Fire Load and Resource Capacity Survey

Agency Response Analysis and Summary

March 30, 2012

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Methodology:

After the contract award (January 26, 2012) the Consultant teleconferenced with the Resource Sharing Task Team (RSTT) contacts (Serge Poulin, Bruce Macnab, and Paul Ward) on January 27, 2012. This group provided direction and oversight to the Consultant for the contract. An initial briefing on the project was provided. This group agreed to meet weekly for updates from the consultant and occasionally with the entire Resource Sharing Task Team for updates and feedback on the project.

All agencies had been contacted by CIFFC and provided with a blank copy of the Survey spreadsheet and asked to provide a completed copy by February 24th initially. This date was later revised to February 29th.

The consultant met with Ontario staff on January 30, 2012 for a first run through of the data collection spreadsheet. A three question interview process was established for subsequent conference calls with all agencies:

- to discuss the data gathering process;
- solicit any recent reports about fire load and resource capacity that agencies may have developed and;
- to gather any preliminary trend information from agencies for the recent past as well as anticipated impacts for the future.

The results of the second two questions are reported in two other background documents produced for this project (Other Reports or Analysis Noted by Agencies During Data Gathering Stage and Preliminary Trends Noted by Agencies during Data Gathering Stage). Recommendations are made for further analysis required for trends with the data elements collected for this survey or with new data elements in a document titled Fire Load and Resource Capacity Survey Overview for the Wildland Fire Management Working Group.

All agencies were interviewed initially between January 30 and February 14, 2012.

The consultant answered questions from agencies during the data gathering process.

Once data sets started to become available (some agencies provided interim sets at the initial interview) the consultant reviewed the data to help understand the data and to look for anomalies in the data that might need to be addressed. Questions and answers were exchanged with agencies through email and phone conversations to improve the data.

Appendix 1 of this document lists the result of the data gathering process to date and provides information for each of the approximately 200 data elements for the data sets provided by March 16, 2012.

Data elements are grouped into like categories and each grouping starts with the list of data elements and their description.

For each data element grouping a summary chart is provided that includes:

- whether the data could be collected; the period of time the data is available;
- how the data element was collected by each agency (units, classification systems etc.);
- whether the agency broke the data elements down further (by response zone or component costs) and;
- initial comments on data element results, and utility and;
- an initial identification of any trends if evident(using graphic arrows↗) .

For each data element there is also a section for any additional information gathered about the data element and recommendation for the future collection and analysis of the data element.

The consultant reviewed this inventory of data with representatives of the RSTT on a March 13, 2012 project update call to begin to identify and prioritize which data elements should be included for more detailed data analysis as part of this project or in future projects. A final call with members of the RSTT during the last week of March was unable to be scheduled before the contract period ended.

Response to the survey

As of March 16, 2012 the data gathering and correction process was still ongoing. Two agencies had yet to provide any data and several had provided interim incomplete data sets with work ongoing to provide a final version.

Many agencies reported challenges to gathering the data sets back even 10 years. Challenging issues include:
- the shortage of staff to gather data especially at the time of year (January, February). (Some agencies reported that they may be able to add to their data sets by assigning tasks to staff hired for the 2012 fire season.)
- The limited time period set for collecting the data (30-45 days).
- Data is collected by different parts of the organization (Regional versus Headquarters) and difficult to bring together.
- Some data elements are collected in a variety of standards outside the fire organization and are not available or not easily available (eg. Evacuation data).
- Information management systems have been upgraded but historical data did not migrate into upgraded systems or is not consistent with current data standards. If available this will need additional data searching, clean up and analysis.

The following agency data sets were as complete as they could be for this project (in some cases data was not available or not available for at least 10 years):

Alberta, Quebec, New Brunswick, Newfoundland and Labrador, Northwest Territories, Parks Canada, the Canadian Interagency Forest Fire Centre(CIFFC) and Natural Resources Canada(NRCan).

The following agency data sets were almost as complete as they could be but had outstanding data gathering, clarification or data correction to provide:

Manitoba, Ontario, Saskatchewan, British Columbia and Nova Scotia.

The Yukon and Prince Edward Island have been unable to provide any data but did provide input into the trends and other report sections of the project during the initial agency interview stage.

There have been challenges to analyzing the data within the period of the contract. In addition to the delayed data availability, the missing data and the data clean up, the submission of the data in fifteen individual agency, CIFFC and NRCAN spreadsheets provided a challenge to analyze the data for national summaries.

This national summation was additionally challenged because of different standards currently in place for agencies. In the interest of time and to gather information about agency standards used agencies were asked to provide their data in their own standard. The most extreme example of multiple standards is how agencies classify or type fires. About half the agencies reported they did not classify their fires while 6 reported that they did. For those that did there were 4 different size classifications and 4 different type classifications and one agency used both a size and a type classification.

Agencies were also encouraged to break down their data further if they had the data available and this was done by adding additional columns to their spreadsheets. For example, some agencies have demarcated full response zones and modified response and/or observation zones, and subdivide data such as numbers of fires and area burned based on these zones.

Except for the data collected by CIFFC daily and annually fire load and resource capacity data is collected nationally on an ad hoc basis rather than on a regular annual basis. The farther into the past that data is required the harder it is to find on an ad hoc basis. There is not a common information system in place to gather this information on a regular basis to provide analysis to senior managers.

Recommendations:

1. Provide agencies with an additional period of time to gather missing data through the 2012 fire season when many have additional staff available who could be assigned this task.
2. Develop a national standard for data elements that don't currently have a common one to improve the ability to produce national analysis.
3. The individual agency datasets gathered for this project and improved over the next season should be gathered into one national dataset for a next round of trend analysis and a national repository of this type of data should be developed for annual data collection and analysis.

Summary of key data changes recommended

The Consultant has recommended revisions to the data elements being collected in this Survey as well as additional data that would assist in future trend analyses of fire load and resource capacity. These have been presented in the detailed analysis in this document (Appendix 1) as well as in two additional documents prepared from the Survey data ("Preliminary Trends Noted by Agencies during Data Gathering Stage" and "Fire Load and Resource Capacity Survey Overview For the Wildland Fire Management Working Group").

Following are the key data element changes or issues that the Resource Management Working Group could address:

- Continue to gather missing data for at least ten years into the past and annually in the future.
- Discrepancies between CIFFC and agency annual fire and area burned numbers should be resolved.
- Common data standards or a more appropriate measure should be developed for:
  - Fire typing/classification
  - Human, Lightning and no cause fires
  - Initial Attack and Sustained Attack fires
  - Values lost
- Expand expenditure data elements to better capture pre-suppression, suppression and funding trends.
- If evacuation data and all risk response data is important consider improved data element collection options.
- To better define resource capability, unfilled resource order data needs to be collected. In the future this data can be used to develop programs to mitigate resource shortages.
- Additional data is needed to capture the loss in knowledge and experience through retirement and staff reductions. This could be in the form of gap analyses which can be rolled up into a longer term training plans to rebuild the knowledge and experience base.
- Collect inventory data for out of country Compact and other agreement resources to assess the viability of this alternative for increasing resource availability in Canada.
- To better understand changing trends in resource availability rather than just collecting numbers of resources each year consider collecting the number of days contracted per season for key resources like fire fighters and fire fighting aircraft.

Appendix 1 Response to Fire Load and Resource Capacity Survey

Fire Load Indicators
Annual Number of Fires

      (Annual number of Fires per calendar year (Jan.1 to Dec. 31))

Annual Hectares Consumed

      (Annual hectares consumed per calendar year (Jan.1 to Dec. 31))

Agency	Y/N	Period/Years	Units	Additional Breakdown	Comments/Initial Trend
BC	N				
AB	Y	90-11 22 yrs			AB #s consistently higher than CIFFC
SK	N				
MB	N				Total H+L matches CIFFC total annual
ON	Y	82-11 30 yrs			Total H+L matches ON total but always slightly higher than CIFFC Total
QC	Y	85-11 27 yrs		Broke down by response zone (Mod, Full)	Totals match CIFFC except for 2007 CIFFC 59 less
NB	N				Total H+L mostly matches CIFFC- 2007 out by 34
NS	N				
PE	N				
NL	N				Total H+L matches CIFFC except 2007
NT	Y	Fires 83-11 29yrs Ha 92-11 20yrs			Totals match CIFFC except for 2007
YT	N				
PC	N				But H+L totals point to a problem in the CIFFC total annual fires for 2007
CIFFC	Y	82-11 30 yrs			Might be an issue with 2007 fire numbers – didn't look at ha. Data only checked back 6 years.

