35	9	more information on the twin peaks of the hydrographs in burned watersheds please
10	1 & 9	get the message out to the public and politicians
47	5 & 9	Follow up needed on the debate whether to conduct mitigation activities such as mulching, given the current debate in the States.

Response #	Affiliation	What suggestions do you have for improving future workshops of this kind?
15	1	Would prefer 1-2 day rather than 3 day workshops in future.
18	1	was very good thanks very much
31	1	The presentations had very good information, they were just all a bit too long and too many per day.
48	1	Ask water purveyors and land managers what type of information they need.
1	5	It will be hard to improve on what you provided but would certainly like to see more of the same next year.
5	5	Good workshop - keep this topic active for a future workshop - say in 2-3 yrs
21	6	1.The workshop synthesis presented by Dan Moore was insightful and extremely useful. This kind of workshop review should be part of any workshop schedule.☐ 2. I am not sure the Panel Discussion accomplished its objectives except that I found it useful to hear the different perspectives on a complex topic.☐ 3. This workshop was of superior quality and my kudoos to Kevin Bladon, in particular, for organizing and conducting the workshop.
24	6	Was just about the right size and length.
16	7	If hte intended audience is broud based (IE researcher to water operator) i would try and present more information on the effect the changes in the water shed would have on consumers or systems down stream.
17	7	Knowledge foundation talks like hydrologic cycle effects, and particularly the soil effects would have made a better start to the workshop and these continueto be knowledge gaps; some better, clearer organization of talks into theme areas
27	7	Fewer presentations on modeling. Inlcude more links from research to managment implications. More presentations like Monica's.
29	7	Congratulations on a successful workshop. I think it succeeded on many levels. It was well organized, from the preparation of the background materials to the relevance and breadth of topics. The high level of engagement from participants helped to strengthen the experience. The workshop was exceptionally good value-I know that similar events put on through my professional association would have cost nearly 10 times the cost of this workshop! Thanks to the supporters for helping keep the costs reasonable.
32	7	This workshop was excellent! Thank you.
37	7	More soils talks.
45	7	No improvements suggested - the event was excellent and exceeded my expectations.
4	8	A better venue would help. Also, in the meeting room, it was sometimes hard to see the slides from the back. So either get a better room (one with risers so we can see over the people in front of us easier) or even just organize the room differently so there are just chairs up front near the speakers (for the talks) and tables and chairs at the back for the coffee and lunch breaks.
11	8	people in the panel discussion were somewhat dissappointed with the involvement of the audience re; questions. It may have been that folks were tired at the end of the workshop or that the question needed some practising foresters to be involved. So possibly moving the panel forward in future or making sure the question has some good planted people in the audience to ensure good interaction. Nice to see such a good wrap-up session to summarize what we heard.
42	8	None
43	8	none really
35	9	more time on the pannel discussion / better presentations as some were just very rough. Would be nice to get a copy of the summary / wrap up given at the end as it really captured the information / learnings from the workshop.
10	1 & 9	repeat the question
47	5 & 9	None