Developing More Common Language, Terminology and Data Standards for Wildland Fire Management in Canada

Abstract

This report provides a summary of common language, terminology and data standards used by wildland fire management agencies in Canada. It provides recommendations for the adoption of standard terminology.

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Executive Summary

Mutual aid resource sharing in response to escalated fire situations has been steadily increasing, accompanied by an increasing need for information exchange to support resource sharing decisions. Agencies have also increased their use of automated information systems to gather and store wildland fire information, and distribute it within the agency, to partners and the public.

The ability to share and assess information among agencies is being increasingly hampered by a lack of standard definition and understanding of common terminology and data attributes.

The Wildland Fire Management Working Group (WFMWG) requested the development of a report for review and analysis of specified terminology and data standards in use across Canada's wildland fire agencies. The objective was to develop recommendations for moving towards more common language, terminology and data standards to enable improved understanding and data sharing across the agencies.

Summary of Recommendations

Recommendation 1
Canadian Interagency Forest Fire Centre (CIFFC) and member agencies should update the Glossary of Forest Fire Management Terms in 2014 to provide additional standard definitions for terms in common use.

Recommendation 2
In order support the analysis of fire cause statistics on a national basis, agencies should adopt a standardized fire cause classification system for national reporting purposes. (Existing cause classification systems can be maintained for agency internal use if they so choose). Fire cause statistics reported to CIFFC should be in the categories defined by the national fire cause classification system.

Recommendation 3
Wildland fire agencies should adopt the national size classification system, as defined in the CIFFC Glossary of Forest Fire Management Terms for purposes on national reporting. Agencies should develop processes and procedures within their agency information systems that enable them to report fires by size class in their daily report to CIFFC.

Recommendation 4
CIFFC and wildland fire agencies across Canada should adopt the ICS fire type classification system for implementation in 2015.

Recommendation 5
Because of the different fire management strategies and response policies across the country, the term initial attack success should continue to be agency specific and not subject to a national standard.

Recommendation 6
As agencies develop or revise fire management strategies and fire response policies they should adopt standard terms such as Full Response, Modified Response and Monitored Response to describe response options. Appropriate definitions should be developed and added to the CIFFC Glossary of Forest Fire Management Terms.

Recommendation 7
Starting in 2015, wildfire agencies across Canada should report daily fire arrivals to CIFFC by the following response types – Full Response, Modified Response, Monitored Response. CIFFC should include the statistics in the National Wildland Fire Situation Report.

Recommendation 8
Implementing standard criteria for determining agency fire load is not recommended. Fire load is relative to the number and intensity of fires experienced by an agency, as well as the agency's resource capacity and fire management policy. Accordingly, it would be difficult to implement a consistent measure of fire load across all agencies

Recommendation 9
Implementing a standard definition for season length is not feasible or necessary, since Fire Season dates are generally determined by agency-specific legislation.

Recommendation 10
CIFFC and member agencies should carry out analysis of the use of Agency Preparedness Levels as a means for quantifying fire season severity and to develop a system that will allow for the consistent year over year ranking of severity nationally and across agencies.

Recommendation 11
Wildland fire agencies in Canada should adopt standard terminology and criteria, as defined in the CIFFC Glossary of Forest Fire Management Terms, for describing the status or stage of control of a fire.

Recommendation 12
It is recommended that agencies use the term "Contained" to describe the percentage of a fire that has been identified as under control. For example, on a large fire with 6 Divisions, if 3 Divisions were Under Control, the fire would be considered as 50% contained.

Background and Objectives

In early 2012 the Wildland Fire Management Working Group (WFMWG) commissioned a survey of the wildland fire agencies, gathering data on recent observations and forecast trends in a variety of parameters related to wildland fire load and agency resource capacity. Agencies provided both quantitative data and more qualitative inputs.

The resulting report indicated some trends of interest concerning changes in fire load and resource capacity. However, drawing an overall conclusion about these conditions across Canada was hampered by incomplete, inaccessible and inconsistent datasets. Among these issues it was noted that agencies used varying definitions for common terms, inconsistent standards for important data elements, and that some agencies did not record, or could not retrieve, data elements that are needed to create a more meaningful analysis of fire load and resource capacity issues across the agencies.

The WFMWG wanted to investigate further the issues related to a lack of common terminology and data standards, more fully document the similarities and differences in usage across the agencies, and develop recommended actions that would lead the agencies towards more common definitions and standards. This would provide more meaningful information on a national basis for agencies, partners and the public, and allow for better quantitative analysis and assessment of fire load and resource capacity trends and issues across all agencies.

A consultant was hired to conduct a survey of Canada's 13 wildland fire agencies to gather additional information for review and analysis of specified terminology and data standards in use across Canada's wildland fire agencies. Eleven of the 13 agencies provided responses to the survey. Two agencies (Prince Edward Island and Parks Canada) did not provide responses.

The objective of the project was to review the responses received from the agencies and develop recommendations for moving towards more common language, terminology and data standards to enable improved understanding and data sharing across the agencies.

The Resource Sharing Task Team under the WFMWG assisted the consultant in refining the survey questions and providing support for the completion of the report.

Introduction

Wildland fire management on Crown lands in Canada is a provincial/territorial responsibility, except on federal lands. Thirteen agencies with individual fire policies, guidelines and fire management strategies manage wildfire response in Canada. Resource sharing is coordinated through the Canadian Interagency Forest Fire Centre (CIFFC).

Wildland fire agencies collect fire statistics in order to support fire prevention, fire prediction, and fire suppression efforts. Statistics are also collected to help agencies and fire researchers gain a better understanding of fire behaviour and the impacts of fire. Agencies use fire statistics to report on program performance measures and to support analysis of fire suppression expenditures. Fire statistics are used in a variety of models that support resource needs planning, predict fire size and fire behaviour and provide estimates of future fire load as a result of climate change.

Forest fire statistics are reported by provincial, territorial, and federal wildland fire agencies. Statistics are maintained on a national level at CIFFC and in the National Forestry Database (NFD). The NFD is a partnership between the federal government and provincial and territorial governments. The Canadian Forest Service (CFS) at Natural Resources Canada, which developed and maintains the database, has responsibility for disseminating national forestry statistics.[1]

Common Terminology

The use of common terminology in wildfire response can help prevent misunderstanding during emergency situations. The use of common terminology can also help responders, the public and media to understand the local and national fire situation.

In 2002 CIFFC and member agencies implemented the use of the Incident Command System (ICS) Canadian Version. ICS replaced the various versions of the 'large fire management organization structure' that was used across the country. Several ICS documents and a training curriculum were developed. Common terminology was adopted that focused on organizational structure, position titles and procedures for managing wildland fires. Common terminology, for the most part, did not expand beyond the Incident Management organization. Agencies across Canada continued to use a variety of terms that came from ICS, the old large fire management organization or that were developed within their own home agency.

The CIFFC Glossary of Forest Fire Management Terms was last updated in 2003. The glossary provides definitions for terms most commonly used in Canada in the field of forest fire

[1] National Forestry Data Base http://nfdp.ccfm.org

management.[2] The main purpose of the glossary is to provide a means of achieving a common understanding of the vocabulary used in forest fire management and to promote the use of standard terminology among forest fire agencies across the country. It is intended primarily for operational personnel, and for use in training and educational programs.

Significant changes have taken place across Canada in wildland fire management since the glossary was last updated in 2003. Mutual aid resource sharing in response to escalated fire situations has been steadily increasing, accompanied by an increasing need for information exchange to support resource sharing decisions. Agencies have also increased their use of automated information systems to gather and store wildland fire information, and distribute it within the agency, to partners and the public.

The ability to share and assess information among agencies is being increasingly hampered by a lack of standard definition and understanding of common terminology and data attributes.

Analysis of the need for more standard terminology follows in this report.

Recommendation 1

Canadian Interagency Forest Fire Centre (CIFFC) and member agencies should update the Glossary of Forest Fire Management Terms in 2014 to provide additional standard definitions for terms in common use.

The issues related to a lack of common terminology and data standards are not unique to Canada. A brief review of documents from other wildland fire organizations shows that countries and regions across the globe are facing similar challenges. The challenges of developing common terminology and data standards are described in reports from South America, Europe and the United States.