Additional Notes:

CIFFC provided this data for each agency however some agencies (AB, ON, NT, QC) have elected to populate this from their own data to assist in their determination of Fire Season Severity

Quebec broke their data down further by response zone as well to look for trends between response objectives.

Cross checking between CIFFC numbers and agency numbers back 5 or 6 years was completed and CIFFCs fire numbers were slightly lower than agency total fires. No attempt was made to explain these differences however many seemed to be out for 2007 which may indicate a problem with CIFFC data for that year.

Recommendations:

Annual fires and area burned are two of the most analyzed data elements. Most recently Stocks provided an analysis up to 2009 and data provided in this survey for 2010 and 2011 continue to support "The highly episodic nature of area burned in Canada, with significant fire years interspersed with relatively quiet years…"

The collection of this data element should be continued. Some agencies may want to continue to collect and analyse this data by response zones.

Number of Human Caused Fires

Number of Lightning Caused Fires

Agency	Y/N	Period/Years	Units	Additional Breakdown	Comments/Initial Trend
BC	Y	82-11 30 yrs			
AB	Y	90-11 22 yrs			Total = AB annual total > than CIFFC annual total More Hum↗
SK	Y	01-11 11 yrs			
MB	Y	01-11 11 yrs			
ON	Y	82-11 30 yrs			
QC	Y	85-11 27 yrs		By response zone (Mod Full)	Total H+L = QC and CIFFC total except 2007.
NB	Y	82-11 30 yrs			Total H+L mostly matched CIFFC but not always
NS	Y	90-11 22 yrs			H+L don't match total annual CIFFC or IA+SA
PE	N				
NL	Y	90-11 22 yrs			H+L match CIFFC totals (Except 2007)
NT	Y	84-11 28 yrs			H+L consistently lower than NT and CIFFC total NT has no causes for some fires and coal seam fires
YT	N				
PC	Y	82-11 30 yrs			H+L consistently lower than CIFFC annual fires except 2007(higher).

Additional Notes:

Cross checked the total of Human plus Lightning fires against the agency and/or the CIFFC total to test the data. In cases where there were differences agencies provided the following clarification:

NT fire records include a "no cause" and coal seam fires. PC noted that there are fires in their data that have no cause determined. NS have a third category of fires classed as Unknown.

In future surveys it is suggested that any fire that isn't determined to be lightning be considered Human but this doesn't cover some of the other "natural" causes.

Recommendations:

This is a fairly common element analyzed. Further trend analysis on a national and agency basis should be completed. This item should continue to be collected.

First Fire of the Calendar Year

(This is the first reported fire that required a response.)

Last Fire of the Calendar Year

(This is the last reported fire that required a response.)

Agency	Y/N	Period/ Years	Units	Additional Breakdown	Comments/Initial Trend
BC	Y	01-11 11 yrs	Day		Day/month
AB	Y	90-11 22 yrs	Day		Format has every year as 2012 Most years have fires in every month
SK	Y	01-11 11 yrs	Day		
MB	Y	01-11 11 yrs	Day		y/m/d
ON	Y	82-11 30 yrs			d/m/y
QC	Y	85-11 27 yrs	Day		d/m/y
NB	Y	82-11 30 yrs	Day		Format has every year as 2012
NS	Y	90-11 22 yrs	Day		d/m/y
PE	N				
NL	Y	90-11 22 yrs			Format has every year as 2012
NT	Y	92-11 20yrs	Day		Format has every year as 2012
YT	N				
PC	Y	82-11 30 yrs			m/d/y

Additional Notes:

Some agencies have fires every month. Future survey definitions might refine this data element to better capture a changing season length.   This could be improved by including size, cause, intensity etc.

It was also suggested that the analysis of trends in season length could be further improved by including an estimation of operating seasons. For instance the active operating season (days) of key operation centres, contracts for key resources (Crews, A/C) or the period of time or number of days key resources were on alerts or on elevated alerts.

Recommendations:

This is a new data element to provide a measure for season length should receive further analysis to look for trends in season length on an agency and national basis. Further modification of the data

element should be considered to better measure the intensity of the season especially for agencies that respond to fires every month of the year.

Fire Classification/Types

Class/Type 1
Class/Type 2
Class/Type 3
Class/Type 4

Agency	Y/N	Period/ Years	Units	Additional Breakdown	Comments/Initial Trend
BC	Y	01-11 11 yrs		4 Fire Type System	
AB	Y	Size 90-11 22 yrs Type 11 yrs		5 Size + 4 Type Systems	
SK	Y	01-11 11 yrs		8 Size Class System	
MB	N				
ON	N				
QC	N				
NB	Y	82-11 30 yrs		4 Size Class System	
NS	Y	00-11 12 yrs		5 Size Class System	
PE	N				
NL	N				
NT	N	No data		4 Type Level	
YT	N				
PC	Y	No Data		4 Type Levels	

Additional Notes:

Agencies were requested (if they currently classify or type fires) to provide their data in that format along with a description of the classification or typing system

This set of data elements raised the most questions.

Some agencies use a size classification and there are 4, 5 or 8 size class systems reported.

Some agencies use a Fire Incident Typing system like the PC 5 type system included as a worksheet in the spreadsheet. Another agency uses a four type system. This data hasn't been stored in fire report records or if it was hasn't been recorded for long so data to analyze is not available.

One agency uses both (4 size classes and 5 types).

NB 4 Fire size classes: 4: 0-10 ha, 3: 10-100 ha, 2: 100-1000 ha 1: > 1000 ha

NS Fire size classes: 1= 0.01-0.1 ha, 2 = 0.1-1.0 ha, 3 = 1.0-10.0 ha, 4 = 10.0-100.0 ha, 5 = 100+ ha.

NT provided a description of their 4 Fire Type system below but don't capture this in fire reports:

Level 1 Fire: A wildfire that is an **immediate** threat to human life and property (communities and other infrastructure) and requires urgent initial attack with regional forces or sustained attack with a Type 1 Incident Command Team.

Level 2 Fire: A wildfire that is a **potential** threat to human life and property (communities and other infrastructure) and requires initial attack with regional forces or sustained attack with a Type 2 Incident Command Team.

Level 3 Fire: A wildfire that is an **immediate or potential threat** to other Values at Risk such as:
  1. Property (Cabins, lodges, hydro, communications, transport corridors)
  2. Natural Resource values (e.g., primary wildlife harvesting areas, commercial timber areas, endangered species areas); and
  3. Cultural Resource values (e.g., historic/archaeological sites, culturally significant areas).

A Level 3 Fire may require initial attack or some form of limited action to quell the danger to a value at risk.

Level 4 Fire: A wildfire that is **not** an immediate or potential threat to any Values at Risk.

PC provided the 4 type level description that was included in the Survey spreadsheet but they don't capture the data in fire reports.

BC has a four type Fire Classification System based on points assessed for values at risk, complexity status, personnel assigned, aircraft assigned, retardant base assigned and heavy equipment assigned. There are two sets of points for the preceding based on whether the fire is out of control or under control. Fires are classified into type with the highest number of points assessed being Type 1 (90+).

SK uses the following 8 size class system:

A = <0.11 ha, B =0.11 ha-1.00 ha, C =1.01-10.00 ha, D =10.01-100.00 ha, E =100.01-1000.00 ha,
 F = 1000.01-10,000 ha, G =10,000.01-100,000.00 ha, H =>100,000 ha

AB fire data is sorted with the 8 size classes and 4 types described below:

AB Size classes: A: <0.10 ha, B: 0.11-4.0 ha, C: 4.1-40.0 ha, D: 40.1-200 ha, E: >200 ha

Fire Types: 1: > 144 personnel, 2 : >44 personnel, 3: >9 personnel, 4: <=9 personnel

In the future AB will be changing their Fire Typing to: 1: >150 personnel, 2: 26-150 personnel, 3: 9-25 personnel, 4: 1-8 personnel

Recommendations:

The RSTT/RMWG should look at the various ways this data is collected to see which method seems most useful in demonstrating temporal trends in fire load. Then the RSTT/RMWG should search for a consensus for selecting a measure and suggest that agencies adopt it for the future to have a national standard for this fire load indicator.

