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The 2022 Wildfire Season is Well Underway. The 2022 wildfire season is well underway. Already [June 27, 2022] 31,000 fires have burned 3,360,037 acres – about two and one-half times the pace of 2021 *and* the 10-year average! This this is not surprising. We know what to do to slow the destruction, yet we seem to halt at success, for some reason.

THIS IS KEY.

Unfortunately, most still tend to forget the horrific destruction from the previous year due to unplanned wildfires. The emphasis to adjust practices diminishes. Rhetorically, can most recall the Camp Fire and Paradise, California? What about Greenville?

Now, Alaska, Arizona, New Mexico, Colorado, Texas and California are in the wildfire caldron and it's still only June.²

As the Washington Post reported, the National Weather Service concluded, "...When it comes to wind and fire weather, there are bad days, really bad days, and really, really bad days," the office tweeted. "Friday [April 22, 2022] is going to be a really, really bad day." There will be other "really bad days." Please help with this National Emergency. The same can be concluded as of this update.

Yes, there has been some action and even additional funding secured. But no cohesive approach has emerged. This is what the *Call to Action* is trying to address: declare a National Emergency and form an effective coalition to address this National Emergency. That is, due to the lack of forest maintenance, wildfires have become larger and more destructive than ever before. This document outlines a way to resolution. Go to Appendix A.13 to see the full "Transitioning the *Call to Action* into 2022" text.

We are now in revision 13.6 of the "Call to Action." We continue to tell the story and seek the needed change. The debate on "managed fire" continues. There should be no debate; not now. As stated above, the current landscape conditions will not allow "managed fires" or "beneficial fires" or a "let it burn" policy; period! See page 9. This is a National Emergency, let there be no doubt. This Administration must react effectively, now. There seems to be some proposed action³, but still no cohesive program direction. Additional rhetoric cannot be tolerated.

Please share your voice for change!

² <https://www.washingtonpost.com/weather/2022/04/22/fire-threat-west-colorado-newmexico/>

³ [Padilla Introduces Slate of Bills to Help California Respond and Recover from Wildfires^{\(PDF\)} - Senator Alex Padilla \(senate.gov\)](#)

America's Forests in the Balance: A National Emergency:

A Call to Action

Executive Summary

The following represents a *Call to Action* -- a plea for a dedicated national effort to reduce the destructive impacts of uncontrollable wildfires. The *Call to Action* -- described in detail beginning on page 24 of this document, includes a:

THIS IS KEY.

- National Emergency Commitment.
- Statement of Intent [example].
- Vision.
- Strategy.
- 10-Year Plan of Work.

The majority of this document establishes the foundation for the *Call to Action*.

"...Putting all fires out immediately is very cost effective; large fires are unimaginably expensive and destructive. On average, total economic losses can range between 15 to 30 times direct suppression costs. So, at this point in time, it is critical to put all fires out quickly with an aggressive Initial Attack. The losses in life and land from wildfires are completely unacceptable. It does not have to be this way. A *Call to Action* is required now. Please help!"

Clearly, we are facing an emergency: 90+ million acres, or more, of our national forestlands are at high-risk to large, destructive wildfires. Why? Because for over three decades, we have significantly underfunded forest maintenance work that could restore the health and resiliency of our landscapes and help prevent large, intense wildfires. By shifting money *from* sustainable forest maintenance actions *to* fire suppression, today's forests have become overgrown and act like tinderboxes. These tinderboxes cause larger, hotter, faster burning blazes that destroy everything in their path -- requiring billions of dollars each year to put out. It's a vicious cycle, and it's time we end it. How do we break the cycle?

We solicit an aggressive commitment -- *A Call to Action* -- from lawmakers to legislate and properly fund forest health maintenance work that creates and maintains a mosaic of vegetative stages that are productive and more resilient to catastrophic wildfire. By restoring the health of our landscapes, we break the cycle and help reduce the horrific destruction that these wildfires level against public health, infrastructure, and natural resources.

A Key Point: The \$1.2 trillion Infrastructure and Investment Jobs Act, signed on November 15, 2021, includes \$3.3 billion for wildfire risk reduction. While the mixture of funds -- about \$660 million annually for five years -- does not match the desired specifics illustrated on page 15 in this document, the total funds provided supports the *Call to Action*. This is very good news. For reference, we shall keep the amounts illustrated on page 16 with its the emphasis on forest maintenance. Also, for reference, this added investment represents about 25 percent of minimal needs. Accordingly, this is a good start. Focusing investments is fundamental. We must keep the momentum going forward and very targeted approaches to make a true difference in forest maintenance.

What can you do now? First, we all must better understand a *Logic Sequence* that enables fires to stay as small as possible. This is the foundation of the *Call to Action*. This *Logic Sequence* is as follows:

Logic Sequence

Keeping Fires Small *Logic Sequence*

Forest Maintenance Helps Keep Fires Small:

- ✓ Small fires = less risk to firefighters and the local citizenry:
 - Putting all fires out immediately is very cost effective; large fires are unimaginably expensive and destructive. On average, total economic losses range between 15 to 30 times suppression costs. So, for the foreseeable future, it is critical to put all fires out immediately with an aggressive Initial Attack.
 - The concept of “managed wildfire”, for now, is simply an intellectual argument with mostly disastrous results:
 - Keeping fires small = saving valuable watershed values, including critical habitat for wildlife:
 - Keeping fires small = fewer smoke pollutants impacting nearby communities, as well as the firefighters themselves:
 - Well trained leaders at the local level = the best utilization of resources to keep fires small.

Please read this document that clearly establishes the foundation for a *Call to Action* and consider signing this *Petition*. At the very least, share your voice of support in any way you feel is appropriate. We need your help.

The 2021 fire season is over, sometimes exceeding the very destructive 2020 pace.⁴ During the 2020 fire season, about 10.4 million acres burned. But it’s so much more than just acres burned. People are dying from fire and smoke, along with countless wildlife and domestic animals. Towns and communities are being wiped away. Stories of loss and grief are gut wrenching. The 2021 fire season was about as destructive as 2020. And, when we review the 2021 Omnibus Spending Bill that was approved, there is a status quo budget in terms of forest maintenance. Ditto for the 2022 budget, with minor exceptions. Yes, there are some planned investments planned in current infrastructure legislation [H.R. 3684] [+\$3.3 billion for a five-year plan], but these represent only about 25 percent of needs. Why are Congressional Representatives and Senators and other leaders not acknowledging this National Emergency? Together we can be a force to make a long-needed change for a long time. To this end, call your Members of Congress and advocate for expanded forest maintenance that enables healthy, resilient forests. Through legislation, funding and the optimization of our wildfire suppression strategies, we can dramatically decrease the threat of large, destructive wildfires.

⁴ [Geographic Area Coordination Center \(GACC\) Website Template \(nifc.gov\)](#)

To date, the 2022 fire season is far exceeding the very destructive pace of 2021. Use the following links to find contact information for lawmakers in your state and share your voice:

- **Senators:** https://www.senate.gov/general/contact_information/senators_cfm.cfm
- **Representatives:** <https://www.house.gov/representatives>
- **Governors:** <https://www.usa.gov/state-governor>
- **Mayors:** <https://www.usmayors.org/mayors/>

Foreword

The intent of this document is to establish the framework for a *Call to Action*. This *Call to Action* is designed to reduce the impacts of large, intense wildfires on people's lives, their communities, and lands along a rural to urban gradient resulting from lack of maintenance of America's forests.⁵ The results of this *Call to Action* shall have a positive global impact, as well. The goal is to advance this *Call to Action* to key decision-makers [i.e., the President of the United States; Members of Congress; USDA⁶ and DOI⁷ Secretaries; and other leaders] – as a way to secure support, advancement of the concepts presented and finally, deploy pragmatic actions.⁸ We cannot wait any longer for action. We are facing a national emergency.

As of June 27, 2022, there are 5,560 signatories for this *Call to Action*. We seem to be stalled. [Please consider signing on](#), or at the very least share your voice of support in any way that you feel appropriate.

COVID-19 Pandemic Update

When the original *Call to Action* was written, there was no COVID-19 pandemic. To date in the United States, 86,980,002 cases and 1,015,962 deaths have been reported – an average of about 17 percent of the global totals.^{9,10} With the coronavirus pandemic and new variants of the virus continuing to collide head-on with the harshness of the 2022 wildfire season,^{11,12} fire suppression tactics and care for firefighters and the citizenry has to change dramatically.¹³ This makes addressing a *Call to Action* even more urgent. Accordingly, even though the maintenance of forests remains the most important overall goal, as the COVID-19 pandemic is being fought throughout the world, the following are the “Top 10 Actions” that must be deployed now and for the foreseeable future:^{14,15}

⁵ In this *Call to Action*, the term *forest* represents more than just trees. For example, the Chaparral Forests of southern California and the wide-range of vegetation that make up the urban gradient, specific to the Wildland-Urban Interface.

⁶ USDA: United States Department of Agriculture.

⁷ DOI: Department of Interior.

⁸ Petition Link: <http://chn.g.it/bGsyZvSb>

⁹ <https://www.cnn.com/interactive/2020/health/coronavirus-us-maps-and-cases/>

¹⁰ <https://www.worldometers.info/coronavirus/>

¹¹ Wildfire Today™ reported on September 2, 2020 that 222 wildland firefighters have tested positive for COVID-19 and one has died. To date, actual numbers are hard to determine.

¹² <https://theconversation.com/smoke-from-wildfires-can-worsen-covid-19-risk-putting-firefighters-in-even-more-danger-145998>

¹³ Geographic Action Plans to help address COVID-19:: <https://www.nifc.gov/fireInfo/covid-19.htm>

¹⁴ A separate companion document to the *Call to Action* is also available highlighting the “Top 10 Action.”

¹⁵ Based on results, weather patterns so far, including the lack of precipitation, indications are the 2021 fire season will be equally as destructive as 2020, perhaps more.