Wildland fire agencies around the world maintain records of annual numbers of fires, average number of hectares or acres burned and average size of fires. There is a lack of common standards for collecting other statistics such as fire cause, initial attack success and fire season severity.

[2] CIFFC Glossary of Forest Fire Management Terms, 2003

Current Efforts to Manage and Share Data and Information

As mentioned earlier, national statistics are maintained at CIFFC and in the National Forestry Database. Provincial and territorial agencies, along with CIFFC and the Canadian Forestry Service are undertaking a project to better manage and share forest fire data and information. It is being developed as an IM/IT strategy and is expected to continue over the next five or so years.

Agencies already share significant amounts of data, both on a daily operational basis through systems such as the daily situation report to CIFFC, and the Canadian Wildland Fire Information System, and annually through vehicles such as the agency annual reports to CIFFC and their submissions to the National Forestry Database.

The Resource Capacity Fire Load (RCFL) system was initiated as a "proof of concept" for the larger IM/IT strategy. Developed a little more than a year ago, it is being used to illustrate how sharing information using established standards could be beneficial by reducing the number of times particular pieces of information need to be entered (i.e. some of the numbers are used for the RCFL, situation reporting, national reporting and so on). Another benefit is that agencies can exercise better quality control over these data and also share the data amongst the agencies and federal (national) bodies, again for reporting and even research purposes.

Much of the information entered into the RCFL will be able to be used in other reports and studies. To meet the goals of the strategy it would be more efficient if the information provided by each agency means the same thing. The development of common terminology and data standards will support this initiative.

Fire Cause Classification Systems

Fire agencies across Canada maintain their own classification systems for reporting fire causes. More than 20 general fire cause categories are used by wildland fire agencies in Canada. While there are several similarities in the classification systems, there are some differences which make analysis on a national or regional basis difficult. The level of detail varies across the country and the terms used to identify the sources of ignition vary as well. The data standards (or definitions) of the fire causes and ignition sources are not consistent from agency to agency. Agencies reported that fire causes are stored in agency databases and that reports can be produced through their agency information management system.

Table 1: Agency Fire Cause Categories

Agency	Natural	Lightning	Recreation	Campfire	Resident	Miscellaneous	Railway/Railroad	Industry	Industrial (Forest Industry)	Industrial (Other Industry)	Power Line (Industry)	Equipment Use	Mechanical	Oil & Gas	Government	Open Burning	Prescribed Fire	Incendiary	Arson	Unknown (Undetermined)	Settlement	Wood Operation	Agricultural	Person	Garbage Dump/Burning Garbage	Smoker/Smoking	Fire Use – Open Burning	Juvenile Fire Starter/Playing With Fire	Other
BC																													
AB																													
YT																													
NT																													
SK																													
MB*																													
ON																													
QC																													
NB																													
NS**																													
PE																													
NL																													
PC																													
CIFFC																													
NFD																													

General Fire Causes are shaded in grey. Some agencies breakdown fire causes further into sub-categories and by source of ignition.
*MB –Public Projects is also a fire cause
**NS – Also uses the following general causes– debris burning, power saw, spontaneous combustion, structure, vehicle, debris fire, slash/land clearing, grass/terrain

In Canada, the CIFFC Glossary of Forest Fire Management Terms describes a fire cause classification system that was adopted in 1980 for reporting national fire statistics. The following categories are listed in the glossary:

Lightning - A wildfire caused directly or indirectly by lightning.

Recreation - A wildfire caused by people or equipment engaged in a recreational activity (e.g. vacationing, fishing, picnicking, non-commercial berry picking, hiking).

Resident - A wildfire resulting from activity performed by people or machines for the purpose of agriculture or an accidental fire caused by activity associated with normal living in a forested area.

Forest Industry - A wildfire caused by people or machines engaged in any activity associated with forest products production.

Other Industry - A wildfire caused by industrial operations other than forest industry or railroads. Includes municipal, provincial, or federal works projects whether employees, agents, or contractors.

Railroads - A wildfire caused by any machine, employee, agent, or contractor performing work associated with a railway operation, or a passenger on a train.

Incendiary - A wildfire willfully started for the purpose of mischief, grudge, or gain.

Miscellaneous - A wildfire of known cause that cannot be properly classified under any of the other standard classes listed above.

While the Glossary of Terms describes the causes listed above as a national system, not all agencies use this system and agencies don't report annual fire cause statistics to CIFFC.

Fire Cause Classification in Other Countries

A similar situation to what has been experienced in Canada has occurred in Europe where most countries have traditionally maintained their own fire cause classification systems. In order to improve the situation, members of the European Union (EU) adopted a new fire cause classification scheme for use with the European Forest Fire Information System (EFFIS). Because the level of detail of classified fire causes is quite varied among the countries, and the causes of forest fires differ significantly, the system was designed in a way to incorporate the different fire causes from the different systems. The scheme is hierarchical and is made of 29 fire cause classes, 8 groups and 6 categories.

The 6 generic categories are as follows: Unknown, Natural, Accident, Negligence, Deliberate and Rekindle

A key feature of the new scheme is that common fire causes categories have to be widely agreed/recognized; in addition clear and unambiguous definitions are integral part of the new classification scheme. (Andrea Camia, 2013)

In the United States, the National Wildfire Coordinating Group's Glossary of Wildland Fire Terminology (NWCG) groups fire causes in the following broad classes: Lightning, Campfire, Smoking, Debris burning, Incendiary, Machine use (equipment), Railroad, Children, and Miscellaneous.

Moving Towards Common Terminology for Identifying Fire Cause in Canada

In order to enable fire managers to carry out fire cause analysis on a national basis and support fire prevention efforts, FireSmart initiatives and the National Forestry Database it would be beneficial for agencies to adopt a common national fire cause classification system. Table 2 below is an example of a harmonized fire cause classification system that could be used to enhance reporting for statistical and research purposes in Canada.

The advantage of such a system is that agencies could continue to collect and archive fire cause statistics using their current reporting systems. Agencies could sort fire cause statistics from their existing fire reporting databases in to the five general categories as part of their annual report to CIFFC.

Based on analysis of Table 1, it is believed that all agencies could "map" their existing fire cause-related data into the classification proposed in Table 2 without requiring changes to their existing internal data reporting.

Alternatively, agencies could agree to a national report based on the 8 cause categories already defined in the Glossary of Forest Fire Management Terms, described on the previous page. This would require additional analysis to ensure that agencies could report to this national standard using their existing internal Fire Cause classification system. Initial analysis indicates that "mapping" current agency fire cause-related data to the 8 cause categories would be more difficult than "mapping" the data to the 5 cause categories in Table 2.

Table 2: Proposed National Fire Cause Classification System

General Cause	Responsible Group	Sources of Ignition
Natural Any wildfire caused by natural origin, with no human involvement in any way.	Lightning Coal Seam Fire Peat Fire	Lightning, Spontaneous Combustion
Industrial Wildfire caused by sparks emitted by engines and machinery in industry, forestry and agriculture or people at work or by ignition of flammables and vapours during works in industrial activities.	Forestry Hydroelectric Mining Oil and Gas Railroad Agriculture Other Industry	Explosions, Welding, Grinding, Smouldering, Hot Exhaust, Muffler, Powersaw, Vehicle, Heavy Equipment, Slash Pile Burning, Powerline
Accidental Wildfire unintentionally and indirectly caused by humans.	Recreation Resident Person Settlement Smoker Miscellaneous	Campfires, Debris Burning, Land Clearing, Children Playing With Matches, Smoking, Burning Garbage, Off Road Vehicle (ie ATV), Fireworks
Deliberate Malicious or mischievous fire setting that results in damage to property or resources	Arson Incendiary	Matches, Lighter, Embers, Ashes, Playing With Fire
Unknown All fires for which a reasonable estimate of the true cause cannot be made. This classification will be used only when all other general causes have been carefully considered and discarded.		

Recommendation 2

In order support the analysis of fire cause statistics on a national basis, agencies should adopt a standardized fire cause classification system for national reporting purposes. (Existing cause classification systems can be maintained for agency internal use if they so choose). Fire cause statistics reported to CIFFC should be in the categories defined by the national fire cause classification system.

Fire Size Classification Systems

Although the CIFFC Glossary of Forest Fire Management Terms describes a national fire size classification system (Table 3 below), few agencies have adopted the system. Most agencies do not classify fires by size class.