Initial Attack Fires

 (Fires that are Being Held within the first 24 hours**.)**

Sustained Action Fires

 (Fires that escaped Initial Attack within the first 24 hours that continue to require
 fire management action and/or classified as a modified action fire)

Agency	Y/N	Period/ Years	Units	Additional Breakdown	Comments/Initial Trend
BC	Y	82-11 30 yrs			Corrected back to 1982 BC uses final size <4ha as an IA success - >4ha is SA
AB	Y	90-11 22 yrs			Total = AB annual total > than CIFFC annual total
SK	Y	01-11 11 yrs			
MB	Y	01-11 11 yrs			Total IA+SA < annual total – no action fires in north get no IA so don't become SA
ON	Y	89-11 for both 23 yrs 82-11 for IA 30 yrs			Total IA+SA < annual total Missing 82-88 for SA
QC	Y	94-11 18 yrs		By Response Zone	Total IA+SA = QC total and CIFFC total except 2007
NB	Y	82-11 30 yrs			Total IA+SA = total H+L Very few SA fires - 23 over 30 years.
NS	Y	00-11 12 yrs			IA+SA close to CIFFC annual total
PE	N				
NL	Y	90-11 22 yrs			IA+SA=H+L=CIFFC annual fires
NT	Y	92-11 20 yrs			Total IA+SA <than annual total. Have fires that are monitored or delayed action that aren't included in IA or SA.
YT	N				
PC	N				Most fires are under a modified response – have data but requires significant data analysis.

Additional Notes:

Cross checked IA+SA totals to see if close to annual totals for the past 5 or 6 years.

MB had no action fires that were not included in either IA or SA

BC IA fires initially equalled total annual fires. These were corrected back to 1982. BC uses final size to determine IA success and this is how the IA/SA numbers were calculated rather than the Being Held in the first 24 hrs.

AB totals of IA/SA equalled AB total annual

SK IA+SA = total annual

ON IA+SA don't equal total annual and missing data.

QC match QC and CIFFC total annual

NT have no action/monitored fires and delayed action fires

<u>Recommendations:</u>

This is a newer data element and should be further analyzed as a trend indicator. A common standard for this data element should be confirmed.

Fire Season Severity

    Low, Medium, High, Extreme

    (The relative severity of the weather, fire occurrence, patterns of weather (extreme events) fire behaviours etc.)

Agency	Y/N	Period/ Years	Units	Additional Breakdown	Comments/Initial Trend
BC	Y	82-11 30 yrs			
AB	Y	90-11 22 yrs			
SK	Y	01-11 11 yrs		did by response zone as well as entire prov	
MB	Y	01-11 11 yrs			
ON	Y				Missing data still working on it
QC	Y	82-11 30 yrs			
NB	Y	82-11 30 yrs			↘
NS	Y	00-11 12 yrs			
PE	N				
NL	Y	90-11 22 yrs			Cyclical between low and medium over the period
NT	N				Not able to provide now
YT	N				
PC	N				Not appropriate with parks distributed across the country. Should be same as agencies each park is in

Additional Notes:

This is a qualitative look at an entire fire season to classify it as either low, medium, high or extreme.

Some agencies(SK) split this (as well as other fire load data)into response zones with an overall column as well to better reflect trends in different parts of the agency(i.e. Full versus Modified/Observation zone).

For PC this severity is not useful because of the cross Canada distribution of parks. They should however match up fairly well regionally with what the adjoining agency determines for seasonal severity.

Recommendations:

This is a new data element and should be further analyzed for usefulness as a trend indicator.

Number of fires ≥ 200 ha that we took suppression action on each year.

Agency	Y/ N	Period/ Years	Units	Additional Breakdown	Comments	Initial Trend?
BC	Y	82-11 30 yrs				
AB	Y	90-11 22 yrs				
SK	Y	01-11 11 yrs				
MB	Y	01-11 11 yrs				
ON	Y	82-11 30 yrs				↘
QC	Y	84-11 28 yrs		By response zone	Also included fires >200ha without suppression action by response zone.	
NB	Y	82-11 30 years			Rare occurrence – no fires over 200ha since 1999	↓
NS	Y	00-11 12 yrs			Not an appropriate measure for NS Rare occurrence	
PE						
NL	Y	90-11 22 yrs			Few and cyclical but ↘	
NT	Y	92-11 20 yrs			Decreasing ↘	
YT						
PC	Y	82-11 30 yrs			Cyclical over 30 yrs	

Additional Notes:

Several agencies with low frequency and mostly small fires noted this was not an appropriate measure for them.

Recommendations:

This is a commonly used indicator by many agencies. Quebec gathered data by response zone and also for fires >200 ha by response zone on fires where no suppression action was taken. Should consider modifying this data element for agencies that don't experience larger fires.
Should continue to gather and analyze trends this data element.

Annual fire suppression expenditures by agency

(Total Cost – includes pre-suppression, suppression and prescribed fire.)

Agency	Y/N	Period/ Years	Units	Additional Breakdown	Comments/Initial Trend
BC	Y	82-11 30 yrs	$Mil		Variable↗↘
AB	Y	94-11 18 yrs	$		Variable ↗↘ Major increase in 1999 after a "particular bad fire season in 1998"
SK	Y	01-11 11 yrs	$Mil Adj for inflat		Variable but generally↘
MB	Y	01-11 11 yrs	$Mil		Variable
ON	Y	90-11 22 yrs	$Mil		Variable but generally↗
QC	Y	94-11 18 yrs	$	Total, Supp, Pre-supp and Bomber financing cost	Variable but generally rising↗
NB	Y	05-11 7 yrs	$	Pre and Supp	↘
NS	Y	00-11 12 yrs	$	Pre, Supp and total	Pre-supp→, Total Variable
PE	N				
NL	Y	98-10	$		→Interim data may be updated in next round – nothing for 2011. Separate note noted missing info in 98-02
NT	Y	06-10 5 yrs	$Mil		Variable
YT	N				
PC	Y	90-11 (x91, 93) 20yrs			Variable
CIFFC	Y	82-09 28 yrs	$		From previous work – need agency data for 2010-11

Additional Notes:

After many agencies had finished their data gathering CIFFC noted they were also providing expenditure data up to 2009 based on Stocks work. CIFFC would like 2010-11 data from agencies to complete the data. Some agencies have broken out Pre-suppression, Suppression and total.

Some agencies have difficulty breaking out pre-suppression costs.

Some agencies indicate that pre-suppression costs are harder to calculate than suppression costs. Some agencies split the total cost column into the component cost with a total because they are going to collect the separate data and would like to see the trends in these components over the years as well as the total.

QC has a 415 annual financing cost they will split out of total cost as well so they can look at trends in pre-suppression and suppression costs.

Recommendations:

B.J. Stocks has done some analysis on this data element up to 2009. Other task teams or working groups are working to develop a process to allow agencies to provide this data in a standard format in the future. There is a need to collect more than just the total suppression cost to be able to analyze the impact of funding changes as identified by agencies in preliminary trends.

Resource Values Lost: Values Lost includes forest resources, interface, improvements

Agency	Y/ N	Period/ Years	Units	Additional Breakdown	Comments/Initial Trend
BC	Y	82-11 30 yrs	$Mil		Total from fire report for structures, forest, range values
AB	N				Not available
SK	Y	01-11 11 yrs	# of structu res		↗
MB	Y	04-01 missing 2010 7 yrs	$mil		↗
ON	N				
QC	N				
NB	Y	82-11 30 yrs	$000		Includes timber losses Softwood/hardwood in process – actual market value Mature timber $10/M^{3}X volume destroyed Immature $75/ha Plantation $1375/ha Logging equ. Buildings, vehicles - Estimated Fair market value
NS	Y	00-11 12 yrs	Struct ure		2 homes in 2008
PE	N				
NL	Y	90-11 22 yrs	$		
NT	Y	04-05	$		Reported for two years
YT	N				
PC	Y	82-11 30 yrs	$		Some data available but minimal so put 0 for all years

Additional Notes:

Many agencies have difficulty gathering values lost data.

