

The following article by George Delisle is from his Presentation to the Emergency Preparedness Workshop March 30 2019 titled "Wildfire History"

Pages 7 thru 9 listing the benefits and negatives of Low, Medium and High intensity fire might be a good starting point.

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Web page editor comment.

Wildfire History

March 30 2019

Fire and Silviculture (the art and science of growing trees)

Topic- wildfire and harvesting impacts, the good the bad and the ugly, there is no black and white in natural resource management.

If a tree is a carbon bank, then the soil is the treasury.

Is fire the real problem or is it just a symptom of a much bigger problem?

Is forest health the real problem behind massive wildfires?

Millions of hectares bark beetle killed stands became a huge dry lumber yard standing on end waiting to burn, except now it is on the ground. It was not a matter of "if", only "when" is it going to burn.

Is Smokey the Bear the culprit? USA created in 1944 when the Japanese were trying to fire bomb the West Coast with fire balloons.

Is misinformed and deeply entrenched public attitudes part of the problem.

How much fuel loading has being reduced over the last 70 years by harvesting?

Stop and consider what this means.

Is the carbon tax helping at all?

How much carbon is put into the air from wildfires?

Is the "Let it Burn" policy a wise decision?

What is the added cost to our health care system from wildfire smoke?

There is no black and white in managing our natural resources:

What can be done??

What options do we have? -----manual piling, burning, manual pruning, mechanical pruning, harvesting, prescribed burns or combinations of all them?

Logging debris matters: Produces better soil, more soil carbon storage, more soil moisture, fewer invasive plants, shorten fire season, better tree growth. (Tim Harrington, PHD Pacific Northwest Research Station.)

WHAT IS THE COST OF CURRENT PRACTICES? \$4000.00 to \$40,000.00 per Ha

Photos ---grapple 1, grapple 2, area select, excavator prune working, excavator finished

We do need buy in from everyone involved

We need every one to fire smart their homes and buildings.

Myth # 1 – The forest fires are much bigger today than in our past. Look at the stats. We do seem to have more large fires but not bigger fires. Why are we losing them?

Biggest fires in BC (since 1950) (info from BC govt web sites)

| | | | |
|--------------------|--|------|--------------|
| 2018--- | Tweedsmuir Complex | ---- | 301,540 ha |
| | --- Johnny Cr fire (Lower Post) | ---- | 156,775 ha |
| | --- Alkalie Lake Complex (Telegraph Cr) | ---- | 121,215 ha |
| | --- Lutz Lake fire (Lower Post) | ---- | 106,799 ha |
| | --- Shovel Lake Fire (Burns Lk) | ---- | 86,397 ha |
| 2017 --- | Elephant Hill fire (Clinton) | ---- | 191,865 ha |
| | --- Plateau Complex (60km NW of Williams Lk) | ---- | 512,621 ha |
| | --- Hanceville complex (Alexis Creek) | ---- | 239,673 ha |
| 2016 --- | Siphon fire (Fort St John) | ---- | 62,700 ha |
| 2015 --- | Little Bobtail fire (PG) | ---- | 25,569 ha |
| | --- Rock Creek Fire | ---- | 4,417 ha |
| 2014 --- | Chleslie River fire (SW of PG) | ---- | 133,098 ha |
| | --- Mnt. McAllister (PG) | ---- | 26,273 ha |
| | --- Red Derr CR (PG) | ---- | 33,547 ha |
| 2013 --- | Tweedsmuir Provincial Park | ---- | 3600 ha |
| 2012 --- | White Spruce Creek (Fort Nelson) | ---- | 23,830 ha |
| 2011 --- | Yukon border | ---- | 11,000 ha |
| 2010 --- | Pelican Lake fire (S of PG) | ---- | 35,000 ha |
| 2009 --- | Liard River | ---- | 23,182 ha |
| 2003 --- | Okanagan Mountain fire | ---- | 25,600 ha |
| In the 1990's ---- | Salmon Arm fire | ---- | 6,000 ha |
| In the 1980's ---- | Swiss fire (Houston) | ---- | 18,000 ha |
| In the 1970's ---- | Tee Fire (Liard River) | ---- | 110,419 ha |
| In the 1950's ---- | Kech fire(Liard River) | ---- | 225,920 ha |
| | ----- Wisp fire (Fort St John) | ---- | 1,400,000 ha |