Table 3: Fire Size Classes – CIFFC Glossary of Forest Fire Management Terms

Number	Letter	Area (Hectares)
1	A	Up to 0.1
2	B	0.11 – 1.0
3	C	1.1 – 10
4	D	10.1 – 100
5	E	100.1 – 1,000
6	F	1,000.1 – 10,000
7	G	10,000.1 – 100,000
8	H	Over 100,000

Table 4: Agency Fire Size Classifications

Agency		
BC	No Fire Size Classification System	
AB	A class = 0 to 0.1 ha B class > 0.1 ha to 4.0 ha C class > 4.0 ha to 40.0 ha	D class > 40.0 ha to 200 ha E class > 200 ha
YT	Use CIFFC Glossary of Terms classification system	
NT	No Fire Size Classification System	
SK	No Fire Size Classification System	
MB	No Fire Size Classification System	
ON	No Fire Size Classification System	
QC	No Fire Size Classification System	
NB	Uses the CIFFC Glossary of Terms classification system with minor changes.	
NS	No Fire Size Classification System	
PE		
NL	No Fire Size Classification System	
PC		

In the United States, the National Wildfire Coordinating Group uses a similar fire size classification system with the main difference being the use of acres rather than hectares for fire size.

The use of a common size classification system would support analysis of fire load across the country and support efforts to develop national resource needs forecasting models.

Most fire agencies reported that fire numbers and fire sizes are stored in agency databases and that their agency information management systems enable them to print reports with fires classified by any size category of their choosing.

Recommendation 3

Wildland fire agencies should adopt the national size classification system, as defined in the CIFFC Glossary of Forest Fire Management Terms for purposes on national reporting. Agencies should develop processes and procedures within their agency information systems that enable them to report fires by size class in their daily report to CIFFC.

Fire Type Classification

There is not a consistent approach for classifying the types of wildfires in the country, in terms of the potential impact of the fire, severity of fire behavior, or the demand the fire places on the fire management agency. Several agencies do not use a system for classifying or categorizing the types of fires they respond to. Agencies that maintain a system for classifying fires use a variety of measures such as number of personnel, complexity of the fire and values at risk.

Some agencies use terms such as initial attack fires and sustained attack fires when referring to the types of fires they are responding to. Initial attack is the action taken to halt the spread or potential spread of a fire by the first fire fighting force to arrive at the fire.[3] Sustained attack is conducting fire suppression action on a wildfire for an extended period of time. Terms such as initial attack and sustained attack should refer to the action taken on a fire, not the type of fire.

Table 5: Fire Type Classification

Agency	
BC	Types 1 to Type 4 based on a points rating system for fire complexity, values at risk, personnel, equipment, aircraft and stage of control.
AB	The following are the four resource build-up stages for wildfires in Alberta: Type 1 = 150 plus personnel Type 2 = 26 to 150 personnel Type 3 = nine (9) to 25 personnel Type 4 = one (1) to eight (8) personnel Alberta is planning to revise its fire types based on the ICS Management definitions.
YT	Classification system describes the number of staff on an incident. Type 1 – 145+ personnel Type 2 – 26 to 144 personnel Type 3 – 1 to 25 personnel Considering revising categories in line with national descriptions.
NT	Classifies fires by 4 Levels. Based on threat to human life, property and values at risk.
SK	Classifies fires A,B,C,D as part of their complexity analysis process.
MB	No Fire Type Classification System
ON	No Fire Type Classification System
QC	No Fire Type Classification System
NB	Uses the ICS Fire Type Classification System. Stored in report/database as T1, T2, T3, T4, T5
NS	No Fire Type Classification System
PE	
NL	No Fire Size Classification System
PC	

It would be beneficial if agencies used a common system for classifying fire types. Using a common fire type classification system would help promote national situation analysis and support CIFFC and wildland fire agency resource needs forecasting.

[3] CIFFC Glossary of Forest Fire Management Terms

The Incident Command System (ICS) provides a description of a classification scheme for categorizing fires by type. ICS is flexible, scaling up or down as complexity changes and the needs of the incidents change. Type 5 is the least complex, while Type 1 is the most complex. Table 6 shows the five types of fire classifications used in the Incident Command System. The characteristics are clear and based on response action, assigned resources, complexity and time period. All wildfire management agencies in Canada have adopted the Incident Command System. Adopting the fire type classification system described in ICS is a logical next step in ICS implementation.

This would likely require agencies to modify their information management systems and operational procedures to track fire type classification on a daily basis for each active fire. Accordingly it is suggested that this recommendation not be implemented until the 2015 fire season.

In terms of the "final" fire report, it would seem appropriate that the highest level (most complex) fire type rating assigned to the fire over its lifespan would be recorded in the permanent record.

Table 6: Incident Command System - Types of Fires

Fire Type	Characteristics
Type 5	• Initial attack • Short duration, seldom lasting into the next burn period • Few resources assigned (generally fewer than 6 people) • Little complexity
Type 4	• Initial attack or first response to an incident. • The Incident Commander (IC) is a "hands on" leader and performs all functions of Operations, Logistics, Planning, and Finance • Few resources are used (several individuals or a single strike team) • Normally limited to one operational period • Does not require a written Incident Action Plan (IAP)
Type 3	• Extended initial attack on wildland fires. • IC walks the line between a manager and a 'doer' • Resources may vary from several single resources to several task forces or strike teams • Some Command/General Staff positions (ie, Division Supervisor, Unit Leader), may be filled • May extend into another operational period (12 hours), and require an IAP
Type 2	• IC spends all time being a manager • Most Command and General staff positions are filled • Large number of resources utilized • Incident extends into multiple operational periods • Base camp(s) established • Significant logistical support is required
Type 1	• All functions are filled, plus leaders, branches etc. • Multi-agency and national resources • Large number of personnel and equipment are assigned to the incident • It is a large, complex incident

Recommendation 4

CIFFC and wildland fire agencies across Canada should adopt the ICS fire type classification system for implementation in 2015.

Initial Attack Success

Agencies define initial attack success by a variety of methods. Some are based on stage of control, some are based on stage of control by a specified time period and some consider final size. Initial attack success is a measure that agencies often use for reporting program accomplishments within their organization. Provincial and territorial agencies have different forest types and different values at risk which can influence how initial attack success would be measured.

Table 7: Initial Attack Success

Agency	
BC	Initial Attack is the action taken to halt the spread or potential spread of a wildfire between the time it is reported and the next burning period, 24 hours. WMB has a strong commitment to controlling all wildfires though initial attack.
AB	To ensure the following provincial objectives are met, safe but aggressive initial attack is taken on all wildfires within the Forest Protection Area (FPA): • Initiate wildfire suppression action before the wildfire exceeds two (2) hectares in size, and • Contain wildfire spread by 1000 hours the day after initial action.
YT	Under development. No definition at this time.
NT	Fires called under control within the 24 hour initial attack period (24 hours of being discovered).
SK	Wildfires in the Full Response Zone contained to 10 hectares or less
MB	Success based on meeting one of 3 criteria. 5 ha. or less, under control by 10 am next burning period, costing less than $30,000.
ON	A fire that is "Being Held" by 12:00 local time the day following its report; or final size of the fire is 4.0 hectares or less; or the fire perimeter remains within pre-determined boundaries.
QC	No initial attack success definition. Instead QC measures different operational objectives results: • Discover all fires less than 0.5 ha • Do an initial attack in an hour our less anywhere in the full response zone • Control fires before 10 AM the next burning period • Put out fires less than 3 ha in size
NB	Once a fire has been determined to be Under Control during initial attack, it is considered a successful IA
NS	Fires extinguished before the next operational period after initial attack.
PE	
NL	Fire is contained within the first operational period.
PC	

Recommendation 5

Because of the different fire management strategies and response policies across the country, the term initial attack success should continue to be agency specific and not subject to a national standard.

Response Type

The types of response options available to fire managers are generally described in an agency's fire management strategy or fire management policy. When determining the type of response, fire managers consider a number of factors such as the zone or area the fire is located in, the values-at-risk, the current and anticipated fire load, the availability of resources and the forecasted cost of fire response.