1. Already, indications suggest the 2022 fire season will be far more destructive than 2021 and the COVID-19 pandemic will certainly still be with us. We must understand this and act accordingly or thousands of people will needlessly become ill or die.¹⁶
2. The concept of “managed wildfire” must be taken off the table for now; no exceptions [see detailed attention to this action on page 12. Clear, unambiguous direction from the Forest Service Chief’s Office on this matter cannot be overstated. And the direction must be corporately followed.
3. The goal is to put out every fire immediately.¹⁷ Reduce response time by at least 80 percent!
4. Smoke is a killer; please know this. We must keep it to a minimum. See No. 3, above.
5. More fully utilize smaller, more agile aircraft and helicopters. They come with much less people needed to effectively operate, thereby reducing the COVID-19 risk profile.
6. Use larger aircraft in a more appropriate role; their response time is slower. Keeping our focus on “Top 10 Action” No. 3 is key.
7. Fully utilize smokejumpers and other specialized firefighters to augment Initial Attack. [see page 23].
8. Pre-position resources much better than ever before. The current mantra must be: **“strive to be close to the incident, react quickly and put all wildfires out immediately.”**¹⁸
9. Seek added funds for the United States Forest Service.¹⁹ If only the COVID-19 pandemic and fire suppression tactics are addressed, the estimate is +\$1.7 billion. If delayed forest maintenance -- including hazardous fuels reduction -- is added, the *annual* cost is about +\$5.3 billion.²⁰ To be clear, the Forest Service does not have adequate funding to address the impacts of the historic 2021 year and what is projected to happen in 2022 without significant action by the United States Congress.^{21,22} See [Appendix A.1](#). **Again, the lack of forest and wildland maintenance to enhance ecosystems productivity over the last 30 years cannot be over stated.**²³
10. We must do all we can to keep people safe and well.

THIS IS KEY.

THIS IS KEY.

Faced with the added impacts of the COVID-19 pandemic, there are three fundamental steps that are inextricably linked as we continued to move into the 2022 fire season:

- **Behave very differently** to remain safe. For example, the notion of traditional, large fire camps in the foreseeable future seems irresponsible.

¹⁶ [Some COVID deaths are linked to Western wildfires, study shows | Fox News](#)

¹⁷ [Rep. McClintock and Rep. LaMalfa Introduce Legislation Requiring the U.S. Forest Service to Immediately Suppress Wildfires | Congressman Tom McClintock \(house.gov\)](#)

¹⁸ Pre-positioning in order to be more efficient and effective in fire suppression was carefully addressed in a letter to the USDA Secretary by the National Wildfire Institute dated May 4, 2020.

¹⁹ The Department of Interior will need to review their level of resources, as well.

²⁰ In response to the Senator Wyden-led letter addressed to the Forest Service Chief on April 30, 2020.

²¹ Congress is considering the Infrastructure Investment and Jobs Act. About \$3.3 billion is being targeted for “wildfire risk reduction” – about \$680 million annually for 5 years. This represent about 25 percent of the total needs.

²² Even with the funding provided in the infrastructure legislation, this represents only about 25 percent of Forest Service requirements.

²³ Current predictions indicate the 2021 fire season will more destructive. And, when reviewing the 2021 Omnibus Spending Bill just approved, there is a status quo budget in terms of forest maintenance.

- **Keep all fires small** and put them out immediately; reduce smoke. Expand the concept of Prescribed Fire whenever possible.
- **Keep the focus on forest maintenance**, the ultimate “brass ring.” Over time, this will ensure America’s forests can become more resilient to disturbances; habitats are improved; forest mosaics become commonplace; and fires are smaller and less intense. And, the current national emergency can begin to dissipate and eventually end.

“... These are different times. With the current land conditions and the impacts of a changing climate, the notion of allowing a fire to burn anywhere, for whatever reason, for the foreseeable future, is unacceptable and must be stopped now; no exceptions.”

The Concept of *Managed Wildfire*

This concept deserves added attention and must be addressed head on.²⁴ Managed wildfires are natural ignitions [some refer to them as “unplanned”]²⁵ which under suitable weather and soil moisture conditions are allowed to burn to meet desired ecological objectives in Wilderness Areas only where pre-planned and approved in Forest Plans. This allows fire to play a natural role in restoring the ecosystems by recycling nutrients into the soil and clearing the forest floor of excessive debris. The key is to identify the right kind of fire at the right time at the right place. However, relying on natural ignitions to instantly create an opportunity for a managed wildfire in a random location, without adequate planning and pre-positioning for resources is like playing a game of Russian Roulette.²⁶ This is not to be confused with “Prescribed Fire” which is conducted under very specific conditions.

Item No. 2 on the list of “Top 10 Action” in this *Call to Action* calls for – without exception – the elimination of “managed wildfires” for the foreseeable future. This includes Wilderness Areas. The reality is, with the clogged-up conditions of our forests; hard to predict weather events; and the extremely high level of expertise required to perfectly “herd” a wildfire, “managed wildfires” quickly become escaped fires. The notion of effectively directing a wildfire to help restore the forest has become largely an intellectual argument and puts others needlessly in harm’s way; causes deaths due to smoke inhalation; and, significantly increases fire suppression costs that continue to shift more funds away from badly needed traditional forest maintenance.

In 2021, with the risks associated with the COVID-19 pandemic, the notion of letting fires burn to help accrue forest restoration targets is unconscionable. The same will be true in 2022. There is a strong connection between smoke inhalation and the more dire effects of Covid-19.²⁷ In addition, coronavirus cases in the U.S. have surged recently with the spread of the highly transmissible Delta and other variants.

²⁴ On July 19, 2021, several conservation professionals, under the leadership of Philip S. Aune [Program Manager (RET), Pacific Southwest Research Station], discussed the concept of “managed wildfire” and concluded that under the current time, its use is completely inappropriate. The group – known as the “Call to Action Group” -- has shared its views with the new Forest Service Chief, Randy Moore for his consideration.

²⁵ The term “natural” is often used by states and the federal government to describe the type of wildfire. Sometimes, the term “unplanned” is used. The terms have been used interchangeably. For example, a *natural* lightning strike causing a wildfire is *unplanned*. Prescribed fires are *planned*. They are not *natural* or *unplanned*.

²⁶ Derr, William. United States Forest Service (Ret.). Email correspondence. May 18, 2020.

²⁷ [Some COVID deaths are linked to Western wildfires, study shows | Fox News](#)

Messages are very mixed. On one hand, national direction from leaders seems to suggest no more “managed wildfires” due to current conditions. Events on the ground show a far different scenario. This misguidance may be due to available budgets. A steady flow of funding from fire suppression is being used to “manage wildfires” or in reality, attempt to manage a wildfire. The application of pre-approved and planned prescribed fire comes with a much more constrained budgetary account. Using an unplanned ignition as a de facto prescribed fire and claiming restoration credits is simply wrong. Perhaps an Office of Investigation [OIG] accounting of this practice is warranted.

As stated above, the practice of “managed wildfire”, especially in the western part of our country, is a huge gamble that can quickly accelerate to an “escaped fire.” This has become all too common in recent years, regardless of good intentions.^{28,29} And, regardless of weather and all the other “fire factors,” the practice of “managed wildfire” requires far too much knowledge and authority by the person making this immediate call; it’s not a fair fight. There are simply too many factors at risk. The unpredictability of the fire and its destruction in the current time and place will always win. As stated earlier, this is a practice that must be separated from prescribed burning.

The outcome of prescribed fire is much more predictable. In recent studies, prescribed fires have shown to be much safer and if deployed carefully can significantly help reduce hazardous fuels. Increased appropriations by Congress for prescribed burning is a critical step in the right direction.

The concept of *managed wildfire* must be stopped and the careful use of prescribed fire needs to be a key tool in a pragmatic forest maintenance regime. It is interesting to note that recently, an extremely well-respected former Forest Supervisor for the Forest Service stated: “...If I were Chief, I would never allow “managed wildfires”; not this year, not EVER.

“Managed wildfire” seems to be, as some have suggested, an intellectual theory, that should never³⁰ be applied, while “prescribed fire” is a great tool that needs much more application and funding.”³¹

Here is the bottom line: It is time to declare that all wildfires will be promptly and aggressively extinguished, period; no exceptions. Extremely clear direction is a must. And this direction must be corporately followed. For example, the word “manage” means: to handle or direct with a degree of skill: such as to exercise executive, administrative,

²⁸ A classic case is the Tamarack Fire in Northern California. [Tamarack Fire Information - InciWeb the Incident Information System \(nwcg.gov\)](#). The fire started on July 4, 2021 and was “monitored” for 13 days before any action. As of August 26, 2021, the Tamarack Fire is 68,696 acres burned and still not fully contained. Go to “Top 10 Action” No. 3, page 5. This incident did not have to turn out this way.

²⁹ Congressman Tom McClintock [CA-4-R] weighs in: [Rep. McClintock Requests Information About Tamarack Fire Response | myMotherLode.com](#)

³⁰ “Never” is a long time. But, let’s be pragmatic. With the current land conditions and the impacts of a changing climate, the notion of allowing a fire to burn, for whatever reason, for the foreseeable future, is unacceptable and must be stopped now.

³¹ Stubblefield, Ted. Forest Supervisor, United States Forest Service (Ret.). Email correspondence. October 30, 2020.

and supervisory direction. To us, this means a very hands-on approach. Backing off to the “next best ridge”, while perhaps workable, can hardly be called a “hands on approach.”

On August 2, 2021, the newly appointed Forest Service Chief sent a letter³² to his leadership team regarding the use of managed wildfires. The key points of the letter: managing wildfires for resource benefits is a strategy we will not use. In addition, until further notice, ignited prescribed fire operations will be considered only in specific geographic areas and only with approval by the national office.^{33, 34} We must be diligent to ensure that clear direction is followed, and for the foreseeable future, all wildfires are extinguished immediately; no exceptions. Unfortunately, it looks like the Chief’s letter is *not* being corporately followed. Examples include the Tamarack, Dixie and Caldor Fires in California.³⁵ In fact, America’s Chief Forester has published a letter on December 20, 2021 that seems to reverse his position on August 2, 2021, regarding “managed fire.” This is unfortunate.

Putting Them Out When Small – Is It Possible?

The simple answer is, “yes.” Not all the time, of course, but the goal for the foreseeable future is to put all fires out immediately; no exceptions. As Murry Taylor, former smokejumper, concludes in his critical essay, it’s possible with the right balance of ability and willingness; it’s called “task relevant maturity.” And, Merv George, Forest Supervisor, Rogue River–Siskiyou National Forest, has “it” – task relevant maturity in wildfire suppression. Also, see Appendix A.16.

Murry Taylor’s Essay. Your views on controlling wildfires, in fire prone areas, will change when you read Murry Taylor’s essay: [How one Forest had 120 fires in the last two years but only burned a total of 70 acres - Wildfire Today](#). The essay will also appear in Smokejumper Magazine; it is very relevant and instructional.

A National Emergency with Global Implications

Currently, there are over one billion burnable acres of landscapes across America. And, during the last three decades or so, the size and intensity of wildfires has left a path of destruction with annual losses in wildfire-related damages to infrastructure, economic effects of evacuations and lost tourism, public health, and natural resources estimated to be \$70 to \$350 billion each year.³⁶ On average, total economic losses can range between 15 to 30 times suppression costs.