Total area for the **Boundary TSA** ----- **580,110 hectares**

Total area harvested in the Boundary since 1971 is ----- 225,600 ha or approximately 4700 ha/yr (which is just about half a rotation depending on species)

(Photos) --- [A](#),[B](#),[E](#),[F](#)

Local fires

1932- Fire went from Bridesville to McCullough Lake ---- area not known probably around 80,000 ha, West Kettle area had extensive flooding in the following year 1933

1985 West fire ---- 3500 ha

1988 Bea fire ---- 1500 ha

2015 Rock Creek fire ---- 4,417 ha

2016 Fort McMurray ---- 590,000 ha

1910 ----Idaho Fire ---- 1,200,000 ha _____85 people died

Myth # 2- “Smokey the Bear” is to blame for all our problems.

Look at the biggest fires before Smokey the Bear had any influence.

1910 ----Idaho Fire ----- 1,200,000 ha _____ 85 people died

Biggest fires in North America prior to 1900

1891- Eastern Michigan ----- 400,000 ha_____ 169 people died

1871- Peshtigo, Michigan ----- 1,011,750 ha_____ 1500 people died

1865- Silverton Oregon ----- 400,000 ha

1825- Miramachi NB ----- 1,214,000 ha _____ 160 people died

In the 1950’s ----- Kech fire(Liard River) ----- 225,920 ha

----- Wisp fire (Fort St John) ----- 1,400,000 ha

I would argue for even the big fires in 1950, Smokey the Bear had no influence on, nobody cared about fires up in that area back then.

Myth # 3 – An area can be made fire proof by treatment of fuel loads. No such thing as fire proofing an area, one can only build in a degree of “fire resilience” in our forests.

(photos) 96, 101, 119

Myth # 4 –after a wild fire, the area will not re-burn so every one is safe. Wrong, it can and some areas will. Once the fire killed trees fall over, the fuel load builds back up and is close to the ground and can burn with the same intensity as the first time. For the 1910 Idaho fire it is estimated that 40% had re-burned by 1942. Locally some of the West fire (1985) re-burned in 2015.

Some stats: 1910 Idaho/Montana Fire (actually burned into Canada)

Estimate area burned----- 3 million acres or 1.2 million hectares lightning caused and had a Fire length was over 300 km long, equivalent distance from Rock Creek to North Vancouver, or Rock Creek to Cache Cr, or Rock Creek to Kimberly and spotting over ten kilometres at a time.

Estimated timber destroyed --- 7 to 8 billion board feet

Four small towns were entirely burn up.

About a third of the city of Wallace was destroyed

Fire fighters killed ---- 78, safety??? Some of the fire fighters died because they did not listen to their boss, some ran up hill from the fire, some went out of their mind and ran into the fire, others were simply trapped.

Fire fighters killed --- 78

Civilians killed ----- 7

Numerous small bush railroads were destroyed

Between 30% and 40% had re-burned by the time the report was written in the 1940’s

The fire crews only had horses and hand tools,

The fire crews had no communication or heavy equipment to rely on, only a few small railroads for transport which quickly burned up in the fire,

Idaho fire was more than double the size of the Boundary Timber Supply area.

In 2017 total area burned in BC was 1,200,000 ha from 1353 fires over 5 ha in size.

40% started by people.

One cubic meter of wood has equivalent to one ton of Carbon dioxide in the air or 350 litres of gasoline. CFS estimates that 158,000,000 tons Carbon stored in wood products from our forests each year.

100,000 tons of carbon dioxide is equivalent to 29,000 cars for a year or 4.5million cars from 158,000,000 stored in wood products.