Table 8: Modified Response Fires

Agency	
BC	Modified Response Fire-a wildfire that is allowed to burn within set policy and management guidelines or may be actioned in such a manner as to bring the wildfire back within those guidelines. A monitor only fire is a modified response fire that is not receiving suppression action at a specified point in time.
AB	This term is not used in Alberta.
YT	Suppression action on a wildfire that targets a portion of the fire perimeter and not the whole fire, with the goal of partial control/extinguishment. The objectives may be to prevent fire growth in one area, to slow the overall advance of a fire or to divert fire advance to another area. Modified Response includes site protection.
NT	ENR uses the term Limited Action which has the same CIFFC definition as modified response.
SK	May be categorized as "Not Contained", "Contained", "Values Protection", "Out" or "Ongoing Assessment" depending on the particular incidents period in its lifespan or method of attack. By definition as a modified response zone incident allows Wildfire management to exercise some leeway in how these fires are actioned, depending on time of year, location or land use plan for the area. The goal is to contain fires within the MRZ. Consider initial attack and sustained action to contain wildland fires to the MRZ based on assessment of values and financial cost. If unsuccessful, pull back and redirect fire action to protect the Full Response Zones.
MB	No formal definition internally. CIFFC glossary term is used. MB used the term 'limited action'
ON	A wildfire that is managed using a combination of suppression techniques, including direct and indirect attack as well as monitoring to steer, contain or otherwise manage fire activity within a pre-determined perimeter such that costs and/or damage are minimized and/or benefits from the fire are maximized.
QC	Term not used
NB	Term not used
NS	Term not used
PE	
NL	A fire which is being monitored but no action taken to suppress the fire.
PC	
CIFFC	A wildfire that is allowed to burn within set policy and management guidelines or may be actioned in such a manner as to bring the wildfire back within those guidelines.

Table 9: Monitored Response Fires

Agency	
BC	Term not used
AB	Term not used
YT	The systematic process of observing a fire on a regular basis to track its fire behaviour, growth and possible changes to risk assessments to surrounding infrastructure or other values. These are fires that most often occur in our "Wilderness Zone" and are not deemed to be threatening facilities or infrastructure.
NT	Term not used
SK	May be categorized as "Values Protection", "Out" or "Ongoing Assessment" depending on the particular strategy required to manage the incident and/or protected values that may be threatened. These incidents would fall into Wildfire Managements Observation Zone, monitor fires and assess the values at risk with the intent to allow fire inclusion for ecological processes on the landscape. Intervention consideration will be based on values vs. the cost of suppression.
MB	Term not used Use terms Being Observed/Being Watched.
ON	A wildfire that is observed and assessed to determine the response option required to minimize social disruption and/or significant value and resource impacts while achieving beneficial ecological, economic or resource management objectives.
QC	Fires whose existence is known, but against which no intervention has taken place.
NB	Term not used
NS	Term not used
PE	
NL	Term not used
PC	
CIFFC	Term not defined in CIFFC Glossary.

Table 10: Full Response Fires

Agency	
BC	A wildfire which requires immediate, aggressive initial attack and or sustained suppression action until the fire is declared out.
AB	Term not used Alberta's policy is to provide aggressive initial attack on all new wildfire starts.
YT	Fires with the management objective of full extinguishment.
NT	A wildfire which requires immediate, aggressive initial attack and/or sustained suppression action until the fire is declared out. (CIFFC Glossary of Terms)
SK	No specific measure for Full Response Fires
MB	No formal definition.
ON	A wildfire which requires immediate, aggressive initial attack and/or sustained suppression action until the fire is declared out. (CIFFC Glossary of Terms)
QC	Fire where a sufficient number of resources are allocated, thereby enabling an appropriate response providing a high probability of success.
NB	Term not used
NS	All of our fires are full response fires.
PE	
NL	Fires which required action when reported.
PC	
CIFFC	A wildfire which requires immediate, aggressive initial attack and/or sustained suppression action until the fire is declared out.

As with Fire Size and Fire Type, it would be beneficial for promoting national awareness and for assessing national priorities if agencies used common terminology to describe the type of response being carried out.

Recommendation 6

As agencies develop or revise fire management strategies and fire response policies they should adopt standard terms such as Full Response, Modified Response and Monitored Response to describe response options. Appropriate definitions should be developed and added to the CIFFC Glossary of Forest Fire Management Terms.

The following definitions would form an appropriate basis for discussion.

Modified Response - A wildfire that is managed using a combination of suppression techniques, including direct and indirect attack as well as monitoring to steer, contain or otherwise manage fire activity within a pre-determined perimeter such that costs and/or damage are minimized and/or benefits from the fire are maximized.

Monitored Response - A wildfire that is observed and assessed to determine the response option required to minimize social disruption and/or significant value and resource impacts while achieving beneficial ecological, economic or resource management objectives.

Full Response - A wildfire which requires immediate, aggressive initial attack and/or sustained suppression action until the fire is declared out. (CIFFC Glossary of Forest Fire Management Terms)

CIFFC National Wildland Fire Situation Report

The National Wildland Fire Situation Report identifies fire response type in two categories, Full Response and Modified Response (Table 11). Most agencies do not use these terms within their organization and only use the terms when reporting statistics to CIFFC for the National Wildland Fire Situation Report.

Currently, fires that receive limited suppression action and values protection, and fires that are monitored are listed as a Modified Response in the situation report. These two broad categories do not provide a sufficient breakdown to help fire managers and the public gain a better understanding of the fire load across the country.

Recommendation 7

Starting in 2015, wildfire agencies across Canada should report daily fire arrivals to CIFFC by the following response types – Full Response, Modified Response, Monitored Response. CIFFC should include the statistics in the National Wildland Fire Situation Report.

Table 11: Response Types Shown in the National Wildland Fire Situation Report

A — Last 24 Hours

	All Fires		
	LTG	HUM	TOT
BC	7	5	12
YT			0
AB		2	2
NT			0
SK	1		1
MB	1		1
ON			0
QC		2	2
NL			0
NB			0
NS			0
PE			0
PC			0
Total	9	9	18

B — Full Response

	Burning			Totals			
	OC	UC	TOT		OUT	TOT	Hectares
BC	1	63	64	BC	1617	1681	6,535.00
YT	3	3	6	YT	51	57	940.00
AB		5	5	AB	1119	1124	21,909.97
NT	8	1	9	NT	77	86	165,540.16
SK	1	3	4	SK	269	273	56,322.69
MB		12	12	MB	296	308	133,271.00
ON			0	ON	468	468	19,657.50
QC			0	QC	412	412	63,897.60
NL			0	NL	91	91	29,593.10
NB			0	NB	352	352	872.40
NS			0	NS	171	171	302.80
PE			0	PE	9	9	55.00
PC		2	2	PC	19	21	5,079.00
Total	13	89	102	Total	4951	5053	503,976.22

C — Modified Response

	ACT	OUT	TOT	Hectares
BC	80		80	6,463.00
YT	67	50	117	237,850.00
AB			0	
NT	42	116	158	351,737.93
SK	14	109	123	254,807.50
MB	47	86	133	551,603.00
ON	14	75	89	23,666.60
QC		75	75	1,794,804.10
NL		8	8	896.20
NB			0	
NS			0	
PE			0	
PC	54	7	61	72,401.00
Total	318	526	844	3,294,229.33

D — Grand Totals

	Fires	Hectares
BC	1761	12,998.00
YT	174	238,790.00
AB	1124	21,909.97
NT	244	517,278.09
SK	396	311,130.19
MB	441	684,874.00
ON	557	43,324.10
QC	487	1,858,701.70
NL	99	30,489.30
NB	352	872.40
NS	171	302.80
PE	9	55.00
PC	82	77,480.00
Total	5897	3,798,205.55

Fire Load

Fire Load is defined in the CIFFC Glossary of Forest Fire Management Terms but is not used consistently by all agencies. Fire load refers to the number and magnitude (i.e., fire size class and frontal fire intensity) of all fires requiring suppression action during a given period within a specified area.

When determining the Agency Preparedness Level (Table 17) for the National Wildland Fire Situation Report, agencies make an assessment of their fire load and assign a ranking from low to extreme. The meaning of the term can be somewhat ambiguous, as it is not determined consistently across the country. When assessing fire load, agencies consider the fire danger rating, the types of new and ongoing fires they are managing and the number of fires in various size classes. Each agency varies in scope and scale, the number of annual fires arrivals, the annual hectares burned and resource capacity. Because of this, the number and size of fires that affect an agency's fire load ranking will be different for each agency.