So, it is critical to put all fires out immediately with an aggressive Initial Attack. But it is more than just acres burned or the size of the fire. As Ernesto Alvarado, professor of wildland fire at

³² [8.2.21 USDA Letter \(ca.gov\)](#)

³³ [USDA chief calls for overhaul of forest maintenance in western states ~ Missoula Current](#)

³⁴ [Forest Service Chief says wildfires will be suppressed, rather than "managed", for now - Wildfire Today](#)

³⁵ Unfortunately, after only 140 days, America’s Chief Forester has reversed his position on “managed fire” [letter dated December 22, 2021]. This will not bode well for the 2022 fire season. We should expect extended damage and loss.

³⁶ The annualized economic burden from wildfire is estimated to be between \$71.1 billion to \$347.8 billion (\$2016 US). NIST Special Publication 1215. The Costs and Losses of Wildfires: A Literature Survey. Douglas Thomas, David Butry, Stanley Gilbert, David Webb and Juan Fung. Applied Economics Office Engineering Laboratory. November 2017.

the University of Washington says, "...we must concentrate more on human losses."^{37,38} Often, the human cost of wildfires has little to do with the fire size. For example, the Camp Fire, which burned more than 18,000 structures and killed 88 people in Paradise, California, isn't even in the state's top 20, ranked by acreage.

The Dixie Fire³⁹ in Northern California burned 963,309 acres before 100 percent containment [October 24, 2021]. The Dixie Fire started on July 14, 2021. 1,424 structures were destroyed or damaged [including the town Greenville]. On August 14, 2021 the Caldor Fire⁴⁰ in Northern California started. It burned 221,835 acres before being fully contained [October 21, 2021]. The Caldor Fire destroyed or damaged 1,084 structures There were 5 known injuries. These three fires represent about 20 percent of the total acres burned to date. Now we are seeing the landscapes of New Mexico scorched.⁴¹ Clearly, fires are larger, more intense and much more destructive than ever before. A *Call to Action* is long overdue.

A 1,000-acre fire in the west may go almost unnoticed. The same size fire in the Pinelands of New Jersey would be a disaster.⁴² Witness the recent fires in the east. America's forests are at risk. This is a National Emergency.

Sometimes we take the power of healthy forests for granted. In addition to their role in helping reduce the intensity of wildfires, healthy forests reduce the impacts of a changing climate by offsetting as much as 20 percent of the country's annual greenhouse gas emissions.⁴³ Healthy forests also reduce flooding by catching rainwater, creating permeable soils and reducing erosion. Healthy forests are crucial for good quality water and air. Over one-half of Americans depend on healthy forests to capture and filter their drinking water. Healthy forests remove millions of tons of pollutants each year helping to reduce respiratory problems, such as asthma and even premature death that pollutants may cause. Healthy forests create habitat for a wide array of plants and animals, including those in which their continued existence is threatened.

The degradation of America's forests due to the lack of maintenance and the subsequent destruction by uncontrollable wildfires has brought us to a pivotal point. That is, a lowered capability of our forests to help mitigate the adverse impacts of a changing climate and produce the air and water we need to survive, is resulting in planetary conditions that are threatening the very existence of humans and wildlife. Simply put, without the protection that healthy forests provide, we are also jeopardizing the future of planet Earth.

For example, smoke from wildfires does not only affect people's health, it can speed up the melting of polar icecaps. Particulate matter in smoke – soot -- settles on glaciers and darkens the ice surface, thereby speeding up melting as more of the sun's heat is absorbed.

³⁷Wildfire Today, October 8, 2020, reporting on an NPR article.

³⁸ [TrueCostOfWilfire.pdf \(blm.gov\)](#)

³⁹ [Dixie Fire \(CA\) Information - InciWeb the Incident Information System \(nwcg.gov\)](#)

⁴⁰ [Caldor Fire | Welcome to CAL FIRE](#)

⁴¹ <https://nmfireinfo.com/>

⁴² <https://www.inquirer.com/science/climate/new-jersey-pinelands-pine-barrens-20210518.html>

⁴³ https://www.fs.fed.us/climatechange/advisor/scorecard/Carbon_Infographic_Final.pdf

A growing body of research suggests that wildfire soot will contribute to accelerating the Arctic meltdown in the decades ahead.

With a projected rise in sea levels of about 2 meters [some predictions are higher] by 2100 – due to ice melting -- the impacts along coastal communities throughout the world will be devastating. According to research by Cornell University in 2017, “...2 billion people – about one-fifth of the world’s population – could become climate change refugees due to rising ocean levels by 2100.”⁴⁴ The social and economic impacts of this level of displacement is almost incalculable. As conservation leaders, we cannot stand by and allow this to take place. We must do all that can be done to mitigate the adverse impacts, now and ahead.

Declining forest health and large, high intensity wildfires that accompany this decline is *the* land conservation issue of our time. We must be vigilant. The lack of forest maintenance is a safety issue. It is an economic issue. It is a security issue. This lack of forest maintenance in America and the associated consequences is now a national emergency contributing to global degradation.

Discussion

In 2018, the *Camp Fire*^{45,46} wiped away the town of Paradise, California, “...burning homes, shops, restaurants, parks – many treasured pieces of an old mining town. It also left thousands of children displaced from their schools – at least from the campuses or even their teachers and peers.”⁴⁷ 88 people perished. Other fires during the year accounted for over 2,000 civilian deaths. The 2018 fire season was horrific in terms of its destruction. But it was not that much different than what happened in 2017-2015; 2012-2011; 2009-2004; and, 2001-2000.⁴⁸ 2019 proved to be somewhat of a reprieve overall, even though the number of fires and acres burned across the country were still significant⁴⁹. However, this *reprieve* has unfortunately become an anomaly. We cannot become complacent. The 2020 fire season was historic in its destruction. According to the [National Interagency Fire Center](#), there were about 57,000 fires and 10.4 million acres burned. The total *10-year average* is about 61,000 fires and about 6.7 million acres burned. The 2020 wildfire season is history. The loss of life, directly from fire and more indirectly from smoke inhalation, and destroyed towns and communities was horrific. This destruction continued in 2021 at times even a *more destructive* pace.⁵⁰ For example, on August 14, 2021, the Dixie Fire -- currently, the second largest fire in California history [now 100 percent contained], destroyed the community of [Greenville](#). Respectfully, the current approach to wildfire management has become a bit stodgy.⁵¹ The current pace of the 2022 fire season is far more destructive. Simply put, enough is enough. It is time for all of us – from the newly elected President to Congress to government officials to state leaders, the local citizenry, and of

⁴⁴ <https://news.cornell.edu/stories/2017/06/rising-seas-could-result-2-billion-refugees-2100>

⁴⁵ https://www.fire.ca.gov/media/5121/campfire_cause.pdf

⁴⁶ [Estimated TOTAL cost of the Camp Fire was about \\$422 billion - Wildfire Today](#)

⁴⁷ The Enterprise-Record. November 8, 2019.

⁴⁸ For the latest fire statistics, use this website: <https://www.nifc.gov/fireInfo/nfn.htm> See also [Incident Activity Charts and Tables](#).

⁴⁹ 2019 wildland fire statistics: Number of Fires [50,477] and Acres Burned [4,664,364]. That is about the same number of 2021 fires and 68 percent of the acres burned, compared to the current 2021 fires season.

⁵⁰ As of December 22, 2021, there has been 57,222 fires that have burned just over 7.3 million acres.

⁵¹ [Wildfire solutions | Stanford News](#)

course, America's Chief Forester of the Forest Service to garner the courage to stand up and begin to put an end to this horrific and totally unnecessary destruction.

Smoke is Also a Killer

Although it may not be as obvious as a raging inferno, smoke from wildfires is also a killer.⁵² America's population is expected to decline between 2000 and 2100. However, the mortality attributable to wildfire smoke is expected to triple between now and the end of the Century - from as much as 25,000 to about 75,000 deaths per year.⁵³ More conservative estimates show this range to be from about 15,000 to 44,000 annual deaths.⁵⁴

According to the US Climate and Health Alliance⁵⁵, "...wildfire smoke is primarily made of carbon dioxide, water vapor, carbon monoxide, particulate matter, hydrocarbons and other organic chemicals, nitrogen oxides, and many other trace elements. Smoke composition can vary, depending on the fuel type, fire temperature, and wind conditions. Of these pollutants, "particulate matter [PM] is the most concerning, given their very small size and ability to be inhaled deeply into the lungs." According to the Environmental Protection Agency⁵⁶, numerous scientific studies have linked long-term PM_{2.5} [also called particle pollution] exposure to a variety of problems, including:

- Cancer.
- Stroke.
- Irregular heartbeat and heart attacks.
- Respiratory problems, such as irritation of the airways, coughing or difficulty breathing.

People with asthma, heart or lung diseases, children⁵⁷ and older adults are the most likely to be affected by particle pollution exposure.⁵⁸ Research is also showing that smoke from wildfires is also causing significant harm to skin health, accelerating skin aging and skin cancers.⁵⁹

According to atmospheric researchers, led by a team from Yale and Harvard, "The scope of the problem is immense: Over the next three decades, more than 300 counties in the West will see more severe smoke waves from wildfires, sometimes lasting weeks longer than in years past."⁶⁰ An obvious and immediate concern should be the vulnerability of the first responders, our wildland firefighters. Now we have the COVID-19 pandemic to accentuate this issue.⁶¹

⁵² [Wildfire smoke increases inflammation, lung disease risk \(ucdavis.edu\)](http://ucdavis.edu)

⁵³ B. Ford, M. Val Martin, S. E. Zelasky, E. V. Fischer, S. C. Anenberg, C. L. Heald, J. R. Pierce. Future Fire Impacts on Smoke Concentrations, Visibility, and Health in the Contiguous United States. *GeoHealth*, 2018.

⁵⁴ <https://grist.org/article/44000-americans-could-end-up-dying-from-wildfire-smoke-every-year/>

⁵⁵ <http://usclimateandhealthalliance.org/wildfires-public-health-view-front-lines/>

⁵⁶ <https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm>

⁵⁷ [Wildfire smoke is particularly harmful to kids' respiratory health, study finds \(statnews.com\)](https://www.statnews.com)

⁵⁸ Recent [2020] studies by Stanford University [researchers say smoke](https://www.statnews.com) from the recent California wildfires led to 1,200 excess deaths and 4,800 additional ER visits among the elderly – and that's just for people ages 65 and over.