In 2017 the fires that burned in California in just one week, produced more pollutants than all the cars in that state did in one year.

A new study out of UBC Okanagan has found that there is a significant release of carbon dioxide into the atmosphere from irrigating crops, lawns, and golf courses.

Worst Drought years in last 350 years ----- 1674, 1682, 1958, 2017

The definition of an expert in the field of so called “Fire Proofing” our forests is usually a stranger from another town.

What is the definition of a mega fire? US forest says >60,000 ha.
If it is burning your house or your ass, it is simply if it is hot!!!!

Potential impacts on wild life from wild fires and harvesting strategies:

Photos - 96

Ground nesting birds are impacted more from intense fires than from harvesting once outside of the nesting period.

Young immature critters of all stripes experience high mortality during wild fires.

Harvesting moves much slower and most wild life can move out of the way. During the nesting period the impact can be the same as fire.

Retaining logging debris contributes to the fuel load but if left un-burned can provide habitat for marten, weasels, porcupines, red backed voles, red squirrels, shrews, rabbits, and various birds. Burning debris eliminates a lot of fuel loading but produces a lot of smoke and pollution.

Retaining logging debris can contribute to a huge build up in the fire hazard and bark beetle populations. Blow down timber not salvaged immediately, contribute to the fuel loads already in the area, and will increase the total fuel load. Lack of action on the blow down also allows bark beetle populations to sky rocket which contributes to even more fuel loading to the problem.

However un-salvaged areas provide good hunting habitat for sub-terranean hunters such as marten and weasels.

It is like the laws of physics, for every action there is a reaction. We can not do any thing without there being a consequence. Even doing nothing has serious consequences.

Potential impacts on watersheds from wild fires and harvesting strategies:

Harvesting and wildfires can have negative impacts on watersheds.

With proper attention to water courses during logging, impacts can be kept to a minimum.

For fires, especially intense mega fires, watersheds can be significantly altered due to hydrophobic soils and erosion and are much more difficult to manage for.

There is very little control on the size of intense fires.

There has been some major harvesting in the Boundary area for mountain pine beetle which rivals a big fire for size but, the impact and management for water is more manageable.

One question that arises, was the recent flooding made worse by concentrated harvesting at one elevation band and what was behind those decisions? Was public pressure partly to blame?

Potential impacts on visuals from wild fires and harvesting strategies:

Harvesting and wildfires can have negative impacts on visual landscapes. The duration and impact depends on what is done to mitigate the impact. A land failure has a long term impact whether it was caused by erosion from a fire or from harvesting. Roads or fire guards stand out for a long time unless they are pulled back to the original slope and grass seeded.

Harvesting can minimize the impacts with careful planning and or using partial cutting to reduce the harsh contrast from harvesting.

Meeting objectives set for our forests.

It is almost impossible to meet all of society's expectations from our forests.

Visuals: leave it untouched and wait for nature to change it or should we manage for it?

Biodiversity: partial cut harvests leaves the ecosystem intact and ends up with the highest level of diversity, but not possible every where.

Revenue from the forest pays for hospitals, schools, highways, government employees, grants etc.

Wildlife: different animals require different forest conditions!!!!

Meeting objectives set for our forests. (cont)

Water: untouched forests are the best until a catastrophic event happens and then serious issues show up, such as erosion, destruction of habitat, changing water course producing siltation, debris flows, flooding, fires, loss of carbon storage, etc. Untouched areas results in no access so small fires can be put out which usually leads to catastrophic fires with resulting serious damage to the ecosystem. This will vary depending on the local climate.

Agriculture and range, if we want to eat we need some agriculture, but at what expense?

Forest Industry, provides materials for housing, jobs, and carbon storage in building materials, energy production, toilet paper, etc, but at what expense?

Fisheries: require clean cool waters-conflicts with agriculture, forestry, recreation, industrial use and let's face it, any human activity!!!!!!!!

Clear cutting:

Clear cutting-why do we see so much of it?

It is the most economical way to harvest timber.

It is usually the cheapest and easiest way to reforest a denuded area.