Recommendation 8

Implementing standard criteria for determining agency fire load is not recommended. Fire load is relative to the number and intensity of fires experienced by an agency, as well as the agency's resource capacity and fire management policy. Accordingly, it would be difficult to implement a consistent measure of fire load across all agencies

Table 12: Fire Load

Agency	
BC	Fire Load is defined by Prep condition levels.
AB	The number and magnitude of all fires requiring suppression action during a given period within a specified area. (Glossary of Terms)
YT	Term not used
NT	The number and magnitude (i.e. fire size class and frontal fire intensity) of all fires requiring suppression action during a given period within a specified area. (CIFFC Glossary of Terms)
SK	The term is used for the most part only with CIFFC to indicate to others our level of resource commitments to active fire incidents and frequency of new starts.
MB	No formal definition
ON	The number and magnitude of all fires requiring suppression action during a given period within a specified area. (CIFFC Glossary of Terms)
QC	Without a clear definition, we measure fire load with the number of active fires in a region or in the entire province. We also take into account the fire size of all active fires.
NB	Fire load is not widely used or understood within general rank and file of the forest service.
NS	Term not used
PE	
NL	Term not used
PC	
CIFFC	The number and magnitude (i.e. fire size class and frontal fire intensity) of all fires requiring suppression action during a given period within a specified area.

Fire Season and Fire Season Severity

Fire Season

Fire season generally refers to the time of year when fires are likely to start, spread, threaten values and require a response by a wildland fire agency. Because of the large size of the country, variety of climate zones and the time of year when fire activity occurs, the dates designated by legislation for the fire season vary.

Recommendation 9

Implementing a standard definition for season length is not feasible or necessary, since Fire Season dates are generally determined by agency-specific legislation.

Table 13: Fire Season

Agency	March 15 to October 15	March 1 to November 1	April 1 to September 30	April 1 to October 31	3rd Monday in April to October 31	May 1 to September 30	April 1 to November 15	March 15 to Nov. 30	Other
BC									
AB*									
YT									
NT									
SK									
MB**									
ON									
QC***									
NB									
NS									
PE									
NL									
PC									
CIFFC	The period(s) of the year during which fires are likely to start, spread, and do damage to values-at-risk sufficient to warrant organized fire suppression; a period of the year set out and commonly referred to in fire prevention legislation. The fire season is usually further divided on the basis of the seasonal flammability of fuel types (e.g. spring, summer, and fall).								

*Since 2012, Alberta started its fire season one month early. An amendment to the legislation is currently being considered to change the start of the fire season from April 1 to March 1.

**Manitoba – The period each year commencing on April 1 and ending on November 15, or any other period of time that may be designated by the minister.

***Quebec does not have a specific definition of fire season. Quebec uses the term “protection season” as defined in Forest Law. In the legislation, the protection season is defined as the period where a permit is mandatory for fire use.

Fire Season Severity

One of the difficulties fire agencies experience is the ranking or rating of the severity of a fire season in comparison with other fire seasons. A number of statistics are used to refer to the severity of a fire season including the following:

- Number of fires
- Number of hectares burned
- Number of fires and hectares burned in the 'full protection' zone
- Average size of fires
- Number of fires that met an agency's initial attack success standard
- Number of fires over a specified size classification
- Resource sharing with other agencies
- Number of evacuations
- Number of days with multiple new starts.

Table 14: Annual Wildfire Starts in Canada

WILDFIRE STARTS TOTAL NUMBERS OF FIRES (LIGHTNING AND HUMAN CAUSED)												
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Avg.	2013
BC	2,472	2,398	970	2,751	1,437	1,817	3,084	1,678	646	1,642	1,872	1,852
YT	77	282	83	80	110	67	118	88	56	126	109	174
AB	1,191	1,597	1,359	1,938	1,164	1,695	1,655	1,837	1,097	1,555	1,509	1,207
NT	160	297	261	166	1.353	241	42	224	207	279	323	243
SK	642	328	322	501	370	599	511	571	303	409	456	429
MB	1,148	234	246	682	364	397	184	583	315	497	465	494
ON	1,015	431	1,961	2,281	1,015	338	385	931	1,334	1,615	1,131	852
QC	716	319	1,374	683	935	222	483	737	329	795	659	515
NL	191	153	145	96	87	139	176	61	53	198	130	99
NB	228	240	305	310	282	168	192	179	81	344	233	352
NS	1274	258	304	234	392	247	193	313	116	352	268	171
PE	14	20	13	36	8	3	8	4	4	8	12	9
PC	115	90	95	135	64	103	136	113	67	87	101	82
TOTAL	8,243	6,647	7,438	9,713	7,581	6,036	7,167	7,319	4,608	7,907	7,266	6,479

Table 14: Annual Wildfire Starts in Canada (Source: CIFFC Canada Report 2013)

Rating the severity of a fire season based on fires and fire sizes may not adequately describe the fire season because a few large fires can skew the averages. In some fire seasons the overall numbers of fires may be low but the sizes of the fires may be larger than average, or a relatively small number of problem fires in even a limited portion of the fire season might influence the categorization of the fire season, as Alberta experienced in 2011 with the Slave Lake and related fires in the spring.

When assessing fire season severity at the national level the challenge is finding a measure that works equally well for agencies that average more than 1,000 fires each year and agencies that average fewer than 500 fires each year.

Table 15: Agencies That Report Fire Season Severity

Agency		Agency	
BC	Based on historical fire numbers and area burnt, above or below average fire stats.	**QC**	No formal measure for Fire Season Severity.
AB	No formal measure for Fire Season Severity.	**NB**	No formal measure for Fire Season Severity.
YT	No formal measure for Fire Season Severity.	**NS**	No formal measure for Fire Season Severity.
NT	No formal measure for Fire Season Severity.	**PE**	
SK	No formal measure for Fire Season Severity.	**NL**	No formal measure for Fire Season Severity.
MB	No formal measure for Fire Season Severity.	**PC**	
ON	No formal measure for Fire Season Severity.	**CIFFC**	Not defined in CIFFC Glossary of Terms.

Quebec has recently done some analysis of a seasonal severity index (sum of all daily severity indices of all weather stations). Based on the analysis they are able to do some comparisons of fire season severity with past seasons.

Several agencies use the term fire season severity as a qualitative assessment of each season (Low, Medium, High, Extreme) but don't follow documented criteria for making the assessment. The assessment of fire season severity is often made by individual fire managers and is not formally recorded in a database. This makes comparisons of fire seasons more based on fire manager memory than on the statistical record.

Table 16: Annual Wildfire Hectares Burned in Canada

WILDFIRE HECTARES TOTAL AREA CONSUMED (HECTARES)												
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Avg.	2013
BC	264,733	220,468	35,091	135,634	28,704	11,939	229,566	331,508	12,357	102,042.00	137,204	18,218.00
YT	49,037	1,817,511	170,691	95,033	41,288	18,845	227,057	146,957	39,091	58,280.00	266,379	238,790.00
AB	55,482	234,764	60,602	118,782	105,321	20,644	66,825.77	83,643	940,596	337,000.00	202,366	21,888.37
NT	127,822	515,622	224,632	53,398	439,886	353,852	2,056.85	333,435	406,693	297,617.92	275,501	512,277.59
SK	126,591	258,441	213,524	1,203,722	212,907	1,130,179	37,559.37	1,734,799	343,720	227,512.00	548,895	312,194.00
MB	430,170	23,117	72,680	166,050	206,924	150,673	2,872	187,494	126,844	216,888.00	158,371	1,160,965.00
ON	314,220	1,616	42,308	149,518	40,591	1,314	20,655.70	14,824	635,373	151,564.00	137,198	43,422.00
QC	87,861	3,044	831,022	124,176	342.682	1,481	93,971.70	314,884	12,726	70,086.00	153,959	1,872,842.00
NL	36,534	2,362	22,834	3437	10,892	5,140	35,267.20	1,020	594	225,524.00	34,360	30,489.30
NB	237	289	355	507	446	143	249	156	45	362	279	872.40
NS	1,257	291	517	1,576	692	2,719	891.75	463	136	817	936	301.30
PE	12	16	50	51	20	8	3.09	5	6	11.88	18	55.00
PC	141,134	197,904	32,142	2,768	222,134	4,439	38,429.57	5,912	85,653	273,037.20	100,355	77,480.00
TOTAL	1,635,090	3,275,445	1,706,448	2,054,652	1,310,148	1,701,376	755,405	3,155,100	2,603,833	1,960,742	2,015,824	4,289,794.96

Table 16: Annual Wildfire Hectares Burned in Canada (Source: CIFFC Canada Report 2013)

Using the amount of resource sharing that has taken place as a measure of fire season severity has limitations as well. An analysis conducted during the NRCan audit of CIFFC found no statistically valid relationships between the level of resource-sharing and fire activity, as reflected through the number of fires and area burned; that is, the years with the highest level of fire activity (expressed by the numbers of fires/area burned) were not necessarily correlated with the years with the most resource sharing activity.