⁵⁹ Y. Claire Change. [Caring for Skin After Wildfire Smoke Exposure and Irritation | Allure](https://www.allure.com) [Dougher, K.9/24/2020].

⁶⁰ <https://www.cbsnews.com/news/2019-wildfire-season-smoke-from-wildfires-increases-health-risks-for-millions-of-americans/>

⁶¹ [Some COVID deaths are linked to Western wildfires, study shows | Fox News](https://www.foxnews.com)

It's a Tie for the Top Spot

Large, high intensity wildfires throughout America – especially in the west – have created this national emergency. The three primary reasons are, with a tie for the top spot:

1. Lack of forest maintenance.
1. The impacts of climate unpredictability⁶²
3. The expansion of the Wildland-Urban Interface

In some past writings on this subject, it has been stated that *the* primary culprit for the deterioration of America's forests [reminding us all that *forests* represent more than trees]⁶³ and the incredible destruction caused by wildfires, is the *lack* of forest maintenance. Further, it was concluded that the impacts of a changing climate represents a real force, no doubt, but not the driving force. Lately, however, the lines between the two – impact of wildfires and impacts of an unpredictable and ever-changing climate on the warming of our planet have become much too blurred to make a rationale distinction; there probably is none. As Jad Daley, President and CEO of American Forests concluded in his November 2018 article, “Climate Change = More Fire More Climate Change.”⁶⁴ Or, as Bob Berwyn of Inside Climate News stated in his August 2018 news note, we are in a “vicious cycle when the results of warming produce yet more warming.”⁶⁵

The Paris Climate Agreement of 2015⁶⁶ provides worldwide awareness, leadership and goals to help ensure post Industrial Revolution global warming would not exceed a +2°C threshold [from pre-Industrial Revolution levels]. To many, re-committing to the Paris Climate Agreement [also known as, the Paris Accord] and our participation in the 2021 United Nations Climate Change Conference [Glasgow, Scotland, October 31, 2021-November 12, 2021], has indicated to the world that the United States continues to care about global warming and its impacts on the health, economy and security of current and future generations. And, we must do our part.

Since 1895, temperatures in the United States have increased by about one-half degree Fahrenheit; some projections by mid-Century are plus 2 to 4 degrees.⁶⁷ That's huge. The consequences will be devastating. Whatever path is chosen to highlight our role, we must be vigilant and sustain our responsibility as visionary and scientific leaders to help mitigate the impacts of a changing climate. Time is running out.

An estimated 120 million Americans in more than 46 million homes are at risk due to wildfire; 72,000 communities are directly in harm's way. Thousands of heroic firefighters have died protecting people and property. How many more reasons does it take before we can begin to improve America's forests so fire can eventually be used as a conservation tool and no longer feared for their destruction? We have a national emergency. The American people are calling for

⁶² Changed from “...the impacts of a changing climate” to a reflect a more contemporary notion.

⁶³ For example, the Chaparral Forests of Southern California and the wildland-urban forests [a wide-range of vegetation and tree species] are in critical need of improved maintenance. Fuels treatment represent far more than just trees.

⁶⁴ Daley, Jad. *New Math: Climate Change = More Fire = More Climate Change*. American Forests. Nov 27, 2018.

⁶⁵ Berwyn, Bob. *How Wildfires Can Affect Climate Change (and vice versa)*. Inside Climate News. August 23, 2018.

⁶⁶ The Paris Agreement [Accord de Paris]. United Nations Framework Convention on Climate Change [UNFCCC]. 2015.

⁶⁷ <https://www.americangeosciences.org/webinars/wildfire-maintenance-in-the-21st-century>

a solution. What is happening does not need to happen. We know what to do to stop this destruction. Now is the time for a *Call to Action*.

The National Fire Plan

It has been over 20 years since the report entitled, “Managing the Impacts of Wildfires on Communities and the Environment” [the *National Fire Plan*] was written by the Departments of Agriculture and Interior. A critical feature of the *National Fire Plan* was “...hazardous fuels reduction improves forest health and its resiliency to fire.” Unfortunately, not much has changed since then. In fact, land conditions have deteriorated. For example, in 2001 there was an estimated 38 million acres on our National Forests considered to be at high risk from destructive wildfires. A recent analysis suggest the figure is about 90 million acres.

ALERT: The new Administration’s Infrastructure and Investment Jobs Act has provided for +\$3.3 billion for wildfire risk reduction. This is a 5-year Bill, so we have to think more short-term and effectively link expenditures with the annual appropriations process. If asked, this is how the *Call to Action* would have distributed the funding:

1. +\$3.047 billion for hazardous fuels treatment. With the current program, this brings the overall level to about \$1.1 billion annually from 2021-2026. The needs are greater but this would be a significant start.
2. +\$33 million for biomass uses and marketing for low value wood; a game changer!
3. +\$70 million for securing defensible space in high priority WUI area.
4. +\$250 million for prescribed fire – a key feature of forest maintenance.
5. +\$100 million for the stewardship on nonfederal forests adjacent to high-risk NFS lands; could not be more critical.

A Funding Gap That Is Forever Increasing

As already stated, a primary culprit for this deterioration is the lack of forest maintenance. And, this is due in part to the lack of adequate resources, caused by 30+ years of shifting funds *from* maintenance actions *to* the fire suppression effort.

For example, about 65+ percent of the current Forest Service budget goes toward controlling fires. In 1995 this amount was about 16 percent. As more and more of the agency’s resources continue to be shifted to the fire effort, fewer funds are available to support forest maintenance work – the same restorative projects that reduce the fire threat. Clearly, a paradox has been created. As funds are shifted away from forest maintenance work, fires have become larger and much more destructive because forests are not being maintained. The loss of funds for forest maintenance over the last decades has not been restored to the Forest Service through the appropriation process. This gap equates to a *minimum* annual amount of about \$2.2 billion up to \$3.6 billion.⁶⁸ The specific *minimum* annual additional investment for just the Forest Service [+ \$2.2 billion] should be guided as follows:^{69,70,71,72}

⁶⁸ See [Appendix A.1](#). The +\$3.61 billion is based on documented needs. The +\$2.2 billion represents *minimal* requirements. The primary difference is due to resource requirements for hazardous fuels reduction.

⁶⁹ These estimates are for the Forest Service only. Additional amounts, if any, will need to also be determined for the DOI.

⁷⁰ After adjusting for LWCF [Land and Water Conservation Fund] and a restructure of the Forest Service budget, the 2021 budget appears to represent a net increase of about \$19 million; essentially a status quo budget.

⁷¹ Indications are about 0.3 percent, or approximately \$3,369,000,000 in this \$1 trillion infrastructure bill is directed at wildland fire reduction. See [A Senate infrastructure bill will address many wildlands fire issues - Wildfire Today](#).

⁷² [LaMalfa laments blockage of fire reform, firefighters pay increase efforts | Corning Observer | appeal-democrat.com](#)

- +\$97 million for “federally assisted state programs [the Forest Stewardship Program] to address the “...strengthening the stewardship of private lands”, as stated by USDA Secretary Perdue.
- +\$600 million for hazardous fuels reduction [this brings the overall level for the Forest Service to \$1.05 billion]. Not the \$2.4 billion per year called for in some estimates but an important increase none-the-less over the completely inadequate \$445.3 million.⁷³
- +\$26 million for fire science and technology development [including defensible space protection in the Wildland-Urban Interface].
- +\$45 million for the cooperative fire programs.
- +\$14 million for forest health protection [specifically, invasive species control].
- +\$1.385 billion for maintenance actions on the National Forests.
- +\$33 million for biomass uses that include wood-based nanotechnology [cellulose nanomaterials], specifically addressing low value wood, such as hazardous fuel.

The \$1.2 trillion Infrastructure and Investment Jobs Act, signed on November 15, 2021, included \$3.3 billion for wildfire risk reduction.⁷⁴ While the mixture of funds – about \$660 million annually for five years -- does not match the desired specifics illustrated on page 13 of this document, the total funds provided supports the *Call to Action*. This is very good news. For reference, we shall keep the amounts illustrated on page 16 with its the emphasis on forest maintenance. Also, for reference, this added investment represents about 25 percent of minimal needs. Accordingly, this is a good start. But, we must keep the momentum going forward.

Caution: A “Fire Fix” is Not a “Forest Fix”

On March 23, 2018, H.R. 1625 [Consolidated Appropriations Act of 2018] was signed into law. This included the “Wildfire and Disaster Funding Adjustment” [Title I, Sec. 102], whereby additional funds for wildfire emergencies shall be authorized from 2020 – 2027, ranging from \$2.25 to \$2.95 billion. These emergency funds are intended to halt the momentum-killing process known as “fire borrowing”, whereby funding for other programs are siphoned away for the fire effort. The Act would also halt the ever-increasing percentage of the overall United States Forest Service budget going to wildfire control by freezing the “10-year average” for fire suppression – a figure used by the Forest Service for budget development purposes -- at the 2015 level. These are all very good things. Accordingly, the action commonly referred to as the “fire fix” has been accomplished. However, we need to fully understand that the *fire fix* is only the first step toward a *forest fix*. Allow for an explanation.

In 1995, expenditures in fire equated to about 16 percent of the total Forest Service budget. It is now about 60+ percent. Over this span, there was a tremendous decline in forest maintenance [*maintenance*] work across the country. Everything – money, skills and emphasis -- was being shifted to the fire effort. The “fire fix” hopefully enables this shift to stop. Again, this is very good news.

⁷³ The 2022 proposed budget includes an increase of \$476 million for hazardous fuels treatment. If enacted, this would bring the total funding level for hazardous fuels treatment for the Forest Service to about \$989 million or about 40 percent of needs.

⁷⁴ [Congress appropriates \\$3.3 billion for wildland fire - Wildfire Today](#)

However, it must be clear, the “fire fix” certainly does not backfill the huge gap that was created in lost non-fire skills and forest maintenance actions foregone, as examples, especially during the last two decades. Accordingly, it is important that this notion be recognized and new momentum be immediately established for the next step. That is, to deploy a comprehensive forest maintenance strategy so wildfires will be smaller and less destructive. This forest maintenance strategy will require new the funding levels outlined above. The 2021 “Omnibus Spending Bill” does not include these additional funds. Unless these funds are provided for, the “fire fix” will have little to do with helping reduce the impacts of large, intense wildfires, perhaps especially for the 90 million acres of National Forests that are now considered to be at high-risk from destructive wildfires.

As one Member of Congress succinctly concluded, “...It [the “fire fix”] doesn’t solve the problem. Solving the problem is stopping the damn fires, not spending more money to put them out once they get started.” Fundamentally, increased fire management requires aggressive forest maintenance. Otherwise, we simply spend more and more money to control wildfires, with no end in sight.