It is certainly the safest way to harvest wood and the safest environment for tree planters to work on.

It uses the least amount of road and thus soil disturbance and sediment delivery into the water system for a given volume of timber.

Clear cutting opens areas up for new regeneration and browse species. We never used to have moose and elk here. But now we also have wolves to contend with.

Clear cutting breaks up the landscape of continuous fuels.

CC can have a negative impact on visuals

CC simplifies the ecosystem

CC reduces biodiversity

CC removes snag habitat and thermal cover

CC in the nesting period can impact ground nesting birds and mammals.

CC produces too clean a forest with very little decay factors present to create cavity habitat.

Partial cutting:

The correct level of retention is still being debated and needs to be clarified and will vary depending on aspect, slope, age of stand, and location within the province.

Photo img 0067

Light thinning less than 30% usually leaves the area stocked with trees.

Visuals are improved, but hunting site lines are also improved so there is an impact on wildlife.

Partial cutting allows some snow and rain to get through the canopy, keeping moisture on site for a longer period of time. This in turn shortens up the critical fire season.

(Photos) img- 0068, 0076

Partial cutting increases the potential for defoliators to increase in population, and at best, reduces growth on the surviving stems until the population collapses and a healthy crown re-grows.

Thinning from below allows for removal of some of the fuel loads and crushes a lot of the original fuel load (ladder fuels) down to ground level and salvages some of the normal mortality.

(Photos) 390, 393, 432

Separating the ground fuels from the live crowns of the forest greatly reduces the potential for severe wild fires (crown fires) and can be an effective strategy to manage the interface area.

Photo --- 325

Only about 25% of our land base lends itself to partial cutting.

Requires a lot more road to be built for given volume which can result in higher short term sediment loads to streams.

Once the roads are built, they need some form of maintenance, but will reduce future sediment loads.

Good road access around communities can be a good thing as it allows for quick fire fighting response.

Even as far back as 1886 when the US army was responsible for fire fighting (there was no US Forest Service until 1905) they recognized the value of a quick response. (1911 for BC)

Good access also allows for more people from the community to enjoy the outdoors, which promotes better health. Walking trails around communities are a major asset.

Why don't we do more partial cutting?

The term partial cutting covers such a vast array of harvest levels.

Every one has a different idea what the end result should look like.

It cost more to do.

Revenue branch is not very good about using stumpage as a way to encourage partial cutting.

The public does not want harvesting in their back yard.

In order to treat large areas in the interface, every one needs to be prepared to give and take a little. The general public needs to accept some harvesting around communities, the government needs to be willing to reduce bureaucracy, and receive less revenue, the local governments need to support the logging industry, the anti-logging fraternity needs to move off the total preservation platform and the logging industry needs to realize that big equipment just simply can not do the job required. Industry needs to realize there will be lower harvesting productivity on these sites.

The general public needs to be prepared for some smoke in the air in the fall so debris can be eliminated.

(photos) – 2015 12 hr, 2015 24 hr, 331, 339, 332,

Industry needs to demonstrate that an acceptable job can be done.

This is a tall order but a necessary one if we expect to protect and make our local communities safer in the near future.

At the end of the day, fire risk can not be eliminated, it can only be managed.

We can not expect to go back to forests of yesteryear. The ecosystems are permanently changed. We need to adapt to a new forest regime.

The Canadian Forestry Service estimated that 30% or more of all CO₂ produced in all of Canada from 2001 to 2004 came from wild fires, in bad years like the last two, more than 45%.

Humans are organic beings deeply embedded in nature, therefore we need to learn to adapt to nature.

The cumulative effects of climate change, logging, grazing, recreation, agriculture and forest fires all impact every one in the watershed. We do need to get a handle on what these effects are, and how they are being mitigated as our forests are regenerated.

We can do better and we must do better.

Thank you

George Delisle ---- Woodlot # 411

Remember opinions are like belly buttons, we all have one.

Questions?