Thus resource sharing may be more related to the proportion of fires requiring a large commitment of resources rather than absolute numbers of fires. A season with an average number of fires but a higher-than-average number of contentious/challenging fires might be more severe than a year with many fires but relatively few that became large or overly challenging.

Figure 1: Personnel Mobilized 1982-2013

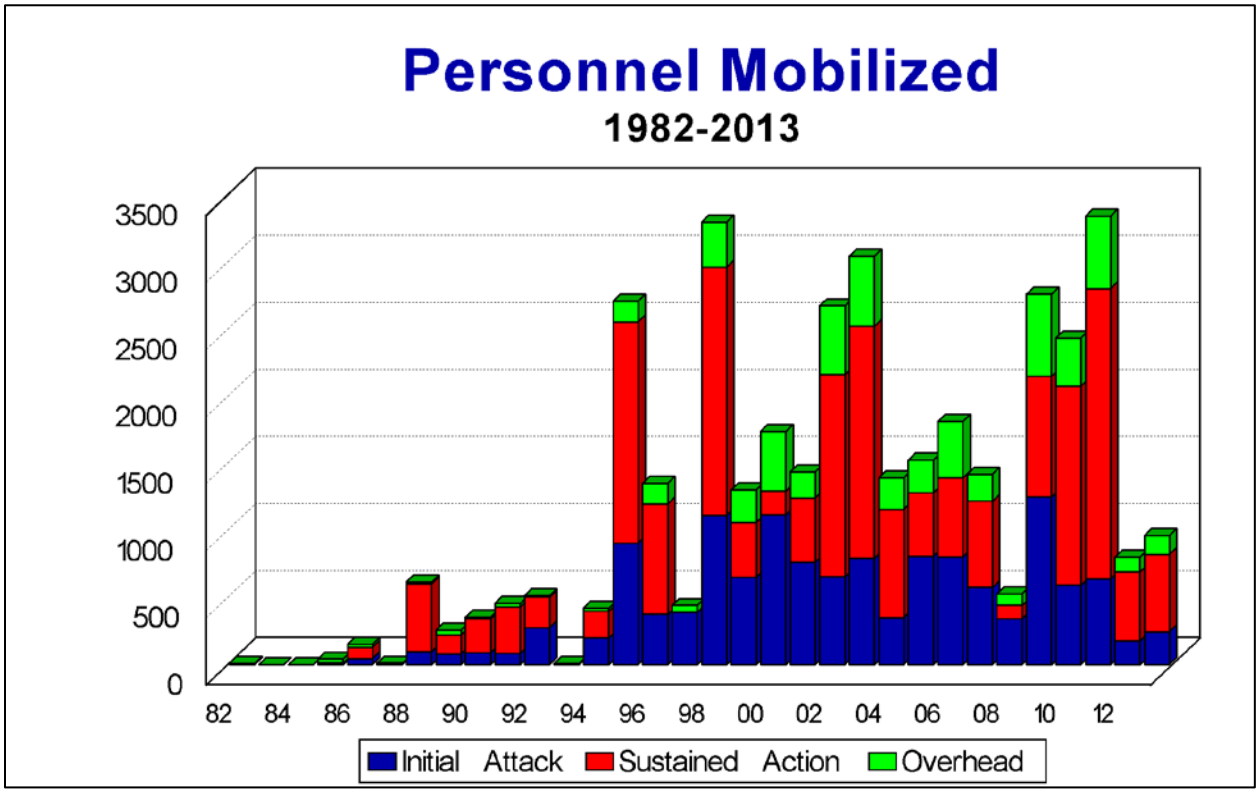

Figure 1: Personnel exchanged through CIFFC 1982-2013 (Source: CIFFC)

Climate researchers have used a Cumulative Severity Rating (CSR) when working with models to predict the fire load in future decades. The CSR is a weather based fire danger metric used to examine the potential influence of climate change on global fire season severity. Using a severity rating based only on observed weather parameters to describe current or previous fire seasons has limitations because fire arrival numbers can vary significantly from year to year even with similar weather conditions.

Other ways to measure the severity of a fire season include factors such as the number of injuries or fatalities, the financial cost of a fire season, the number of values lost during a fire season, the number of fires that required deployment of Type 1 IMT's, and the number of unfilled resource orders in a season.

It may be beneficial to consider a measure that includes qualitative and quantitative information. A measure of fire season severity could consider fire weather, fire load, resource needs and resource sharing ability. One approach to consider is a severity rating based on the CIFFC Agency Preparedness Levels. Fire agencies across Canada report preparedness levels to CIFFC on a daily basis during the fire season once the agency fire centre is operational. The

preparedness levels for each member agency are shown daily in the National Wildland Fire Situation report.

Table 17 shows the factors that are considered when determining the agency preparedness level. Agency response personnel review quantitative information such as fire weather indices, number of new and ongoing fires and number of resources orders made. Qualitative information such as anticipated fire load and potential for seeking assistance is also considered. Finally a subjective judgment is made by knowledgeable and experienced personnel of the preparedness level for the day.

Table 17: Agency Preparedness Levels

	Level 1	Level 2	Level 3	Level 4	Level 5
Agency Fire Hazard	Low	Low-Mod	Mod-High	High-Extreme	Extreme
Current Fire Load	Low	Low-Mod	Mod-High	High	High-Extreme
Anticipated Load (7days)	Low	Moderate	High	High-Heavy	Heavy
Agency Resource Levels	Adequate	Adequate	Some Assistance	Assistance req.	Inadequate
Ability to Respond to CIFFC Resource Sharing Requests	Excellent	Good	Mod-Poor	Poor-Nil	No Ability
Potential for Requesting Out of Country Resources and/ or Military Support	Nil	Nil	Nil	Increasing	Consideration

Presumably, a fire season with numerous days ranked at levels 4 and 5 would be more severe than a fire season with preparedness levels mostly in the 1 and 2 range.

In order to improve national situational awareness and the quality of the data related to Agency preparedness levels, agencies should work with CIFFC to develop procedures to follow for determining the daily preparedness levels on a consistent basis. Agencies should carry out training to ensure that fire centre staff are aware of the criteria and procedures to follow when determining preparedness levels. This will help maintain consistency as different people cycle through the fire centre and are made responsible for determining the daily preparedness levels.