Lack of Forest Maintenance That Halts Resilient Vegetative Mosaics

At an August 16, 2018 Cabinet Meeting⁷⁵, the former President of the United States [Trump] spoke about the need to improve the *maintenance* of the forests. The former Secretary for the Department of Interior [Zinke] stated that the current situation of uncontrollable wildfires is due to “gross mismanagement [of the forests] for decades.” Actually, what former Secretary Zinke said was not true. It is not *gross mismanagement*. It is little or no management [i.e., maintenance]. Nobody knows how to manage forests better than the Forest Service. But, “...you cannot do when you do not have.”⁷⁶

In a November 19, 2018 opinion piece entitled “...Who or What Is Really Responsible for the Huge Forest Fires in California? [by Bruce Bialosky],” a quote from Chris French, Deputy Chief for the National Forest System, USDA Forest Service, stated: “the primary cause of the intense forest fires is the forests are overstocked. There are more trees than 100 years ago.”⁷⁷

Accounting for amounts of wood exports and imports, we essentially use each year about one-half of the wood that is produced from all our forestlands. That in itself has created a problem. Simply put, our forests are getting clogged up. Each year, about 317 billion board feet of new wood is produced from the forests and woodlands in the United States – 60 billion board feet from our National Forests.⁷⁸ The current harvest level from these National Forests, for example, is 3 billion board feet -- or about 5 percent of the annual growth. More biomass *can* and *should* be removed. Our forests – which are much more than just trees [for example the Chaparral Forests of Southern California] -- are getting stressed, they are dying, and are becoming a

⁷⁵ See time 11:53 of the Cabinet meeting: <https://www.youtube.com/watch?v=mNddZ4cwzRU>

⁷⁶ Rains, Michael T. Forest Maintenance and Fire Management: In Sync or at Odds [A “Short Paper”]. November 20, 2018.

⁷⁷ Comments made while serving as the Deputy Chief for the National Forest System, United States Forest Service.

⁷⁸ U.S. Forest Resource Facts and Historical Trends. USDA Forest Service, FS-1035. 2014: https://www.fia.fs.fed.us/library/brochures/docs/2012/ForestFacts_1952-2012_English.pdf

tinderbox for fire. And, once a fire gets a foothold, they become destructive behemoths that destroy everything in their paths. Productive ecosystems are being completely altered or destroyed. Simply put, more vegetation *can* and *should* be sustainably, economically, and safely removed from our forestlands.

But let's be clear. This *Call to Action* is not just about biomass production and uses. In fact, available biomass – including biochar as an example -- is simply a “by-product” of a much more dynamic approach to maintaining America's forests. That is, the focus of expanded forest maintenance shall be on wildlife habitat condition treatments across very large landscapes. The goal shall be to create and maintain a mosaic of seral vegetative stages that are highly resistant to catastrophic fires, as well. That is, well-planned, methodical steps in the process of enabling productive ecological succession across priority watersheds that are especially high risk to wildfires. The 10-year plan-of-work in the *Call to Action* will outline specific treatments that place wildlife habitat first and foremost across large geographic ecotypes and agency regional boundaries. Cooperation and collaborative approaches, with a wide-range of partnership, will be commonplace resulting in the eventual reduction of large, intense fires.⁷⁹

Forest Maintenance: Pace and Scale

Repeating, a dominant reason for the deterioration of America's Forest and the incredible destruction caused by wildfires, is the lack of forest maintenance. But whenever the term “forest management” surfaces, there are many that conclude, “that's just a coverup for “*indiscriminate logging*.” And, as former Forest Service Chief Jack Ward Thomas said, “gladiators form and fights ensue.” So, we are using the term “forest maintenance” to convey our intentions. To be clear, forest maintenance focuses on managing vegetation, restoring ecosystems, reducing hazards and maintaining forest health. vegetation management⁸⁰ activities that will help improve habitat -- including timber harvesting, timely salvage, thinning, pruning and prescribed fire are fundamental to the maintenance of trees, forests and forest ecosystems and wildlife habitat conditions. Over the last 30 years, timber harvest levels, for example, have declined by about 80 percent. Excessive regulations, disguised as important to an *environmental movement* have in fact contributed to a reduction in environmental health.

Most who are in the profession of caring for the land along a rural to urban gradient, consider themselves *environmentalists*. But, with a *conservation* bent. That is, to keep our forests healthy, sustainable and more resilient to disturbances. Maintenance, protection and use – stewardship – is key. Doing nothing means nothing ever changes. Thus, we find ourselves in this current mess. We must embrace the notion of “Invest to Save.”

Let there be no doubt, the health of America's forests is declining. Wildfires are destroying lives and property, reducing air quality, altering critical wildlife habitat and killing millions of animals

⁷⁹ [LaMalfa Introduces RESTORE Act to Improve Forest Health, Mitigate Wildfire Risk | Congressman Doug LaMalfa \(house.gov\)](#). The proposed legislation would be a solid “...set of good tactics that would fit nicely into a more cohesive *Call to Action*.”

⁸⁰ Vegetation management includes a wide-range of vegetation types and tree species. Perhaps a newer phrase in our communications needs to emerge. That is, instead of the lack of *forest management* we should say, lack of *vegetation maintenance* or the lack of *forest maintenance*. Our forests are more than just trees!

needlessly. Forests in declining health, the impacts of a changing climate, and the expanding Wildland-Urban Interface, has created a volatile mixture that has led to the current national emergency. Now, it is time to step forward with a concentrated effort and begin to address the 19-20 million acres annually of forests across our country that need some type of restorative action – about 8 million acres each year on the National Forests.

The goal of this restoration commitment is to help create healthy, sustainable forests that are more resilient to disturbances so the linkage between environmental health and community stability can be more fully realized.⁸¹ See [Appendix A.3](#) for additional detail and tactics and [Appendix A.3.1](#) for examples.

Reduction in Hazardous Fuels

This large, fundamental task cannot be accomplished with such a meager level of funding. In the late 1990s, a General Accounting Office [GAO] report noted that “the most extensive and serious problem related to the health of forests in the interior West is the over-accumulation of vegetation, which has caused an increasing number of large, intense, uncontrollable, and catastrophically destructive wildfires.” When the *National Fire Plan* was written, it was thought that about \$850 million annually was the minimum required to more effectively address the issue of hazardous-fuels removal. More recently, a 2013 Congressional Research Service report suggests costs for a comprehensive hazardous fuels treatment program for the National Forests could exceed \$2 billion a year.

The point is, cost estimates to effectively address the removal of hazardous fuels range from about \$1 to \$2 billion dollars a year for just the Forest Service depending on the acres that can be treated. The current agency budget for this activity is about \$445 million. Thus, with only a fraction of required funds available, focusing work on the highest-priority areas is fundamental to success. But let’s be candid: no amount of focusing can offset this level of funding shortfall. Simply put: at the current investment level, the effort in reducing hazardous fuels is not making a difference that is even close to what is needed. A recent Farm Bill, authorized the collection of “excess KV funds,” termed *K2*, to be collected and used for varied needs throughout the geographic region in which collected. This created an opportunity by Forest Service to use such funding for desperately needed fuel reduction projects, specifically within the Wildland Urban Interface [WUI] where fire risks are great.

Advanced Biomass Uses

Most people are aware that traditional timber harvesting, thinning, and timely salvage of dead and dying trees, as examples, represent biomass removed and then used; shorthand for *biomass uses*. Recently, biomass uses have turned to more innovative solutions that offer opportunities for high-volume, high-value markets for lower quality wood. For example, wood-based

⁸¹ Initially, due to lack of capacity and funding and other constraints, a goal of about 5-7 million additional acres annually would be a very reasonable objective, especially if these acres are targeted to the highest priority “fresheds.” As capacity and funding increase, the pace and scale of forest maintenance will also increase.

nanotechnology⁸², a biomass use example, offers a revolutionary technology to create new jobs and strengthen America’s forest-based economy through industrial development and expansion as well as providing means to enable forests to remain healthy and sustainable through accelerated restoration. Wood-based nanotechnology applications include packaging barrier coatings; printing paper coatings; structural composite panels for construction; flexible electronic displays; printed electronics; lightweight structural and non-structural panels and parts for aerospace; automotive applications; and, a host of industrial tools and consumer products.

Other examples include innovations in the development, application and technology transfer of cross laminated timber – CLT⁸³ -- for use in nonresidential building construction. And, torrefied wood and biochar for energy. For example, torrefied wood and coal have similar heat producing capabilities and can generate electricity at about the same efficiency rate while torrefied wood emits significantly less particulate matter.

These science-based innovations are critical to forest maintenance, thus healthy forests. The greater the level of hazardous fuels that can be economically removed, the more efficient the forest maintenance campaign becomes.

It is estimated that a strong, well-established program in cost-effective biomass uses could create high-value markets from low-value wood [i.e., hazardous fuels] that could reasonably help restore about 20 million forested-acres annually. About one-half of the nation’s 885 million acres of forestland currently requires some type of restorative action. This pace and scale of restoration could reduce future fire suppression costs in the range of 12-15 percent [some say as high as 23 percent]. In terms of what the 2020 fire suppression expenditures were, this represents a savings of about \$1 billion! These are funds that could be redirected for vegetation maintenance uses, which will in turn help reduce the size and intensity of unwanted fires. Simply put, it makes good economic sense to aggressively invest in biomass uses to help achieve more resilient forests throughout the rural to urban land gradient. As stated earlier, funding in the range of \$33 million per year equates to a “strong, well-established program” in innovative biomass uses.⁸⁴

Be Fire Wise and Safe

As the Wildland-Urban Interface [WUI] continues to expand across America, emphasizing the maintenance of vegetation and individual property care in the WUI will be a critical aspect of the *Call to Action*. This includes helping expand the number of Fire Safe Councils⁸⁵, Fire Safe USA^{®86} sites, and defensible space around homes. And, any other tactics that will enable the WUI to be more resilient to fire in order to save lives and property. We know that “defensible space” [also known as the “home ignition zone”] and preparing structures [“hardening”]⁸⁷ is

⁸² https://www.fpl.fs.fed.us/documnts/pdf2014/fpl_2014_rains001.pdf

⁸³ <https://www.youtube.com/watch?v=wFVUw5duyb4>

⁸⁴ The 2021 Omnibus Spending Bill does not provide any increase in funding for Research and Development and specifically for biomass uses. Thus, in terms of funding and focus, nothing has changed.