Low to Mild intensity fire:

Beneficial:

- Some specific species thrive on burned areas
- Cleans up lots of accumulated fuels
- New vegetation re-sprouts shortly after fire has passed
- Reduces potential for high intensity fires, but does not eliminate it
- patchy regeneration of site

Negative: Some species move out due to lack of habitat, species conversion may happen

- Low Impact on local economy
- Small reduction in timber values due to burned bark making wood un-useable for pulp
- Area quickly reproduces fuel load that will carry a wildfire
- Fire weakened trees subject to increased insect populations that kill the tree
- Creates minor air pollution
- Requires constant money for maintenance over time to maintain any value toward fire resilience
- major impact if it is your house in the fires path!

Moderate intensity fire:

Beneficial:

- Cleans up most of accumulated dead and dry fuels as well as some bush species
- Fire resilience lasts a little longer
- Creates some snag habitat and browse species
- Some specific species thrive on burned areas

Negative:

- Simplifies the ecosystem,
- Reduces biodiversity,
- Reduces hiding cover
- Increases snow accumulation on the ground resulting in more run off and higher peak flows.
- Larger impact on more of the local economy
- Reduces recreation values due to danger of falling timber and damaged visuals and is a safety hazard,
- Kills some timber creating future fuel loading unless salvage logged
- Reduces timber growth on individual trees

- Fire weakened trees subject to increased insect populations that kill the tree
 - Creates some air pollution problems depending on size of fire and location,
 - Difficult breathing for people with compromised breathing conditions,
 - Loss of some assets (homes, vehicles, boats, power poles, cell phone towers, grocery stores etc)
 - Moderate potential for wildlife mortality,
 - Moderate potential for invasive weed problems,
 - High impact on deer winter range and snow interception cover,
 - Moderate potential for soil erosion and flash floods,
 - Naturally regenerated stands usually come in at very high densities resulting in reduced growth potential
-

High intensity fire:

Beneficial:

- Cleans up most of accumulated fuels but creates significant future fuel loading as trees fall over,
- Creates some snag habitat

Negative:

- Creates hydrophobic soils so water penetration is restricted, depending on soil type,
- Clogs streams with ash,
- heats up small streams and kills most aquatic life during the fire,
- Long term impacts on fish,
- Increased phosphate levels in water and thus increased algae,
- Simplifies the ecosystem,
- Reduces biodiversity significantly,
- Reduces hiding cover,
- Destroys micro fungi in the soil that are critical for forest litter recycling,
- Reduced future tree growth due to damaged soil,
- Increases snow accumulation on the ground resulting in more run off and higher peak flows,
- Major impact on most of the local economy,
- Reduces recreation values due to danger of falling timber and damaged visuals, blocked trails,
- Kills most timber creating future fuel loading for a re-burn of the area,
- Reduces timber growth on individual trees that survive,
- Fire weakened trees subject to increased insect populations that kill the tree,
- Creates significant air pollution depending on size of fire, location, and venting along with wind direction and time of day,
- Creates serious breathing problems for people with compromised breathing conditions,
- Significant soil erosion,
- Impacts water systems for years down the road,
- Fire in head waters of rivers impact downstream water users for decades to come,
- Loss of major assets, (power lines, cell phone towers, bridges, homes, recreation facilities etc)
- Potential loss of humane life
- High potential for wildlife mortality
- High potential for invasive weeds to get established,
- Transportation systems disrupted,
- Contributes to a negative image of “Beautiful British Columbia” at the world level (bad publicity),
- No snow interception value left for deer winter range,
- Some areas naturally regenerate at high densities with very slow growth patterns,
- Some areas do not come back to trees as the soil is too damaged, especially if it is a re-burn
- significant off-site movement of carbon by streams, air currents, and run off

- high likelihood of flash floods depending on the weather
- Elk tend to avoid areas once trees fall over due to difficulty to move through
- higher mortality on deer from coyotes and wolves if the prey can be pushed into high windfall areas
- loss of micro fungi in the soil
- loss of fertility in soil especially for coarse soils

A life time