Table 18: Agency Preparedness Levels 2009-2013

2009	BC*	YT*	AB*	NT	SK	MB	ON	QC	NB	NS	PE	NL*	PC*
Level 1	18	37	32	72	86	102	82	92	89	58		92	23
Level 2	35	26	65	39	18	17	32	19	29	40		20	51
Level 3	19	31	16		13		5	8	2	19		5	18
Level 4	30	19	6		1			1					
Level 5	10												
Number of Days	112	113	119	111	118	119	119	120	120	117		117	92
% of Days Levels 4 or 5	36	17	5	0	0.8	0	0	0.8	0	0	0	0	0

2010	BC	YT	AB*	NT	SK*	MB*	ON	QC*	NB	NS*	PE	NL	PC*
Level 1	39	23	49	38	32	48	62	51	78	47	18	91	25
Level 2	15	59	60	36	62	28	42	30	35	63		24	65
Level 3	34	25	12	29	22	34	4	21	2	8			9
Level 4	7	2		3	1	5	13	20					
Level 5		1											
Number of Days	95	110	121	106	117	115	121	122	115	118	18	115	99
% of Days Levels 4 or 5	7	3	0	3	0.8	4	11	16	0	0	0	0	0

2011	BC	YT	AB	NT	SK	MB	ON*	QC	NB	NS	PE	NL	PC
Level 1	73	80	22	38	87	31	18	103	103	92	18	97	27
Level 2	9	22	54	47	15	46	40	12	7	23		17	64
Level 3		6	10	26	18	34	18	6		2		3	1
Level 4		1	34	2			46						
Level 5					1								
Number of Days	82	109	120	113	121	111	122	121	110	117	18	117	92
% of Days Levels 4 or 5		0.9	28	1.8	0.8	0	38	0	0	0	0	0	0

2012	BC	YT*	AB*	NT	SK	MB*	ON*	QC*	NB*	NS*	PE	NL*	PC
Level 1	45	76	40	28	100	38	13	67	66	39	19	57	27
Level 2	32	30	40	37	24	50	56	42	42	56		53	41
Level 3	10	3	37	38		26	52	16	15	14		10	23
Level 4		3	7	14		7	5	4	1	1		4	
Level 5				2									
Number of Days	87	112	124	119	124	121	126	129	124	110	19	124	91
% of Days Levels 4 or 5	0	3	6	13	0	6	4	3	1	1	0	3	0

2013	BC	YT*	AB	NT	SK	MB*	ON	QC	NB	NS	PE*	NL*	PC
Level 1	42	52	64	20	86	7	51	60	87	54	23	74	15
Level 2	45	35	29	52	21	62	41	19	10	42		9	52
Level 3	5	8	16	22	1	32	16	16	2	5		15	20
Level 4		8	1	2		1		9					
Level 5													
Number of Days	92	103	110	96	108	102	108	104	99	101	23	98	87
% of Days Levels 4 or 5	0	8	1	2	0	1	0	9	0	0	0	0	0

*Indicates the number of fires reported were above the 10 year average.

Yellow shading indicates the agency reported more fires than the 10 year average and also reported Agency Preparedness Levels in the 4 to 5 range during the season.

Tan and Red Shading indicate reaching Levels 4 or 5.

Table 18 (previous page) shows Agency Preparedness Levels that were reported to CIFFC during the 2009 -2013 fire seasons.

There are a number of factors that limit the quality of the data from the 5 year period:

- There has not been a strong emphasis placed on the importance of reporting the Agency Preparedness Level.
- Procedures have not been developed for determining the Agency Preparedness Level.
- Training curriculum has not been developed to ensure consistency amongst the agencies and within an individual agency.
- All agencies do not report daily once their fire centres become operational (BC does not normally report on weekends).

With a cosistent approach for determining the preparedness levels and more analysis, it may be possible to develop a ranking system for Low, Medium, High and Extreme fire season severity. The ranking would be based on the number of days or percentage of days throughout the fire season that an agency experiences each of the 5 preparedness levels.

Recommendation 10

CIFFC and member agencies should carry out analysis of the use of Agency Preparedness Levels as a means for quantifying fire season severity and to develop a system that will allow for the consistent year over year ranking of severity nationally and across agencies

Stages of Control

Wildland fire agencies use a variety of terms to identify the stage of control of a wildfire. Most terms refer to the progress related to the establishment of control lines and extinguishment of interior islands and spot fires. Some refer to the response actions such as protecting values, being patrolled, being assessed, being monitored or being observed.

The term *Under Control* as defined in the CIFFC Glossary of Terms is used by most agencies. Alberta and New Brunswick provided different definitions for the term.

- CIFFC Glossary - Having received sufficient suppression action to ensure no further spread of the fire.
- Alberta - A wildfire has sufficient (suppression) action and the entire fire perimeter is secured from further spread. Fireline perimeter has mechanical, handline, and/or natural barriers with a high confidence level of no further acreage loss through predicted weather and present resources.
- New Brunswick - Fire contained within all breaks or wetlines. Fire activity low with occasional flare-ups. Likelihood of jump/escape fires minimal. Demob being considered, mop-up actions underway.

The mobilization of Incident Management Teams (IMTs) across the country has increased over the last number of years.

IMTs develop and implement Incident Action Plans and communicate fire status and stage of control to agency management, affected stakeholders, the public and the media. Fire crews are given suppression objectives related to placing a fire or section of fire in a state of being held, under control or being contained by a specified time of a day.

It would be beneficial for all involved if there was common terminology for identifying the stages of control.

The terminology should be based in criteria that are easily understood and measureable. The terminology should provide a clear understanding of the status of the fire but not convey undue concern for the public or media.

Table 19: Stages of Control Used in Canada

Agency	Not Contained	Contained	Ongoing Assessment	Protecting Values	Out of Control	Not Under Control	Being Held	Under Control	Being Patrolled	Being Observed (Monitored)	Being Watched	Turned Over	Mop Up		Out	Extinguished	No Action
BC		■			■				■				■		■		
AB					■		■	■				■				■	
YT					■		■	■	■	■					■		
NT					■		■	■		■					■		
SK	■	■	■	■											■		
MB					■		■	■			■	■			■		■
ON						■	■	■		■					■		
QC					■		■	■		■					■		
NB		■			■			■	■						■		
NS					■		■	■	■	■					■		
PE																	
NL		■			■			■							■		
PC																	
CIFFC					■		■	■	■	■					■		

It is understood that implementing common terminology in all agencies would require a significant change in current agency procedures, forms and information systems, and could not be implemented immediately. However, there would be significant benefits to all agencies – internally and nationally – in moving to standardized definitions for stages of control.

The following terminology and definitions from the CIFFC Glossary of Forest Fire Management Terms should be considered for the national standard.

Note:

> The term *Out of Control* has been replaced with the term *Not Under Control*. *Out of Control* could be understood by the public or media to imply that a fire is burning uncontrollably and spread is limitless. Not all fires that are *Out of Control* pose a threat to the public or place values at risk. The term *Not Under Control* is more consistent with the CIFFC glossary definition that states that the fire may only be responding on a limited basis to suppression action.
>
> The term *Being Observed* has been replaced with the term *Being Monitored* to be more consistent with agencies that use the term Monitored as a response option in their Fire Management Strategy.

Recommended Stages of Control

(Modified from the CIFFC Glossary of Forest Fire Management Terms)

Not Under Control - Describes a wildfire not responding or only responding on a limited basis to suppression action such that perimeter spread is not being contained.

Being Held - Indicates that with currently committed resources, sufficient suppression action has been taken that the fire is not likely to spread beyond existent or predetermined boundaries under prevailing and forecasted conditions.

Being Monitored- Currently not receiving suppression action, due to agency policy and management guidelines.

Under Control - Having received sufficient suppression action to ensure no further spread of the fire.

Being Patrolled - In a state of mop-up, being walked over and checked.

Out - Having been extinguished.

Recommendation 11

Wildland fire agencies in Canada should adopt standard terminology and criteria, as defined in the CIFFC Glossary of Forest Fire Management Terms, for describing the status or stage of control of a fire.

Fire Containment

The use of the term "Contained" has increased in recent years although several agencies do not have an official definition for the term. For many, it is a judgment call rather than a statement based on clearly defined criteria.

Those agencies that have defined the term and use it as one of their stages of control have come up with different definitions. Contained is used by Newfoundland, New Brunswick, Saskatchewan and British Columbia. The four agencies provided the following definitions.

- Saskatchewan - Suppression action is taking place and the fire is not expected to grow in size.
- New Brunswick - Fire contained within a bulldozed break or wet-line. Fire activity still occurring on any or all flanks. Flanks are easily challenged but efforts are holding fires within established firebreaks. Jump/escape fires possible.
- Newfoundland - With currently committed resources, sufficient suppression action has been taken that the fire is not likely to spread beyond existent or predetermined boundaries under prevailing and forecasted conditions.
- British Columbia – Having a contained perimeter around the fire.

In the United States, the NWCG provides the following definition for contained.

- The status of a wildfire suppression action signifying that a control line has been completed around the fire, and any associated spot fires, which can reasonably be expected to stop the fire's spread.

The concept of fire containment is probably easier for the media and members of the public to understand than operational terms such as Not Under Control or Being Held and should be considered for use across the country.

Recommendation 12

It is recommended that agencies use the term *"Contained"* to describe the percentage of a fire that has been identified as under control. For example, on a large fire with 6 Divisions, if 3 Divisions were *Under Control*, the fire would be considered as 50% contained.