- Most agencies report that values lost data is not being tracked to any great extent.

- Some may be able to identify structures lost but value of the loss is unlikely to be available.

- This may be more of a corporate memory on large incidents than specific records.

Some may be able to approach their forest inventory departments to access forest value losses as either an area or perhaps a dollar value

Recommendations:

This data element needs further work to find an appropriate measure that agencies can track.

Days/season W/multiple new starts that need to be actioned

(number of days where new starts ≥ 3% of 10 year average annual of total fires.)

Agency	Y/N	Period/Years	Units	Additional Breakdown	Comments/Initial Trend
BC	N				
AB	Y	91-11 21 yrs			Decreased from late 90s then fairly steady
SK	Y	01-11 11 yrs			Cycle?
MB	Y	01-11 11 yrs			MB 10 yr annual average 3% =14.7 fires/day ↘→
ON	Y	01-11 11 yrs			ON 10 yr annual average 3%=33 fires/day - ↗↘
QC	Y	85-11 27 yrs		Provided 10 yr total rolling average	10 yr ave total↘2011 3%=20 fires/day Multifire days↘
NB	Y	82-11 30 yrs			Cyclical. In 2011 3% =7 fires
NS	Y	00-11 12 yrs			10 yr ave 275, 3%=8 fires Cyclical
PE	N				
NL	Y	90-11 22 yrs			↘
NT	Y	93-11 19 yrs			Cyclical
YT	N				
PC	Y	82-11 30 yrs			Cyclical

Additional Notes:

Most agencies report they are using a 10 year rolling average for this calculation.

Agencies like PC with a primarily modified response policy found this difficult to extract from their data. They have multiple fire days but do not action all fires to meet fire use objectives.

Some agencies numbers originally looked out of range and were found to be calculated incorrectly and these were corrected. Others may have used a current 10 year average and worked back rather than a rolling 10 year. This is a number that can be calculated from CIFFC data rather than have each agency run through it.

BC was the only reporting agency that was unable to calculate this data and was asked if they would be able to complete this value but this was not completed before the completion of this project.

Some initial results include:

ON 3% multi fire day ranged from 33-43 fires over the period submitted. QC ranged from 20-35 with 20 in 2011

QC provided a column with their 10 year rolling average from which was calculated their annual 3% number. This steadily declined from 35 fires in 1985 to 20 fires in 2011 although the number of days that this number occurred is variable.

NB 3% = 7 fires in 2011.

Manitoba for 2011 was 15 fires.

NS used 10 year average 275 fires – 3%=8 fires.

NL in 2009 3%=5 fires 2011 3%=4 fires

NT in 2011 3%=6 fires

PC in 2011 3%=3

Recommendations:

This is a new element that should be analyzed further for trends.

This is a number that can be calculated from CIFFC data rather than have each agency run through the calculation.

Communities Evacuated
Evacuation (total people)
Evacuation (total person days)

Agency	Y/N	Period/Years	Units	Additional Breakdown	Comments
BC	N				Not Available
AB	N				Not Available
SK	Y	01-11 11 yrs			# of Communities and # of people but not duration
MB	Y	01-11 11yrs			Communities and duration TBA. # of people 04-11↗↘→
ON	Y	95-11 17 yrs			# of Communities and # of people but not duration↗→↘↗
QC	Y	94-11 18 yrs			# of Communities→↗
NB	Y	82-11 30 yrs			# of Communities and # of people but not duration
NS	Y	00-11 12 yrs			# of people reported Cycle?
PE	N				
NL	N				
NT	Y	94-11 18 yrs			Communities only↗
YT	N				
PC	Y	82-11 30 yrs			Communities only - all zero.
NRCAN	Y	80-07 28 yrs			See Beverly + Boswell 2011 paper

Additional Notes:

This is a difficult data element for most agencies to provide. Not all agencies track evacuation data required for these three columns. Many will need to solicit this data from other government departments responsible for Emergency Response.   Some were only be able to provide partial data.

Bruce Macnab provided a recent paper Beverly and Bothwell 2011) along with their data spreadsheet.

Abstract:
Evacuations represent an integral aspect of protecting public safety in locations where intense, fast-spreading forest fires co-occur with human populations. Most Canadian fire management agencies have as their primary objective the protection of people and property, and all fire management agencies in Canada recommend evacuations when public safety is in question. This study provides the first national assessment of wildfire-related evacuations in Canada and documents the loss of homes that coincided with evacuation events. The most striking finding is that despite the intensity and abundance of wildfire in Canada, wildfires have displaced a relatively small number of people. Between 1980 and 2007, the median number of evacuees and home losses per year in Canada were 3,590 and

2, respectively. Evacuees' homes survived in 99.3% of cases. Patterns of evacuations and home losses reflected the distributions of forests, wildfire, and people across the Canadian landscape. Most evacuations occurred in boreal areas, which have relatively low population densities but among the highest percent annual area burned in Canada. Evacuations were less common in southern parts of the country, where most Canadians reside, but individual wildfires in these areas had significant impacts. Interactions between wildfire and people in Canada exhibited a unique regional pattern, and within the most densely populated regions of the country they can be considered 'low-probability, high-consequence' events. This Canadian context is fundamentally different from places such as California, where concentrations of fires and people overlap across large areas and therefore calls for a fundamentally different fire management response.

The consultant communicated with Jennifer Beverly. Her paper also noted the difficulty for gathering this data and used a media archive search instead.

If the RMWG or the WFMWG felt that it was important to collect better data from agencies about evacuations Ms. Beverly provided the following key data elements that should be collected:
- Timing
- Location(localized or dispersed)
- Location Type(14 noted)
- Final Number of Evacuees
- Evacuee Types(7 noted)
- Evacuation Causes(3 noted)
- Voluntary or order
- Wildfire Characteristics (cause, size at event, distance from evacuation site, contributing weather factors(5), FFMC, Wind Speed, Fuel Type)
- Structure Losses(Permanent, Seasonal, Outbuildings, Infrastructure(bridges etc), Industrial/commercial,
- Non-structural Impacts(Road closures, Air quality)(In some remote locations smoke impacts air transport a well)
- Civilian Fatalities.

Recommendations:

Beverly et al suggest that the occurrence of wildland fire evacuation is a "low risk high consequence event in Canada.

Beverly has provided a suggested set of data elements that could be collected if the intent was to annually collect data to regularly update the results Beverly and Bothwell produced for 1980-2007 without having to rely on media reports.

IF RMWG and WFMWG agree that this is an important fire load indicator future analysis should be done to establish a process to collect this data. This will need to be done in conjunction with provincial and possibly national Emergency Management organizations

Number of days in high - extreme (FWI) (NRCAN will provide this data for each agency)

Agency	Y/N	Period/Years	Units	Additional Breakdown	Comments/Initial Trend
BC	N				
AB	N				
SK	N				
MB	N				
ON	N				
QC	N				
NB	N				
NS	N				
PE	N				
NL	Y				Didn't realize they didn't have to provide – asked how they calculated it↘
NT	N				
YT	N				
PC	N				
NRCAN	Y	82-11 30 yrs	% stn days FWI ≥20	Provided in forest ecozones and all stns	Parks Canada data analyzed separately

Additional Notes:

NL did calculate this number by counting a day when one or more of the 21 or 22 zone weather stations had a high or extreme FWI.

This data element was originally described as the number of days in high-extreme FWI but was adjusted to the percent of station days when FWI was greater than or equal to 20. This analysis was completed for two sets of stations. One set were stations in forest ecozones only and the other was for all weather stations in each agency. The time period used was May through August.

Recommendations:

This is a new element that should receive additional analysis.
- Includes the Average for 30 years across Canada for all agencies except PC.
- Compared 30 year average to more recent 10 year average for stations in forest ecozones only (Figure 1).
  - Results show western provinces (from MB west) have had about 10-20 percent of station days with FWI greater than or equal to 20 while the eastern provinces have five percent or less over the past 30 years.
  - The ten year average shows a slight an increase in high to extreme FWI in the west and a decrease in the east when compared to the 30 year average.

o   Comparing the last 10 years to the preceding 20 years shows a similar pattern - The ten
year average shows a slight increase in high to extreme FWI in the west and a decrease
in the east when compared to the 20 year average.

