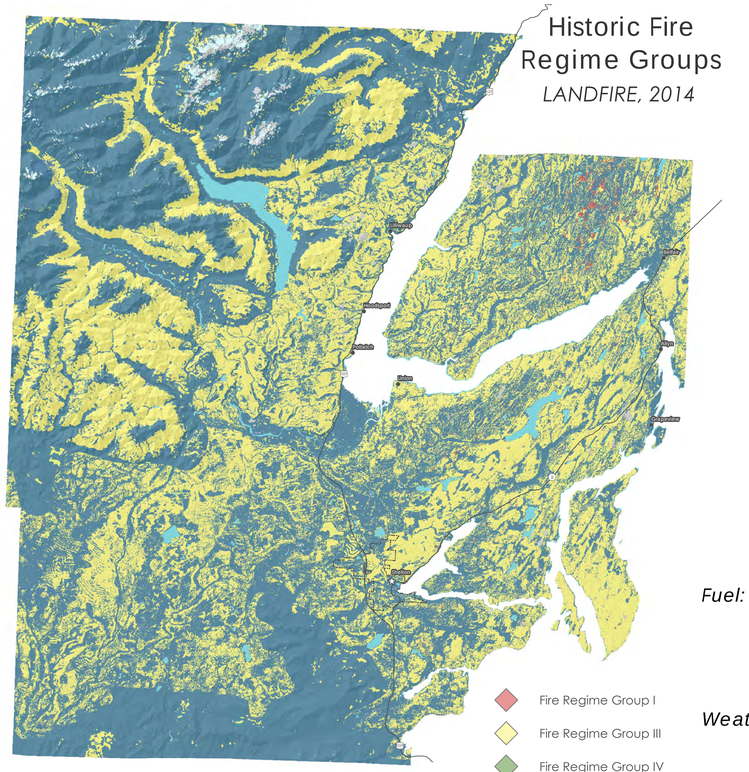
Mason County Wildfire Risk

Historic Fire Regime Groups

LANDFIRE, 2014



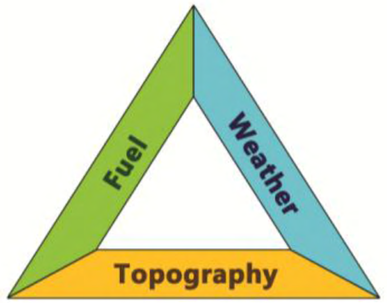
- Fire Regime Group I
- Fire Regime Group III
- Fire Regime Group IV
- Fire Regime Group V
- Sparsely Vegetated
- Water
- Barren
- Snow/Ice

Many ecosystems are adapted to historical patterns of fire. These patterns are called "fire regimes," which refers to the frequency and intensity of natural fires occurring in various ecosystem types. Alterations of historical fire regimes and vegetation dynamics have occurred in many landscapes in the U.S., including Mason County through the combined influence of land management practices, fire exclusion, insect and disease outbreaks, climate change, and the invasion of non-native plant species. Wildfire abatement practices have reduced the spread of wildfires after ignition. This has reduced the risk to both the ecosystem and the urban populations living in or near forestlands, such as portions of Mason County.

The LANDFIRE Project produces maps of simulated historical fire regimes an also produces maps of current vegetation and measurements of current vegetation departure from simulated historical reference conditions. These maps support fire and landscape management planning outlined in the goals of the National Fire Plan, Federal Wildland Fire Management Policy, and the Healthy Forests Restoration Act.

The historical fire regime groups simulated in LANDFIRE categorize mean fire return interval and fire severities into five regimes defined in the Interagency Fire Regime Condition Class Guidebook:

- Regime I: 0-35 year frequency, low to mixed severity
- Regime II: 0-35 year frequency, replacement severity
- Regime III: 35-200 year frequency, low to mixed severity
- Regime IV: 35 -200 year frequency, replacement severity
- Regime V: 200+ year frequency, any severity



Key Factors Affecting Wildfire Behavior:

Fuel: *Lighter fuels such as grasses, leaves and needles quickly expel moisture and burn rapidly, while heavier fuels such as tree branches, logs and trunks take longer to warm and ignite. Snags and hazard trees—those that are diseased, dying, or dead—are larger but less prolific west of the Cascades than east of the Cascades. In 2002, about 1.8 million acres of the state's 21 million acres of forestland contained trees killed or defoliated by forest insects and diseases.*

Weather: *Relevant weather conditions include temperature, relative humidity, wind speed and direction, cloud cover, precipitation amount and duration, and the stability of the atmosphere. Of particular importance for wildfire activity are wind and thunderstorms:*

– Strong, dry winds produce extreme fire conditions. Such winds generally reach peak velocities during the night and early morning hours. East wind events can persist up to 48 hours, with wind speed reaching 60 miles per hour. Being a coastal community, the County experiences significant winds on a fairly regular basis during all times of the year.
– The thunderstorm season typically begins in June with wet storms, and turns dry with little or no precipitation reaching the ground as the season progresses into July and August.

Topography: *Topography includes slope, elevation and aspect. The topography of a region influences the amount and moisture of fuel; the impact of weather conditions such as temperature and wind; potential barriers to fire spread, such as highways and lakes; and elevation and slope of land forms (fire spreads more easily uphill than downhill).*

Time of Day: *A fire's peak burning period generally is between 1 p.m. and 6 p.m.*

Forest Practices: *In densely forested areas, stands of mixed conifer and hardwood stands that have experienced thinning or clear-cut provide an opportunity for rapidly spreading, high-intensity fires that are sustained until a break in fuel is encountered.*

Fires are Categorized by Fuel Type:

Smoldering *Involves the slow combustion of surface fuels without generating flame, spreading slowly and steadily. Smoldering fires can linger for days or weeks after flaring has ceased, resulting in potential large quantities of fuel consumed. They heat the duff and mineral layers, affecting the roots, seeds, and plant stems in the ground. These are most common in peat bogs, but are not exclusive to that vegetation.*

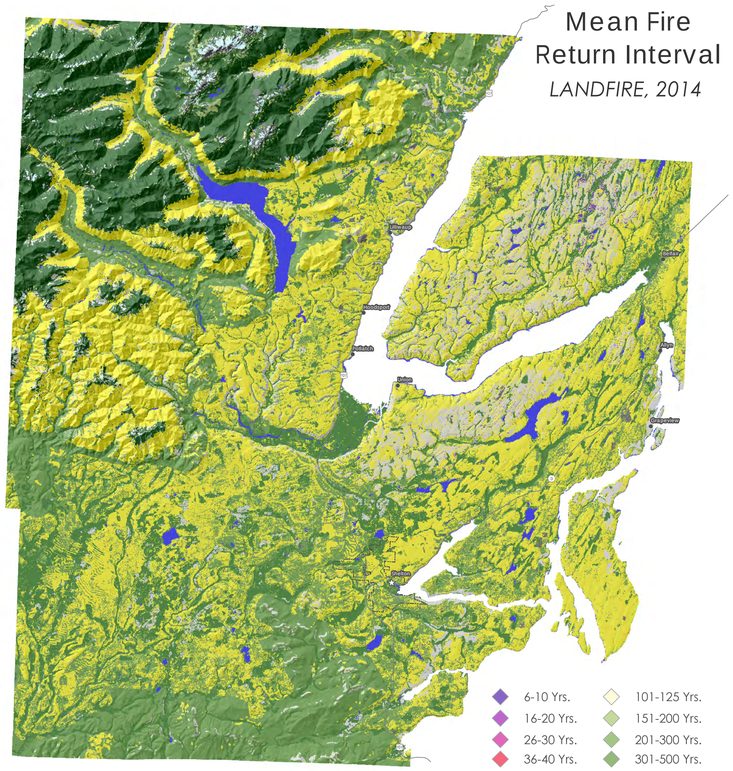
Crawling *Surface fires that consume low-lying grass, forest litter and debris.*

Ladder *Fires that consume material between low-level vegetation or forest floor debris and tree canopies, such as small trees, low branches, vines, and invasive plants.*