Summary

The use of common terminology in wildfire response can help prevent misunderstanding during emergency situations. The use of common terminology can also help responders, the public and media to better understand the local and national fire situation.

In 2002, CIFFC and wildland fire agencies across Canada made a significant step forward in adopting some common terminology when the Incident Command System was implemented. Since then, resource sharing has increased and the demand for more common language, terminology and data standards has also increased.

Updating and revising the CIFFC Glossary of Forest Fire Management Terms on a regular basis will help support the use of common language and terminology.

Adopting a common national fire cause classification system will enable fire managers to carry out fire cause analysis on a national basis and support fire prevention efforts, FireSmart initiatives and the National Forestry Database.

The use of a common size classification system will support analysis of fire load across the country and support efforts to develop national resource needs forecasting models.

A common fire type classification system will help promote national situation analysis and support CIFFC and wildland fire agency resource needs forecasting.

For years, wildland fire agencies have looked for a relatively simple method of assessing fire season severity. It may be beneficial to consider a measure that includes qualitative and quantitative information. A measure of fire season severity based on the Agency Preparedness Levels should be considered.

This report makes several recommendations related to the adoption of common language and terminology. As agencies build and make improvements to their information management systems they should work with CIFFC and the other wildland fire agencies to adopt common data standards that will enable better management and sharing of forest fire data and information.

Resource Documents

CIFFC Glossary of Forest Fire Management Terms, 2003

Forest Fires in Europe, Middle East and North Africa 2012

Harmonized Classification Scheme of Fire Causes in the EU Adopted for the European Fire Database of EFFIS, 2013

International Handbook on Forest Fire Protection – Technical Guide for Countries of the Mediterranean Basin

Managing Efforts to Prevent Forest Fires in South America, 2004

NWCG Glossary of Wildland Fire Terminology, 2012

Annex 1: Survey – Common Terminology

(Survey sent to each Wildland Fire Agency)

In early 2012 the Wildland Fire Management Working Group (WFMWG) commissioned a survey of the wildland fire management agencies, gathering data on recent observations and forecast trends in a variety of parameters related to wildland fire load and agency resource capacity. Agencies provided both quantitative data and more qualitative inputs.

The resulting report indicated some trends of interest concerning changes in fire load and resource capacity. However, drawing an overall conclusion about these conditions across Canada was hampered by incomplete, inaccessible and inconsistent datasets. Among these issues it was noted that agencies used varying definitions for common terms, inconsistent standards for important data elements, and that some agencies did not record, or could not retrieve, data elements that are needed to create a more meaningful analysis of fire load and resource capacity issues across the agencies.

The WFMWG would like to investigate further these issues related to a lack of common terminology and data standards, more fully document the similarities and differences in usage across the agencies, and develop recommended actions that would lead the agencies towards more common definitions and standards.

The objective of this survey is to gather additional information for review and analysis of specified terminology and data standards in use across Canada's wildland fire management agencies. Recommendations will be developed for moving towards more common language, terminology and data standards to enable improved understanding and data sharing across the agencies.

Please submit completed surveys and information or questions related to this survey to Grahame Gordon at… wildfiremanagement@shaw.ca

Agency name:

1. Please provide definitions that your agency uses for the following classification systems. If your agency does not use a classification system listed below, please indicate so in the text box.

If your agency has a definition or description of one or more of these classification systems in an operational manual or policy document, a scanned copy in a pdf format will suffice. You can attach the file to an email message and indicate in the text box below that a file is attached.

Fire cause classification

Example – Some agencies use the following classifications for fire cause: lightning, recreation, resident, railway, miscellaneous, industrial (other), industrial (forest), incendiary, unknown

Please use as much space as needed below to provide a description of how your agency defines fire causes. What are the rules that you use to assign a fire cause? (or provide a pdf file with the definition/description)

How is data/information related to Fire Cause stored?
How is data/information related to Fire Cause retrieved?

Fire size classification

Example – Does your agency have a system for classifying fires by size? The following size classification system is defined in the CIFFC Glossary of Terms:

No.	Letter	Area (ha)
1	A	up to 0.1
2	B	0.11 -1.0
3	C	1.1 -10
4	D	10.1 -100
5	E	100.1 -1000
6	F	1000.1 -10,000
7	G	10,000.1 -100,000
8	H	over 100,000

Please use as much space as needed below to provide a description of how your agency classifies fires by size (or provide a pdf file with the definition/description)

How is data/information related to Fire Size stored?
How is data/information related to Fire Size retrieved?

Fire type classification

Example – Does your agency have a system for classifying the types of fires? Some agencies use the ICS system for classifying the types of fires. Type 5 is the least complex, while Type 1 is the most complex.

Levels and Types of ICS Management

Type 5 Fire
Initial attack
Short duration, seldom lasting into the next burn period
Few resources assigned (generally fewer than 6 people)
Little complexity

Type 4
Initial attack or first response to an incident.
The Incident Commander (IC) is a “hands on” leader and performs all functions of Operations, Logistics, Planning, and Finance
Few resources are used (several individuals or a single strike team)
Normally limited to one operational period
Does not require a written Incident Action Plan (IAP)

Type 3
Extended initial attack on wildland fires.
IC walks the line between a manager and a 'doer'
Resources may vary from several single resources to several task forces or strike teams
Some Command/General Staff positions (ie, Division Supervisor, Unit Leader), may be filled
May extend into another operational period (12 hours), and require an IAP

Type 2
IC spends all time being a manager
Most Command and General staff positions are filled
Large number of resources utilized
Incident extends into multiple operational periods
Base camp(s) established
Significant logistical support is required

Type 1
All functions are filled, plus leaders, branches etc.
Multi-agency and national resources

Please use as much space as needed below to provide a description of how your agency classifies fires by type (or provide a pdf file with the definition/description)

How is data/information related to Fire Type stored?
How is data/information related to Fire Type retrieved?

2. Please provide definitions that your agency uses for the following terms. If your agency does not use a term listed below, please indicate so.

If your agency has a definition or description of one or more of these terms in an operational manual or policy document a scanned copy in a pdf format will suffice. As above, you can attach the file to an email message and indicate in the text box below that a file is attached.

Initial Attack Fires

Please use as much space as needed below to provide a definition (or provide a pdf file with the definition/description)

Sustained Action Fires

Please use as much space as needed below to provide a definition (or provide a pdf file with the definition/description)

Modified Response Fires

Please use as much space as needed below to provide a definition (or provide a pdf file with the definition/description)

Monitored Response Fires

Please use as much space as needed below to provide a definition (or provide a pdf file with the definition/description)

Full Response Fires

Please use as much space as needed below to provide a definition (or provide a pdf file with the definition/description)

Other terms used by your agency to describe Response or Attack methods not listed above.

Please use as much space as needed below to provide definitions (or provide a pdf file with the definition/description)

How does your agency define Initial Attack Success?

Please use as much space as needed below to provide a definition (or provide a pdf file with the definition/description)

How does your agency define the term Fire Season?

Please use as much space as needed below to provide a definition (or provide a pdf file with the definition/description)

How does your agency measure or define fire season severity?

Please use as much space as needed below to provide a definition (or provide a pdf file with the definition/description)

How does your agency measure or define the term Fire Load?

Please use as much space as needed below to provide a definition (or provide a pdf file with the definition/description)

How does your agency define stage of control or status of a fire?

Example – Some agencies use the following terms from the CIFFC Glossary of Terms to describe the control status of fires.

Out of Control - Describes a wildfire not responding or only responding on a limited basis to suppression action such that perimeter spread is not being contained. Synonym - Not Under Control.

Being Held - Indicates that with currently committed resources, sufficient suppression action has been taken that the fire is not likely to spread beyond existent or predetermined boundaries under prevailing and forecasted conditions.

Being Observed - Currently not receiving suppression action, due to agency policy and management guidelines.

Under Control - Having received sufficient suppression action to ensure no further spread of the fire.

Being Patrolled - In a state of mop-up, being walked over and checked.

Out - Having been extinguished.

Please use as much space as needed below to provide a definition (or provide a pdf file with the definition/description)

Thank you for providing information to support the development of more common language, terminology and data standards for wildland fire management in Canada.