Figure 1 Comparison of past 10 year average to preceding 20 year average FWI >= 20 by Agency
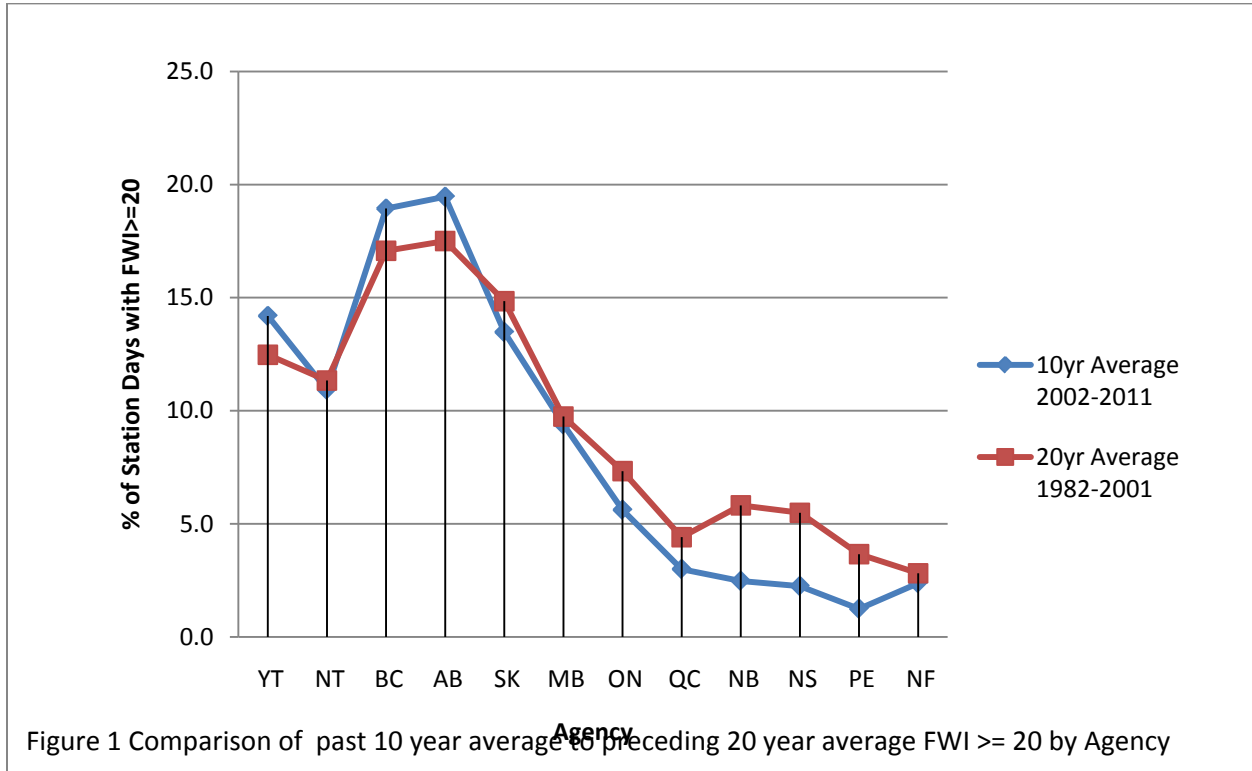
Identify what other incidents do your staff respond to.

Agency	Y/N	Period/ Years	Units	Additional Breakdown	Comments/Initial Trends
BC	Y	No period			General breakdown of types of incidents responded to. (Flood, SAR, Med First Responder, Influenza, Landslides, Windstorm Cleanup, Downed A/C.
AB	Y	2000			SAR
SK	Y	01-11 11 yrs			Flood in 4/11 yrs ↗
MB	Y	01-11 11 yrs			Flood 7/11 yrs→
ON	Y	No period			General breakdown of incidents responded to.(Flood, windstorm damage, ice storm, SAR)
QC	N				
NB	Y				Identified Flood in 2008
NS	N				
PE	N				
NL	N				
NT	N				
YT	N				
PC	Y	82-11 30 yrs			SAR, Law Enforcement, Events, Wildlife Mgt., Business Continuity

Additional Notes:

Recommendations:

Additional analysis is required to improve and to establish a process to collect this data. This will need to be done in conjunction with provincial and possibly national Emergency Management organizations.

Number of resource exchange (person/aircraft days) (CIFFC provided this data March 6, 2012)

>**Personnel (person days)**
>>**Initial Attack, Sustained Attack, Overhead**
>
>**Aircraft – Skimmer days imported**
>>**CL-215, CL-215T, CL-415, AT-802 Amphib, Twin-Otter, Canso, Single Otter, Beaver**
>
>**Aircraft – Skimmer days exported**
>>**CL-215, CL-215T, CL-415, AT-802 Amphib, Twin-Otter, Canso, Single Otter, Beaver**
>
>**Aircraft – Landbased days imported**
>>**CV-580, L-188, DC-4, DC-6, AT-802, Firecat, A/B-26, TBM, Trackers, B-25, F-27**
>
>**Aircraft – Landbased days exported**
>>**CV-580, L-188, DC-4, DC-6, AT-802, Firecat, A/B-26, TBM, Trackers, B-25, F-27**
>
>**Number of international (CanUS) resource exchanges imported**
>>**Personnel, Aircraft, Equipment**

Additional Notes:

Agencies provided preliminary trends for resource sharing. CIFFC data should be used to confirm a number of these including:

- Smaller agencies have less reluctance to ask for resources from "big exporters"
- Several agencies state they are under-resourced and/or running out of resources sooner
- More export days/person for personnel
- confirm trend for personnel and skimmer a/c imports for agencies that mention this (MB, NT, SK, PC, YT
- Some agencies noted they were unable to acquire the resources they needed.

CIFFC staff reported that in their experience that 99% of resource orders requested are filled. Agencies in some cases may request the availability of resources when they are in need but then order only the resources that CIFFC reports are available. This masks the true need and may hide the gap in resource capability.

Recommendations:

Further analysis is required to identify trends in resource sharing. The documentation of unfilled resource need is a data gap that should be addressed. Although there is data on resource sharing no data has been collected to describe shortfalls in resources. Agencies should be encouraged to order what they need through CIFFC and CIFFC can document shortfalls on an annual basis. This data can then be used to develop programs to mitigate resource shortages.

Number of regional compact resource exchanges imported

      NW Compact: Personnel, **Aircraft**, **Equipment**

      GLFFC Compact: Personnel, **Aircraft**, **Equipment**

      NFFPC Compact: Personnel, **Aircraft**, **Equipment**

Agency	Y/N	Period/Years	Units	Additional Breakdown	Comments/Initial Trends
BC	Y	01-11 11 yrs	#(days	Personnel only	NW Compact
AB	Y	90-11 22 yrs			NW Compact only exchanges were in 2006 and 2008
SK	Y	01-11 11 yrs			NW Compact No imports
MB	Y	01-11 11 yrs			GLFFC Compact 1 out of 11 years
ON	Y	95-11 17 yrs			Reported both Imports and Exports on 9 out of 17 yrs
QC	Y	94-11 18 yrs	# + days		NFFPC↗
NB	Y	02-11 10 yrs	#		Two imports in 2003-4 - I person in each year.
NS	Y	00-11 12 yrs			No imports
PE	N				
NL	N				
NT	N				Don't use compact for Canadian imports – have gone to BC with Compact IMT 2 in past for years – should be in BC data
YT	N				
PC	N				PC not a member of any Compacts – only CIFFC

Additional Notes:

The initial indication is a fairly limited import use for Compact resources by many agencies.

Recommendations:

Further analysis of the use of Compact resources should be completed to better understand the role their import has played and could play to supplement Canadian resources. Document the availability of Compact resources outside Canada that could be available to supplement sharing to confirm whether this will be a viable alternative to increase resource availability in Canada.