⁸⁵ [Home | California Fire Safe Council | Learn More Today \(cafiresafecouncil.org\)](#)

⁸⁶ [NFPA - Firewise USA®](#)

⁸⁷ [Hardening Your Home - Ready for Wildfire](#)

critical for the protection of homes from wildfire. Observe this wonderful example.⁸⁸ Yet, less than 2 percent of the 72,000 communities at risk have been formally designated as fire wise and safe. The *Call to Action* will help change this through activities that include, additional grants and funding; minimizing risks; improved insurability; application of K2 funding; and expanded partnerships with first responders. The short-term goal -- working with existing organizations -- is to provide additional funding to protect the highest priority areas, immediately. The long-term goal is to help enable at least one-half of all communities-at-risk to be designated *fire wise and safe*. This will require significant resources over a long period of time. See [Appendix A.2](#), for additional details.

Once again we must ask a driving question. That is, where is Congress on this serious financial need? As well, where is for example, NACo [the National Association of Counties] on this matter? Why are so many silent regarding the need for adequate forest maintenance funding?

Improved Aerial Fire Suppression Tactics

In 2013, the U.S. Government Accountability Office, in their Wildland Fire Maintenance report to Congress, recommended a nationwide, multi-year Aerial Firefighting Use and Effectiveness [AFUE] study. The study was chartered by the United States Forest Service to answer a pivotal question given the growing wildfire threat across America.^[1] That is, "...What are the best mixes of aircraft to do the fire suppression job?" AFUE findings included:

- The majority of retardant drops were completed by large aircraft [Large Air Tankers (LATs), Very Large Air Tankers (VLATs), Multi-Engine Scoopers (MES), and Type 1 helicopters] in an effort to control large wildfires, including those that were allowed to burn [i.e., "managed wildfires"] across landscapes to remove fuels.
- Smaller aircraft [i.e., Single-Engine Scoopers (Fire Bosses), Type 1, 2 and 3 helicopters, and retardant-dropping Single-Engine Air Tankers (SEATs)] were predominantly used to subdue small fires during Initial Attack (IA).
- Based on the results of the AFUE study, and following the parallels of the 2012 Rand Institute Study on "Determination and Cost-Benefit Analysis of the Optimal Mix of Helicopters and Airtankers for the U.S. Forest Service"^[2], the Forest Service should be acknowledging that smaller, more agile "scooping" aerial firefighting assets such as single engine scoopers [i.e., Fire Bosses and others] can help fill the role to achieve goals and outcomes that are best suited for many fire prone western states.

If we intend to try to accomplish the "Top 10 Action" No 3 in the Call to Action, [i.e., put out every fire immediately. Reduce response time by at least 80 percent!], fire agencies should lead with their amphibious IA aircraft without hesitation. Pre-positioning single engine amphibious tankers and Type 1, 2 and 3 helicopters in fire prone areas and respond as quickly as a fire is identified. Backfill these IA resources with LATs and VLATs and single engine airtankers dropping retardant when a fire breaks IA.

⁸⁸ [Wildfire Survivors on Firewise and Protecting Your Home: Bruce Courtright and Catherine Barash - YouTube](#)

^[1] [AFUE FINAL REPORT.pdf](#)

^[2] [Identifying a Cost-Effective Aviation Fleet for the U.S. Forest Service | RAND](#)

Accordingly, in this *Call to Action*, another paradox has emerged. That is, since the concept of “[managed wildfire](#)” needs to be eliminated due to ramifications of much greater and destructive fires, the use of smaller aircraft to enable more cost-efficient and effective fire suppression needs to be expanded [“Top 10 Action” 2 and 3].

Here is what experience is telling us:

- Large airtankers certainly have a place in fire suppression efforts, but oftentimes they are not the most effective in helping achieve Goal No. 3 in the “Call to Action”: “...Put out every fire immediately. Reduce response time by at least 80 percent!”
- Large airtankers are expensive and limited in number. There are 28 LATS or VLATs that can fight fires across the entire fire landscape in a given season.
- Due to these high costs, often times Incident Commanders are reticent to call for aerial assets and try to mitigate the fire risk without these assets, often with disastrous results.
- Smaller, more agile aircraft and helicopters are cost-efficient and effective.^[3]
- There are also significantly more of these smaller aircraft, with the number reaching to almost 100 retardant-dropping Single-Engine Air Tankers (SEATs) and 25 single engine scoopers [Fire Bosses]. This would allow for a simple and cost effective “network” of rapid response, Initial Attack assets to be positioned across much of the fire prone areas in a season.
- The firefighting agencies – federal, state and local – need to embrace a more agile, effective approach in aerial fire suppression tactics. Essentially, seek a better balance of aerial suppression tactics and a quick response force.
- A recent evaluation^[4] by this author suggests that up to 20 percent of the acres burned in 2020 [about 2 million acres] might have been avoided if a more agile, aerial approach to fire suppression would have been deployed throughout. Current estimates for 2021 suggest that figure is now closer to 25 percent [see [Appendix A.5](#)].
- A goal of 65 percent of all aerial wildfire firefighting tactics would probably be a more effective target for smaller aircraft usage.
- All the above should result in a greater reduction in exposure to Covid-19; less the need for fewer fire camps and fewer crews.

Improved Use of the Forest Service Smokejumper Cadre

It should also be note that another critical feature of *Improved Aerial Fire Suppression Tactics* is the expanded use of Smokejumpers [“Top 10 Action” No. 7] in Initial Attack. In a recent article by Chuck Sheley⁸⁹, a former Smokejumper, the following was a conclusion: “...reverse the trend and let smokejumpers be used as they were designed to be used in 1940 -- initial attack as soon as possible. USFS [United States Forest Service] smokejumper use in 2018 went down by over 300 fire jumps compared with the 10-year average.” In 2019, there were 604 *jumps*, down about 47 percent of the 10-year average of about 1,300. In 2020, and by all consensus a “horrible fire season,” *jumps* represented about 74 percent of the 10-year average [959 *jumps*].

^[3] ["It's a war": California turns to new, high-tech helicopters to battle wildfires — 60 Minutes - CBS News](#)

^[4] See Appendix A.5.

⁸⁹ [Smokejumpers.com - National Smokejumper Association](#)

A reduction of 26 percent from the 10-year average of fire jumps in one of the worst fire seasons on record, clearly needs to be discussed and evaluated.

It is our combined opinion that today's Agency Administrators/Line Officers are not being adequately trained or informed of the valuable skills that Smokejumpers bring "to the table" for a quick reactionary force on fires at the point of Initial Attack.⁹⁰

With the wildfires America is facing, and assuming safety protocols are being met, there should be few to **NO** available smokejumpers on the *daily status report*. We must maximize the use of these iconic resources, if at all where possible.

Again, the optimal use of aerial suppression tactics, including a fuller utilization of the Smokejumper force must be discussed, analyzed and determined to reduced damages and costs and save lives from wildfires. It seems clear that currently an optimal level on both tactics is not being attained.

A Call to Action

Conservation leaders are concluding that in order to "create healthy, sustainable forests that are more resilient to disturbances -- so the linkage between environmental health and community stability can be more fully realized" -- a *Call to Action* is required.⁹¹ That is, a well-coordinated partnership that bands together, shares resources and avoids duplication will ensure a successful campaign that improves our forests and the economy and protects lives and property.

This *Call to Action* will include a:

- 1. National Emergency Commitment.** This shall include a formal declaration of an unprecedented national federal, state and local commitment to aggressively care for America's forests along the complex rural to urban land gradient, so the destructive nature of large, high intensity wildfires will be reduced. The national commitment must address the current lack of resources that have dictated a lack of *forest maintenance*, resulting in the landscape scale destruction from wildfires that we are seeing every year. This cannot be overstated. Estimates suggest this amount is more than \$2 billion annually for just the Forest Service; some suggest as high as about \$5 billion. The total investment level for all involved shall be determined and budgeted. Leading the way for this national commitment will be a clear and powerful "Statement of Intent" to be issued jointly by the Secretaries of the Departments of Agriculture [USDA] and Interior [DOI]. Success of this national commitment will be enhanced by local and regional coalitions seeking to resolve common problems. Even with the horrific destruction from wildfires over the last decade, a *National Emergency declaration and commitment* has not been made. That simply seems unacceptable.

⁹⁰ When the Tamarack Fire in California started on July 4, 2021, Smokejumpers were readily available but not deployed while the fire was being "monitored." As of October 26, 2021, the fire burned 68,637 acres in size and is now 100 percent contained. [Tamarack Fire Information - InciWeb the Incident Information System \(nwcg.gov\)](#)

⁹¹ Recently [August 4, 2021], USDA Secretary Vilsack talked about the positive impacts of forest maintenance and his commitment to emphasize the care of our forests. [USDA chief calls for overhaul of forest maintenance in western states | Courthouse News Service](#)

To this end, a Commission has been proposed within the Public Law Number 117-58.⁹² Let us be very cautious, please. Under the current circumstances, there might be one positive benefit of a Commission to address the current wildfire issue. Allow me to explain.

During my [Rains] Forest Service career, I was involved in three Presidential Commissions. One, in my view, was extremely successful – the Northern Forests Lands Act. The goal was to address the maintenance of the northern forests of New England and New York.

A key part of this Commission was to assign the leadership to the four Governors. Whom in turn, assigned the tactics to some very good people. Local interest was assured. Many of the options proposed are still in effect today. Most would call this Commission a success.

A key point: Senator Leahy of Vermont laid the ground work; was well-liked and people were excited. To this point, look at some of the comments in recent Gabbert’s Wildfire blog; cynical beyond belief.

In part, I do understand [the tone of the comments]. The issue of wildfires and wildfires management has so many plans and strategies already in place. For example:

1. The Quadrennial Reviews.
2. The *Call to Action*.
3. *Toward Shared Stewardship Across Landscapes: An Outcome-Based Investment Strategy*
4. The 2014 *National Cohesive Wildland Fire Management Strategy*.

Simply put, we know what to do. Candidly, we do not need another *Commission* to outline what we already know and the proven actions that we do not seem to want to deploy.

Now, a Commission does have a key benefit. It can bring badly needed Executive awareness and attention to a problem. And, that can generate real gains – especially through the Appropriations process. To this end, Senator Leahy was respected and committed and real gains were achieved. That kind of Executive level leadership is critical to the success of any Commission.

Candidly, I do not see it with the “...Commission to evaluate wildland fire mitigation, management, and aircraft needs and use.” It feels to me as a political statement so the current Administration can say they are concerned about the results of inadequate forest maintenance across America and the resulting wildfires.

Look at the two key focal points of the proposed Commission:

1. Develop recommendations to mitigate and manage wildland fires.
2. Report on aerial wildland firefighting equipment, strategy, and inventory.