Crown *Fires that consume low-level surface fuels, transition to ladder fuels, and also consume suspended materials at the canopy level. These fires can spread rapidly through the top of a forest canopy, burning entire trees, and can be extremely dangerous (sometimes referred to as a "Firestorm").*

Mean Fire Return Interval

LANDFIRE, 2014



- 6-10 Yrs.
- 16-20 Yrs.
- 26-30 Yrs.
- 36-40 Yrs.
- 71-80 Yrs.
- 91-100 Yrs.
- Water
- Barren
- 101-125 Yrs.
- 151-200 Yrs.
- 201-300 Yrs.
- 301-500 Yrs.
- 501-1,000 Yrs.
- >1,000 Yrs.
- Snow / Ice
- Sparsely Vegetated
- Indeterminate Fire Regime Characteristics

The Mean Fire Return Interval layer quantifies the average period between fires under the presumed historical fire regime, its intent to describe one component of historical fire regime characteristics. As illustrated, the average Mean Fire Return Interval for the majority of Mason County is every 70-100 years.

Mason County Historic Fire Events 5 Acres or Greater

Date	Name	Acres Burned	Complexity
7/7/2004	Island Shore Fire	10.4	Unknown
4/25/2006	Razor Fire	5.6	Unknown
8/29/2006	South Loop Fire	15	Unknown
9/2/2006	Dewatto 2 Fire	61	Unknown
9/7/2006	Pipeline 2 Fire	5	Unknown
7/12/2007	Shelton Valley Rd. Fire	13	Unknown
7/1/2007	Martin Road Fire	15	Unknown
9/7/2008	East Cushman	10	Unknown
8/2/2009	Eels Hill Road	13.2	4
8/25/2009	Vance Creek	16.3	3
8/15/2010	Richert Road	84.4	3
8/17/2011	Eells Hill	51.2	3
9/11/2012	School	10.4	4
9/12/2012	Carney Lake	5	4
9/26/2012	Powerline	9.3	4
10/4/2012	Powerline 2	229	2
8/10/2014	Mill 5	21	4
8/11/2014	Haven Lake	185	2
9/6/2014	Boyer Road	11	4
11/16/2014	WC 131	37	4
6/22/2015	Kamilche	5	4
7/31/2015	Deckerville	107	3
8/27/2015	Sunnyside	58	3
5/27/2016	Lynch Pit	7.1	4

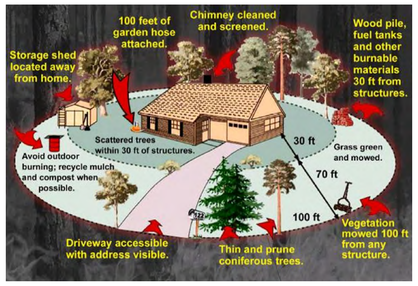
How do Wildfires spread?

Wildfires may spread by jumping or spotting, as burning materials are carried by wind or firestorm conditions. Burning materials can also jump over roadways, rivers, or even firebreaks and start distant fires. Updraft caused by large wildfire events draw air from surrounding area, and these self-generated winds can also lead to the phenomenon known as a firestorm. Wildfires can create their own climate – making them very unpredictable.

Wildfire Incidents by Cause

Cause / Year	Arson	Children	Debris Burning	Lightning	Miscellaneous*	Rail-road	Recreation	Smoker	Undetermined or Under Investigation
2009	5		4	1	11		3	2	2
2010	3	1	1		6		4	2	
2011	3	3	4		11		6		
2012	10	2	3		5		5		2
2013		2	2		7	1	6	1	
2014			5	1	11				14
2015	1	2	3	1	18		6	3	21
2016	1		15		6		7	2	18
Total	23	10	37	3	75	1	37	10	45

What can you do to protect your home from wildfires?



Total Number Wildfire Events 2009-2016

Year	Total Number of Wildland Fires	Total Acres Burned
2009	26	42.9
2010	17	91.31
2011	26	55.52
2012	42	262.94
2013	18	4.44
2014	33	261.77
2015	54	183.65
2016	53	25.8
Total	269	928.33

BRIDGEVIEW CONSULTING

Date: July 8, 2017
Sources: Mason County GIS; LANDFIRE; WADOT; WAOFM