Other Agreements (Specify)

Agency	Y/N	Period/ Years	Units	Additional Breakdown	Comments/Initial Trend
BC	Y	2009	#/days		Australia
AB	Y	90-11 22 yrs	#		Mexico agreement used in 2009 and 2011↗
SK	Y	01-11 11 yrs			No importation – New Zealand agreement
MB	N				Only border agreements
ON	N				
QC	N				
NB	N				
NS	N				
PE	N				
NL	N				
NT	N				
YT	N				
PC	Y	82-01 30 yrs	No data		Have MOUs with adjoining agencies and municipalities. No numbers tracked – mostly quickstrike.

Additional Notes:

Recommendations:

Other agreements have had fairly limited use except in the west. Like Compact resources should collect information on availability of resources to confirm whether this can be a viable alternative to supplement Canadian resources during busy periods.

Other suggested indicator

    Total prescribed fires (burns + objective if available)

    Total prescribed fire hectares

Agency	Y/N	Period/ Years	Units	Additional Breakdown	Comments/Initial Trend
BC	Y	82-11 30 yrs	# of Burns/ Ha		Included objectives by ha for each year.
AB	Y	01-11 11 yrs	# of Burns/ ha		Lumps in hazard reduction burns, #↗
SK	Y	01-11 11 yrs	# Obj and ha		5 Veg Mgt in 2008-9
MB	N				N/Applicable
ON	Y	82-11 30 yrs	# and ha		↘
QC	N				No PBs
NB	N				No Pbs since 70s but starting small again in 2012
NS	N				
PE	N				
NL	Y	82-11 30 yrs			Intermittent use of PBs.
NT	N				
YT	N				
PC	Y	82-11 30 yrs	#, ha + obj		Obj. Fuel reduction – FireSmart + eco restoration, anchor units, facility protection.

Additional Notes:

Recommendations:

Although interesting data RMWG may want to discuss whether additional analysis is required to support Resource Sharing objectives.

Resource Capacity Data

Personnel

    Fire Fighters:

    Total Type 1 IA

    Type 1 IA eligible for export

    Type 1 SA

    Type 1 SA eligible for export

    Type 2 (Gov't)

    Type 2 (Gov't) eligible for future export

    Type 2 (Private)

    Type 2 (Private) eligible for future export

    Type 3 (Gov't)

    Type 3 (Private)

Agency	**Y/ N**	**Period/ Years**	**Units**	**Additional Breakdown**	**Comments/Initial Trends**
BC	Y	92-11 20 yrs			T1 IA↗, T1 SA↗, T2 none reported
AB	Y	IA 97-11 15 yrs SA 96-11 16 yrs T2 90-11 22 yrs			T1 IA→, T1 SA↘ 1500 Type 2(gov) are emergency hire w/prior training, exp., + certification. They could be exported but hasn't happened much.
SK	Y	01-11 11 yrs			T1 IA↙ , T2(P)↗, T3(P)↗
MB	Y	01-11 11 yrs			T1 IA↗, T2(Gov't) + T3(Gov't)"As Req'd"
ON	Y	T1 IA 88-11 24 yrs T2(P) 99-11 13 yrs			T1IA Missing 98-00 T2(P) contract started in 99. Number of ff halved in 2011 (640 to 320)↘
QC	Y	T1 IA 94-11 18 yrs T1 IA exp. 08-11 4 yrs			T1 IA only↗ listed as exportable for last 4 yrs
NB	Y	2011			No historical data provided
NS	Y	00-11			T1IA 8-5 →↘,T1SA 120

		12 yrs			40 exportable →
PE	N				
NL	Y	82-11 30 yrs			T1SA(102)→, Exportable only for past 3 years(16)↗ T2(G)→
NT	Y	00-11 12 yrs			T1IA(03-29)↘
YT	N				
PC	Y	87-11 23 yrs			T1IA(8-60)↗, 87-97 had T1 (P) Rap crews

Additional Notes:

Recommendations:

Additional analysis is required to identify trends in resource inventory.

Military

Military Availability

Agency	Y/ N	Period/ Years	Units	Additional Breakdown	Comments/Initial Trend
BC	N				No data
AB	Y	90-11 22 yrs	#		Only used in 1998 200 military – no report on availability
SK	N				
MB	Y				"As Requ'd"
ON	N				
QC	N				
NB	N				
NS	N				
PE	N				
NL	N				
NT	N				
YT	N				
PC	N				

Additional Notes:

Canada Command maintains domestic emergency contingency plans (CONPLAN) for various emergencies (Forest Fire, Flood, Hurricanes, Downed Aircraft etc.). Joint Task Forces each area of the country (for example Joint Task Force Central is Ontario) maintain a plan for assisting in forest fires (CONPLAN Lynx) and in the plan identifies the various military resources (personnel, aircraft, logistics) it will task if a province /territory declares and emergency and requests assistance through their own

Emergency Management organizations.   All commercial and Mutual Aid resources should normally be exhausted before the military can assist.

Recommendations:

Canada Command could be approached to provide a summary by Joint Task Force of the resources that could be made available. This could be done by each agency or centrally at CIFFC and kept up to date annually. One of the challenges will be that the Canadian Forces are reticent about releasing data about numbers of resources they have for security reasons.

Forest Companies

Agency	Y/N	Period/Years	Units	Additional Breakdown	Comments/Initial Trend
BC	N				No data
AB	Y	01-11 11 yrs			Contract hires that worked on a fire for each year. (Dozer boss, AAO, Heavy Equipment Group Supervisor, etc) Does not include FF who were captured in T1 SA or T2 FF
SK	N				
MB	Y				"As req'd"
ON	N				
QC	N				
NB	Y	2011			100 FF No historical data provided
NS	N				NA
PE	N				
NL	N				
NT	N				
YT	N				
PC	N				

Additional Notes:

Use of forest company fire fighters has been limited over the years and in some anecdotal discussions is expected to continue to be limited due to the forest industry economic situation.

Recommendations:

Limited data is available on a national basis. Agencies should continue to collect this data if more historical data could be found or if agencies expect these resources to be more available.

Other Gov't Services

Agency	Y/N	Period/ Years	Units	Additional Breakdown	Comments/Initial trend
BC	N				
AB	N				
SK	N				
MB	Y				"As Req'd" may want to include fire departments
ON	N				
QC	N				
NB	Y	2011			400 FF No historical data provided
NS	N				
PE	N				
NL	N				
NT	N				
YT	N				
PC	N				

Additional Notes:

No data to analyze trend but sense is this is a limited and possibly declining resource.

Recommendations:

Limited data is available on a national basis. Agencies should continue to collect this data element if more historical data could be found or if agencies expect the resource to become more available in the future.

Incident Management Teams:
IMT1 (# & Size)/IMT1 eligible for export
IMT2 (# & Size) /IMT2 eligible for export

Agency	Y/N	Period/Years	Units	Additional Breakdown	Comments/Initial Trend
BC	Y	92-11 20 yrs			IMT1→, IMT2→
AB	Y	01-11 11 yrs			IMT1↗
SK	Y	01-11 11 yrs			IMT1 ↘fewer but larger team. IMT2 no change
MB	Y	01-11 11yrs			IMT2 2(9)↘ export↗
ON	Y	IMT1 94-11 18 yrs IMT2 04-11 8 yrs			IMT1↘ IMT2→
QC	Y	IMT1 96-11 16 yrs			IMT1 only in prov. (2/8)→
NB	Y	2011			2 IMT2 – size is variable on demand. No historical data provided
NS	Y	10-11 2 yrs			1x IMT1 1/8, 2x IMT2 1/8
PE	N				
NL	Y	2011			1 IMT2 short team for export and long team for in province use
NT	Y	91-11 11 yrs			IMT1(3/5p)→ 1/8p for export→
YT	N				
PC	Y	95-11 17 yrs			IMT1(4/14)↘, IMT1 (2/14)Exportable, 2 (IMT2/14)Exportable

Additional Notes:

Several agencies have seen a decline in the number of IMT1s available for the period of time reported although team size has increased in some cases.

Recommendations:

Additional analysis is required to identify trends in resource inventory.