⁹² [Commission established to evaluate wildland fire mitigation, management, and aircraft - Wildfire Today](#)

As so many well know, we have more existing information on these two items than you can possibly imagine. We simply choose not to respond for a variety of reasons.

The Bottom Line: We do not need another Commission. What we need is enhanced awareness by real “deciders” about the issue. And, we know what the issue is and how to solve it. Again, I refer you to the numerous Quadrennial Reviews; the current *Call to Action; Toward Shared Stewardship Across Landscapes: An Outcome-Based Investment Strategy*; and the 2014 *National Cohesive Wildland Fire Management Strategy*.

What we need is America’s Chief Forester to work with key “deciders” to deploy what we already know. This way, the Forest Service Chief *leads*. The other way – through a Commission – America’s Chief Forester waits and follows. The Chief knows what to do. Why not be aggressive and “...influence the deciders” NOW.

2. Statement of Intent. An example “Statement of Intent” is as follows:

“The lack of forest maintenance across the country has greatly contributed to the current wildfire situation and the associated horrific impacts on people’s lives and their communities. This is going to change. Immediately, we [USDA and DOI Secretaries] will be meeting with the new Administration leaders and Congress to gain adequate funding for the *Toward Shared Stewardship Across Landscapes: An Outcome-Based Investment Strategy*⁹³ and other corporately-used guides.

This will be the beginning of a long-term campaign to ensure our landscapes become healthy, sustainable and more resilient to disturbances. We will be counting on the aggressive, promotional leadership of everyone to ensure our direct and indirect roles in the stewardship of America’s forests is achieved, now and ahead. The Forest Service Chief and the Director of the Bureau of Land Management will be relentless in leading the way.”

3. Vision. The vision of the national commitment will be guided by the following: “To ensure America’s forests are healthy, sustainable and more resilient to disturbances in order to protect people, landscapes and communities from the destruction of large, high intensity wildfires.”

4. Strategy. The *Call to Action* is the overall framework. *Toward Shared Stewardship Across Landscapes: An Outcome-Based Investment Strategy* can be a guiding strategy for the Forest Service.⁹⁴ This will be augmented by the 2014 *National Cohesive Wildland Fire Management Strategy*.⁹⁵ The overall approach shall include specific levels of vegetative maintenance to improve ecosystem health through actions such as hazardous fuel treatment, timely timber salvage, thinning, pruning, prescribed fire and reforestation. A focus shall be to create and maintain a mosaic of seral vegetative stages that are highly resistant to catastrophic fires and provide for quality wildlife habitat conditions. Quantifying associated outputs and expected outcomes with specific investment levels targeted to specific

⁹³ <https://www.fs.fed.us/sites/default/files/toward-shared-stewardship.pdf>

⁹⁴ <https://www.fs.fed.us/sites/default/files/toward-shared-stewardship.pdf>

⁹⁵ <https://www.forestsandrangelands.gov/strategy/thestrategy.shtml>

geographic areas [i.e., high priority watershed and landscapes] that are at high risk to wildfire shall be key.

- 5. 10-year Plan of Work.** A comprehensive 10-year Plan of Work shall be developed to deploy the *Call to Action*. This Plan of Work will include monitoring and the annual evaluation of progress and outcomes, with adjustments as needed. The Plan of Work will need to include detailed tactics, including additional investment strategies to increase the pace and scale of forest restoration; optimal fire suppression methods; agency workforce requirements; outlining of specific roles; identification and deployment of improved organizational processes; comprehensive reform maintenance; and the delineation of specific outcomes. These annual outcomes shall include, but not be limited to, the amounts of prescribed burning; targeted hazardous fuels reduction; increasing the production of traditional and innovative new forest products; the creation of varied wildlife habitat conditions; and reducing the backlog in critically needed reforestation.

Capacity to efficiently deploy significant new funding levels is a concern. This must be addressed now and this includes firefighters.⁹⁶ The very comprehensive “Increasing Workforce Capacity” report⁹⁷ developed by the National Association of Forest Service Retirees [NAFSR], as an example, provides a strong foundation for many elements of an effective 10-year Plan of Work for the *Call to Action*. The decline of non-fire skills sets within the Forest Service over the last 30 years – about 40 percent -- cannot be overstated.

NAFSR has also produced a position paper entitled “America’s Forest Management Emergency – A National Catastrophe.” The details in this “Call to Action” help augment NAFSR’s position paper.⁹⁸

On January 18, 2022, Agriculture Secretary Tom Vilsack and Forest Service Chief Randy Moore launch “Confronting the Wildfire Crisis: A Strategy for Protecting Communities and Improving Resilience in America’s Forests.” See Appendix A.6.

Strategies are not a problem. We need a detailed, cohesive Implementation Plan with adequate funding for a “campaign of our campaign.”

⁹⁶ <https://www.wsj.com/articles/western-forest-wildfire-firefighter-crew-california-11637425808>

⁹⁷ <https://www.nafsr.org/advocacy/2019/072619%20Workforce%20Capacity%20Study.pdf>

⁹⁸ <https://www.nafsr.org/advocacy/2021/042921%20Cover%20Letter%20to%20Congress%20on%20America's%20Forest%20Maintenance%20Emergency.pdf>

Appendix A.1. Additional Cost Estimates to Address COVID-19, Effective Fires Suppression Tactics and Forest Maintenance.^{99,100,101}

Category	Amount
COVID-19:	\$ in millions
Supplies and Equipment [Protection and Care]	\$128.0
Planning and Response [On Incidents and Within the Community]	34.5
Infection Control [Identification and Mitigation]	88.6
Cost Recovery of Businesses Associated with Fire]	108.3
Behavior and Health Response [First Responders and Citizenry]	34.5
Medical Team [s] Assistance [Newly Established IC Teams]	44.3
Medical Assistance [Direct Assistance]	24.6
Medical Assistance [Insurance and Added Hospital Facilities]	19.7
Community Outreach [Technical Assistance to Ensure Safety]	9.8
COVID-19, Subtotal	492.4
Wildland Fire Suppression:	
Expanded Contracts for Shorter Response Times	579.6
Personnel [Additional to Keep Fires Small]	326.0
Personnel [Replacements Due to Sickness]	157.0
Community Assistance to Ensure and Deploy Defensible Space	69.5
Community Assistance For Structure Preparedness	320.0
Fire Suppression, Subtotal	1,452.2
Fire Suppression Plus COVID-19	1,944.6
Forest Maintenance:	
Hazardous Fuels Reduction [HFR], Subtotal	1,855.0
Fire Suppression, COVID-19 and HFR, Subtotal	3,799.6
Delayed Maintenance of Forestlands	1,755.0
Total Estimated Costs	\$5,554.6

⁹⁹ Additional costs ranged between +\$130 up to +\$250 per acres burned in 2020 [projections estimate 2021 will be the same or higher]. This includes new suppression tactics [“preparedness closer to the incident”]; new skill sets in and around incidents; equipment; medical assistance; backup personnel due to sickness; etc.]. The projection for 2020 is in the range of about 7.1 to 10.2 million acres burned [the actual count was 10.4 million acres]. Costs are expected to exponentially increase above 8.8 million acres. The estimates, additional annual costs, also include additional resources for hazardous fuels reduction and delayed maintenance of forestlands based on questions presented in the Senator Wyden-led letter to the Forest Service Chief on April 30, 2020.

Appendix A.2. Cost Estimates to Address Defensible Space and Home Hardening Requirements¹⁰²

Assumptions:

1. Defensible Space [DS]:

- a. 1 community averages 600 homes and 50 percent of these homes need DS work: thus 300 homes per community at an average cost of \$1,750 per home:
 - 1 crew = 4 homes per month.
 - 1 month = 20 days; 1 day = 7 hours; 1 month = 140 hours of work per month.
 - 140 hours x \$50/hour = \$7,000.
 - $\$7,000 \div 4 = \$1,750$ per home for DS work.
 - 1 community = \$525,000 [$\$1,750 * 300$ homes] for DS work.

2. Home Hardening [HH]:

- a. \$8,000 per home.
- b. 1 community averages 600 homes and the goal will be to Hardened [HH] 50 percent of the homes in each community served.
- c. 1 community will cost \$2.4 million [$(\$8,000 * 600) * 0.50$] to HH.

3. Total Communities:

- a. There are 72,000 communities at high risk to wildfire across the country. Only 2 percent have been designated as “fire wise and safe.” Thus, 70,560 communities need DS and HH.
- b. **Goal:** treat one-half of the total communities at risk to wildfire *and* in need of DS and HH work: 35,280 communities.
- c. Time period to accomplish work: 20 years [or, 1,764 communities treated annually].

4. Cost-share Requirement: 75 percent federal share/25 percent non-federal share.

5. Calculations:

- a. **DS:** $\$525,000 * 1,764$ [communities] = \$926.1 million * 0.75 ~ \$694.6 million each year.
- b. **HH:** $\$2.4$ million * 1,764 [communities] = \$4.2 billion * 0.75 ~ 3.2 billion each year.
- c. **Total Annual Federal Costs:** ~ \$3.85 billion.
- d. **Revised Amount in the “Call to Action” for DS and HH [Appendix A.1]:** 10 percent of estimated costs to help comply with overall budget constraints: DS [\$69.5 million]; H [\$320 million] for a total of \$389.5 million for the first 5-7 years. As fire suppression costs decline, funds for DS and HH can increase.

6. Definitions:

- a. **Defensible Space.** Defensible space is the buffer between a building on your property and the grass, trees, shrubs, or any wildland area that surround it. This space is needed to slow or stop the spread of wildfire, helping protect your home from catching fire -- either from direct flame contact or radiant heat. Defensible space is also important for the protection of the firefighters defending your home.¹⁰³
- b. **Home Hardening.** Preparing your home to provide maximum wildfire protection with appropriate building materials and related design features. To provide maximum protection, home hardening must be used in combination with adequate defensible space.¹⁰⁴

¹⁰⁰ The USDA Forest Service budget for 2021 is status quo. The additional needs for 2021 that are illustrated in Appendix A.1 remaining basically the same. The 2022 proposed budget includes \$1.7 billion for high-priority hazardous fuels and forest resilience projects, an increase of \$476 million over the 2021 enacted level.

¹⁰¹ [HHRG-117-AP06-Wstate-ChristiansenV-20210415.pdf \(house.gov\)](#)

¹⁰² Prepared by Michael T. Rains on February 23, 2021 [revised].