Overhead:

    Total Overhead

    Total overhead eligible for export

Agency	Y/N	Period/Years	Units	Additional Breakdown	Comments/Initial Trend
BC	Y	91-11 20 yrs			1990 Missing↘ Drop of about 2/3s in 2009 Drop of 3000 to 230 in 1995 with ministry separation
AB	Y	02-11 10 yrs			Total incl certified/qual, uncert/trainee→ Export incl only certified/qualified.→
SK	Y	01-11 11 yrs			No change
MB	Y	01-11 11 yrs			O/H↘, exportable↘
ON					
QC	Y	94-11 18 yrs			O/H in Prov only→↗
NB	Y	2011			95 available – 25 exportable no historical data provided.
NS	Y	00-11 12 yrs			OH 45 ↗
PE	N				
NL	Y	2011			O/H 14 none exportable
NT	Y	01-11 11 yrs			O/H(59)→
YT	N				
PC	Y	02-11 11 yrs			O/H (10-30-0)↓

Additional Notes:

Initial trend is a reduction in overhead available.

Recommendations:

Additional analysis is required to identify trends in resource inventory.

Aircraft

Skimmers (Government own):

CL-215, CL-215T, CL-415, AT-802 Amphib, Twin-Otter, Canso, Single Otter, Beaver

Skimmers (Private own):

CL-215, CL-215T, CL-415, AT-802 Amphib, Twin-Otter, Canso, Martin Mars, Single Otter

Landbased (Gov't own):

CV-580, L-188, DC-4, DC-6, AT-802, Firecat, A/B-26, TBM, Trackers, B-25, F-27

Landbased (Private own):

CV-580, L-188, DC-4, DC-6, AT-802, Firecat, A/B-26, TBM, Trackers, B-25, F-27

No. of Birddog:

Government own

Private

Agency	Y/N	Period/ Years	Units	Additional Breakdown	Comments/Initial Trend
BC	Y	97-11 MM 00-11 others 12 yrs			Slight increase
AB	Y	01-11 11 yrs BD 14 yrs			DC 6 and A/B 26s went offline. l-188 increased to replace. Other a/c static
SK	Y	01-11 11 yrs			Skimmers static – converted 1 215 to 215T CV-580↗ Trackers↙ BD 6-9-7
MB	Y	01-11 11 yrs			215(7)→ except one replaced with 415 in 2011 Previously has Single Otter skimmers to 2004
ON	Y	03-11 9 yrs			415s(9)→, Twin Otters increased 4-5 in 2005↗ Trial evaluation of 1 AT 802 Amphib in 2004 BD(P)→
QC	Y	WBs 82-11 30 yrs BD 94-11 18yrs			Cansos + 215s 82 to 91 (QC had 15 215s back to 1972 – started with 4 in 1971) 215 +215T 92-94 215+215T+415s 95-11 Overall a/c numbers ↘23-14 over 30 yrs but improved technology BD 10-8 ↘
NB	Y	2011			1 AT-802 Amphib,

					6 AT-802(G Land) 4 BD used for Detection as well No historical data provided
NS	N				
PE	N				
NL	Y	90-11 22 yrs			6-3 215s↘, 2-3 415s↗ Overall skimmer fleet stayed at 6→ 1 BD→
NT	Y	90-11 22yrs			4 215s→, 2 DC-4s(G)→ 4 BD ↗↘→ 3-4 Cansos 96-01↓
YT	N				
PC	N				

Additional Notes:

QC reported a decline in their Skimmer fleet although aging 215s and Cansos were upgraded to 415s. Several agencies reported that Skimmer availability could decline with aging 215s and some are upgrading to 215Ts and 415s.

Recommendations:

Additional analysis is required to identify trends in resource inventory.

R/W Gov't own & used for fire:

    Light

     Intermediate

    Medium

R/W private long-term hire:

Light

Intermediate

Medium

Heavy

Agency	Y/N	Period/ Years	Units	Additional Breakdown	Comments/Initial Trend
BC	Y	00-11 12 yrs			Med(P)4-8 doubled in 07↗ Inter only 4 yrs 05-08↓
AB	Y	Rw 10yr			Intermed(P) 5→, MED(P) 10→
SK	Y	01-11 11 yrs			Inter↙ to 0, Med↗
MB	Y	01-11 11 yrs			Inter→Med↗
ON	Y	03-11 9 yrs			Intermed(G) 3-4 → MED(P)↘↗
QC	Y	94-11 18 yrs			Light (P)8↘5, Intermed(P) 4↗↘, Med (P)2→↘
NB	N				
NS	Y	00-11 12 yrs			Light (G) 4→, Med 1→ Light(P) 1 in 2011
PE	N				
NL	N				
NT	Y	90-11 22 yrs			Intermed(G)6-5↘→
YT	N				
PC	Y	99-11 13 yrs			Intermed(P)2-4↗, Med 1-0↓

Additional Notes:

PC suggested that the number of contract days for long term hire a/c might be more useful to explore trends and availability over a fire season and trends over the years than just numbers of aircraft.

Recommendations:

Additional analysis is required to identify trends in resource inventory. Additional data could be collected about contract days to better describe resource capability trends.

Detection Aircraft: Long-term hired contract by member agencies.

Transport Aircraft:

Gov't own

Private long-term contract

Agency	Y/N	Period/ Years	Units	Additional Breakdown	Comments on Utility/Initial Trend
BC	N				
AB	Y	90-11 22 yrs			Transport only 1 Dash 8
SK	Y	01-11 11 yrs			Detection↘, Trans↘
MB	Y	01-11 11 yrs			Detection hired as req'd Transport→ 1TWO 2 Turbo Otters→
ON	Y	03-11 9 yrs			Detection→↘ Transport(P)0-1 in 2010↗
QC	Y	94-11 18 yrs			Detection 33-28↘
NB	N				Use BD for detection
NS	Y	00-11 12 yrs			1 Detection in 2011
PE	N				
NL	N				
NT	N				
YT	N				
PC	N				

Additional Notes:

Where detection aircraft are used their numbers have declined.

Recommendations:

Additional analysis is required to identify trends in resource inventory.

Infra-red Aircraft:
> **High-level fixed-wing**
> **Low-level Rotary-wing**
> **Is this a shared resource?**

Agency	Y/N	Period/ Years	Units	Additional Breakdown	Comments/Initial Trend?
BC	N				
AB	Y	98-11 14 yrs			High-level ↓ Low-level ↗
SK	N				
MB	N				
ON	N				
QC	N				
NB	N				
NS	N				
PE	N				
NL	N				
NT	N				
YT	N				
PC	N				Only use handhelds

Additional Notes:

For the first two IR A/C columns enter the number of aircraft owned or on long term hire each year.

The third column was to capture whether policy or long term contract allowed sharing of these resources with other fire fighting agencies.

Recommendations:

AB is only agency to report availability of IR Aircraft. Unless this resource is expected to increase in use could drop this data element.

Equipment

    Mark-3 pumps,

    Wicks 375,

    Light pumps Description: Less than 11.34 kg (25lbs)

    Heavy pumps Description: Greater than 34.94 kg (77lbs)

    Hose (1½" perc)

    Hose (1½" non-perc)

    Hose (2½")

    Sprinkler heads Description: Total number of sprinkler heads in inventory

    Chainsaws

Agency	Y/N	Period/ Years	Units	Additional Breakdown	Comments/Initial Trend
BC	Y	2011 1 yr			No historical annual numbers Most equipment has been stable except: MKIII increased from 615 (2005) to 815 (2006) Sprinkler heads from 1000 (2008) to 2000 (2009)
AB	Y	00-11 12 yrs			MkIII↗ light pumps↗ Hose↙ Sprinklers→ Chainsaws→
SK	Y	01-11 11 yrs			MK111↗, Wick/Light↗ Heavy Pump→, Hose↗↘ Hose 2.5↗ Sprinkler↗, Chainsaw↘
MB	Y	01-11 11 yrs			MKIII↘,Light pumps→, heavy pumps ↘↗↘, Hose↗↘,Hose 2.5↗→↘ sprinklers↗, chainsaws→↘
ON	Y	05-11 7 yrs			MKIII→,Hose(perc)↗↘, Hose 2.5↗, Sprinklers→, Chainsaws→
QC	Y	98-11 14 yrs			MKIII (1037-800)↘ Hose(perc)↗→↘ Sprinklers↗↘ Chainsaws (324-369)↗
NB	Y	2011			MKIII 233, W 375 20, light pump 137, heavy pump 125Hose(perc) 10,044, Hose(N/P) 571, Hose 2.5 226, Sprinkler 125, Chainsaws 194 No Historical data provided but static
NS	Y	00-11 12 yrs			MKIII 357→, W375 2→, Light Pump 28→, Hose ~14,000→, Sprinklers 80→, Chainsaws 0 Note: hose # includes P and N/P

PE	N				
NL	Y	06-11 6 yrs			MKIII 290→, Light Pump 52→, Heavy Pump 7-6↘, Hose(P) 8600→, Hose (N/P) 570→,, Hose 2.5" 300→, Sprinklers 190→, Chainsaws 35→
NT	Y	02-11 10 yrs			MKIII 258↗,W375 3-0→↓ Light Pump 90↗→, Heavy Pump 5-7↗, Hose P 6300↘, Hose 2.5 80↗,Sprinklers 590↗,Chainsaws 283↗
YT	N				
PC	Y	06-11 6 yrs			MKIII 275→, MK26 50→, Light Pump 66→, Heavy Pump 5→ Previous years data requires significant data analysis. Hose (P) 5000→, Hose (N/P) 250→, Big Inch Hose 200→, Other equip data requires analysis.

Additional Notes:

PC added MK26 pump which at 38 pounds is heavier than a light (25lbs) and lighter than a heavy.

Recommendations:

Additional analysis is required to identify trends in resource inventory.

Value Protection Unit:

Type 1-4

Mobile Warehouses Description: contains pumps, hose, camp gear, PPE etc.

Pump / Hose Trailers Description: contains pumps and hose only

Mobile Command Centre

Mobile Fire Camps

<u>Agency</u>	<u>Y/N</u>	<u>Period/Years</u>	<u>Units</u>	<u>Additional Breakdown</u>	<u>Comments/Initial Trend</u>
BC	Y	VPU 04-11 8 yrs Other 2011			Historical data for VPUs only↑
AB	Y	00-11 12 yrs			All no change in numbers→
SK	Y	01-11 11 yrs			VPUT1→, Warehouse↘, P/H trailers↘, Fire Camp→
MB	Y	01-11 11 yrs			No VPU, Warehouse T→↘, pump T(1 in 11)↗, Command Centre→
ON	Y	VPU 09-11 3 yrs Warehouse 05-11 7 yrs MCC, Fire Camp 10-11 2 yrs			VPU 2→ Warehouses↗→ MCC + Fire Camp↗
QC	Y	MCC 97-11 15 yrs			MCC(2) →
NB	Y	2011			Warehouse 1, Pump trailer 7, MCC 1, No historical data provided but static
NS	Y	00-11 12 yrs			1 MCC→
PE	N				
NL	Y	06-11 6 yrs			Pump Trailer 1↗, MCC 1↗
NT	N				
YT	N				
PC	Y	99-11 13 yrs			Warehouse 8→, Pump Trailer 2→, MCC 3→

Additional Notes:

A Value Protection Unit classification worksheet was included in the spreadsheet.

Recommendations:

Should continue to collect this data. Additional analysis is required to identify trends in resource inventory.

Communication:
Handheld radios
Satellite data kits Description: Satellite dish with voice and data availability.
Satellite handheld phones
Weather Stations Description: Quick deploy weather stations

<u>Agency</u>	<u>Y/N</u>	<u>Period/ Years</u>	<u>Units</u>	<u>Additional Breakdown</u>	<u>Comments/Initial Trend</u>
BC	Y	Radio 2011 Sat 7 yrs Wx Stn 5 yrs			
AB	Y	01-11 11 yrs WX 10 yrs			Radios↑ Sat Kits↑ Sat handhelds→ Wx Stns↗
SK	Y	01-11 11 yrs			Radios→, Sat Dat↗, Sat HHD↗, WX Stns→
MB	Y	01-11 11 yrs			Radios↗, Sat Data As Requ'd, Sat HHD → Listing 45 wx stns - Confirmed only 1 deployable
ON	Y	Radio + Sat HHD 05-11 7 yrs Sat Kits 10-11 2 yrs			Should be more years of data. No Deployable WX stations noted
QC	Y	94-11 18 yrs SatDat 07-11 4 yrs Sat HHD, Wx Stns 96-11 16 yrs			Radios 595→, Sat Dat 3→, Sat HHD 1- 46↗, WX Stns 2→
NB	Y	2011			Radios 581, Wx stns 1 -No historical data provided but reported as static
NS	Y	00-11 12 yrs			NO Radios available to share - only work in NS WX Stns1- 3 in last 3 years
PE	N				
NL	Y	06-11 6 yrs			Radios 266→, Weather Stns 1-4↗

NT	Y	98-11 13 yrs			Radios 280↘, Sat Dat 1↗, Sat HHDs 75↗, Wx Stns1→
YT	N				
PC	Y	Rad/Wx 06-11 6 yrs Sat 99-11 12 ys			Radios 200→, Sat Dat 1→, Wx Stn 1-9↗

Additional Notes:

Many agencies initially reported permanent weather stations instead of deployable.

Recommendations:

Should continue to collect this data. Additional analysis is required to identify trends in resource inventory.

Structural (Apparatus):

        Type 1, Type 2

        Wildland Engines (Apparatus):

        Type 3, Type 4, Type 5, Type 6, Type 7

        Tender (Apparatus)

        Type1, Type 2, Type 3

Agency	Y/N	Period/ Years	Units	Additional Breakdown	Comments/Initial Trend
BC	Y	00-11 12 yrs			Engines T3↓ T5↑ Tenders T2→ T3↗
AB	Y	03-11 9 yrs			T6 only ↗
SK	Y	01-11 11 yrs			T6 only↗
MB	N				
ON	Y	06-11 8 yrs			T4 and T6 Engines→
QC	N				
NB	Y	2011			38 T4, 16 T6. No historical data provided but engine numbers reported to have been dropped slightly in past 5 years and expected to drop further in coming years.
NS	Y	00-11 12 yrs			34 T3→, 4 T4→
PE	N				
NL	N				
NT	N				
YT	N				
PC	N				

Additional Notes:

An Apparatus Classification worksheet was included in the spreadsheet.

Recommendations:

Additional analysis is required to identify trends in resource inventory. Should continue to collect this data.

Aerial Ignition Kits:
Heli-torch
Terra-torch
Plastic sphere dispenser

Agency	Y/N	Period/ Years	Units	Additional Breakdown	Comments/Initial Trend
BC	Y	2011			10 plastic sphere only No history
AB	Y	00-11 12 yrs		Added Drip Torch↗ Heli-torch Trailers→	
SK	Y	01-11 11 yrs			Heli-torch↗, Terra-torch→, Plastic Sphere↗
MB	Y	01-11 11 yrs			Helitorch only→
ON	Y	HT 10-11 2 yrs Sphere 05-11 7 yrs			Missing years of data
QC	Y	Spher 88-11 24 yrs			Plastic Sphere only - 1 unit. →
NB	N				
NS	N				
PE	N				
NL	Y	06-11 6 yrs			Plastic Sphere 0-2↗
NT	N				
YT	N				
PC	Y	99-11 13 yrs			Drip 70→, Pres. T 10→, Heli 2→, Terra 0-2↗, Plastic S. 3-2↘

Additional Notes:

PC included Drip Torch and Pressurized Torch

Recommendations:

Additional analysis is required to identify trends in resource inventory. Should continue to collect this data.

Other resource types

Agency	Y/N	Period/ Years	Units	Additional Breakdown	Comments/Initial Trend
BC	N				
AB	Y				See Aerial Ignition section
SK	N				
MB	N				
ON	N				
QC	N				
NB	Y	2011			1 muskeg – no historical data but reported to be static.
NS	N				
PE	N				
NL	N				
NT	N				
YT	N				
PC	N				

Additional Notes:

Recommendations:

Should continue to provide this opportunity to agencies to add different resource types as required.