¹⁰³ [Defensible Space - Ready for Wildfire](#)

¹⁰⁴ [Hardening Your Home - FIRESafe MARIN](#)

Appendix A.3. Possible Forest Maintenance Tactics to Help Implement the *Call to Action*¹⁰⁵

The *Call to Action* specifies a clear pathway as to what is necessary, especially for the Appropriations needed, the immediate fire policies required, and political support needed. I [Aune] would like to take some time and specifically concentrate on the “how-to” aspect of getting on top of the current forest conditions exacerbated by tremendous overstocking and excessive fuel loading. We need to begin being prepared to discuss and present possible on-the-ground solutions.

Here are a few of my imperatives that must be achieved to change the behavior and actions of the United States Forest Service [USFS]:

1. As the *Call to Action* clearly points out, immediately halt the use of *managed wildfire* for resource benefits, the so-called strategy of “monitoring wildland fires,” and other euphemisms currently used that lead to what is now regarded by many as “let burn” procedures and policies. This cessation of letting fires burn would be replaced with a rebirth of the “10 a.m. policy.”¹⁰⁶
2. This policy would be in place on every Ranger District west of the Mississippi River.
3. This policy would remain in place until Fire Condition Class III¹⁰⁷ lands comprise less than 20 percent of a third-order watershed. Fire Condition Class [FCC] II¹⁰⁸ lands should be reduced to no more than 30 percent of the same third-order watershed.¹⁰⁹ Reduce the existing FCC III and FCC II lands will require careful considerations of aspect, species, stocking levels, ground fuel conditions, slopes, past fire history, expected reentry periods and other key factors.
4. A network of Defensible Fuel Profile Zones (DFPZ)¹¹⁰ located adjacent to roads and ridges shall be established and blocks of forested lands no greater than 5,000 acres within these third-order watersheds.
5. District Rangers would be required that within six months of establishing an action-oriented fuels reduction policy, to map and identify all of their appropriate third order watersheds, high priority Condition Classes, appropriate Defensible Fuel Profile Zones, and Wildland Urban Interface [WUI] lands.
6. Develop a ten-year plan focused on accomplishing the fuels reduction program based upon accomplishing the goals of the program on each of the Ranger Districts within a National

¹⁰⁵ Prepared by Phil Aune, September 7, 2021. While with the USFS, Aune was a Silviculture Research Program Manager for PSW 1987-2000; Forest Silviculturist Tahoe NF 1975-1987; Silviculturist Mad River Ranger District 1970-1975; Forestry Tech and Forester 1962-1970. Additionally, he was Vice President of the California Forestry Association 2000-2005 and Consultant to the American Forest Resource Association 2006-2012.

¹⁰⁶ In 1935, Chief Forester of the USFS, Ferdinand “Gus” Silcox, utilized the CCC to develop a uniform fire policy. The result was Silcox’s “10 a.m. policy,” a directive that demanded that all wildfires, regardless of how remote, be brought under control by 10 a.m. the morning following ignition. In 1978, the USFS abandoned the policy and adopted a more ecological approach to wildfire management, which included the use of prescribed fire to minimize catastrophic fires.

¹⁰⁷ Condition Class 3: Lands where fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high.

¹⁰⁸ Condition Class 2: Lands where fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components is moderate.

¹⁰⁹ [Watersheds \(umd.edu\)](http://umd.edu).

¹¹⁰ Defensible Fuel Profile Zones [DFPZ] create openings in the landscape to alter wildfire behavior and decrease fire intensity,

Forest. This may not be feasible due to lack of funding, personnel needs or lack of skills necessary, availability of forest products firms, or other reasons that limit the capability to achieve full coverage. This will help establish the necessary local infrastructure needs. A companion fire-year action plan would be required to consider all of the available factors such as workforce, funding, mill capacity, etc. This would be similar to the 5-year Timber Sale Action Planning process that has been used in the past.

7. A suite of appropriate fuel reduction prescriptions will be developed that eliminate fuel ladder conditions, reduce stocking levels not to optimize growth, but reduce fuel loads and the potential for crown fires. WUI lands and DFPZ's should be designed to look like an open park-like stand of forested conditions with the goal of keeping fires in these areas as ground fires with less than 3 to 5-foot flame lengths. The focus on all lands would be to reduce the ground, ladder, and crown fuels to levels that are only suitable for ground fires during typical wildfire seasons.
8. Active use of all possible forest management practices including the use of prescribed fire will be included in the assessment and implementation of all of the previous requirements for fuel management and reduction programs.

The pathway to accomplishing all of the above is the *Call to Action*. Further debates are not necessary. The only action left is the focus on implementation and accountability. There is no need to wait for a new computer program to analyze how much of the landscape to treat, what would be the most efficient suite of activities required, or where should treatments occur. In essence, implementation will be focused on:

1. Which trees to cut and which trees to leave. This is always the major question for any forest management program. What will be required is that the fuels management objectives will be paramount. Once that is established, the goals are essentially similar to experiences with forest management objectives designed to maximize growth and yield, economic returns, wildlife habitat objectives, or any other natural resource objective established for management of our National Forests or other forestlands. The goal will be to improve the resiliency of the forest while reducing the fuel problems as soon as possible. The goal will not be to regulate the forest in a classic forest management perspective. That can come later.
 - All forest management practices can and should be used to reduce excessive fuel loading including the use of Prescribed Fire with all of the proper controls and requirements under policies that have worked for the past 50+ years.
 - Tree harvesting prescriptions should focus on selecting the trees that have the best characteristic and strongest potential to survive a ground fire and prevent the development of crown fires. An analogy to use for similar approaches to selecting the best trees for fire survival is the development of prescriptions for a seed step shelterwood: The focus there is to select trees that have to potential for excellent seed-bearing characteristics and to develop wind firmness in the potential seed trees. All of the trees not meeting these desired characteristics for either the seed tree prep or the fuel reduction objectives are to be removed.
 - During the harvesting operations, concepts like whole tree yarding and delimiting at the landing should be used of all lands available for log processing machines. On cable

ground, Yarding Unmerchantable Material (YUM),¹¹¹ should be required to reduce within stand fuel loads. Removal of chippable material and other non-saw log material should be considered if markets are available.

2. Post-sale activities should focus on ground fuels not removed in the harvesting operations. This would be the highest priority for all post-sale activities including reforestation.
3. Annually report to Congress the progress on accomplishing the fuels reduction program results in terms of Fire Condition Classes reduced and planned activities for the next five years.

Concern. The only significant barrier to accomplishing the aforesaid actions is the willingness to do it! All of the other so-called barriers are merely problems that can be overcome given the willingness to do it! As an example, mill-capacity! **One helpful solution:** Immediately eliminate log export restrictions and develop regulations that encourage exporting of logs.

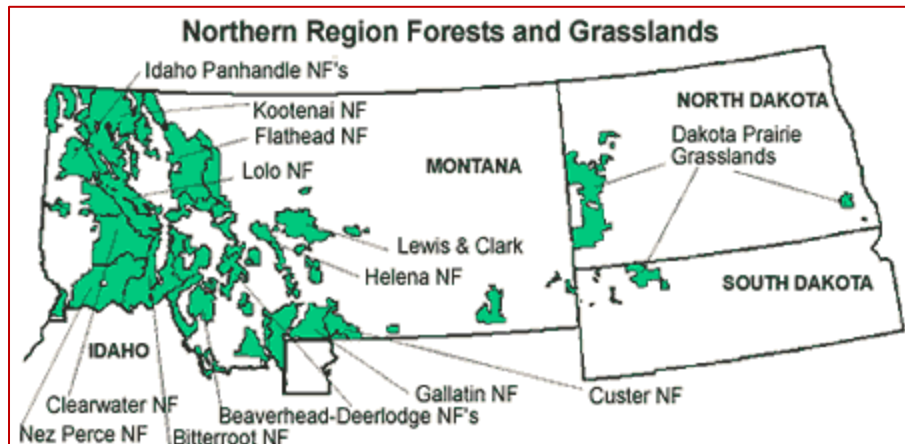
¹¹¹ https://www.fs.fed.us/pnw/pubs/pnw_gtr048.pdf

Appendix A.3.1. Possible Forest Maintenance Examples to Help Implement the *Call to Action* [Companion Piece to Appendix A.3]¹¹²

Specific Forest Maintenance

Examples. Appendix A.3, produced by Phil Aune, discusses concepts and tactics for expanded forest maintenance to more effectively deploy the *Call to Action*. Appendix A.3.1 is a companion piece developed by Jim Marsh is an effort to support the foundation of the *Call to Action* by providing actual examples in Region 1 of the United States Forest Service. Other Forest Service Regions have similar activities that will help deploy the *Call to Action*.

“...The Flathead National Forest in Region 1 has become a contemporary leader in forest maintenance, including the use of prescribed fire, to help effectively deploy the *Call to Action*.” As you read Appendix A.3.1, you will be struck by the abundance of available plans and strategies to address this National Emergency – large, destructive wildfires due to lack of forest maintenance. **The Driving Question:** Why is there a corporate hesitancy to garner and deploy adequate resources to solve this issue. Yes, it will take time. But now is the time.”



REGION 1. UNITED STATES FOREST SERVICE

The *Call to Action* specifies a clear pathway as to what is necessary to help provide healthy, resilient forests across America’s landscapes, especially the added Federal and state

¹¹² Prepared by Jim Marsh, January 1, 2022. While with the Forest Service was Forester /Watershed Scientist on the Brownstown District Wayne Hoosier National Forest, Ukonom and Scott River Districts of the Klamath NF. Forest Hydrologist, Shasta -Trinity National Forest and Regional Hydrologist, Region 5, California. Was District Ranger, Mad River District. And, Aviation, Fire, Lands, Minerals, and Law Enforcement Staff Officer, Six Rivers NF over a 17-year period. Additionally, was the Assistant Chief of Staff, Environment, Natural Resources and Training Lands Management for the Marine Corps Combat Development Command, Quantico, VA. After a federal career, Jim was CEO of an Environmental Consulting company, staff member for Texas A & M University Research and Extension and on the Board of Directors for several consulting and service companies currently.

appropriations needed; the immediate fire policies required; the corporate linkage of existing strategies; and essential political support.

Philip Aune explained in Appendix A.3 the “how-to” aspect of getting on top of the current forest conditions exacerbated by tremendous overstocking and excessive fuel loading. We need to begin being prepared to discuss and present possible on-the ground solutions. Here [Appendix A.3.1] are a few examples that actually illustrate [or refer to] and show the results of specific actions taken along the lines that are discussed in Appendix A.3.

Land and Resource Stewardship Program.¹¹³ The Forest Service has the full authority to accomplish the forest [forests are more than just trees] maintenance actions discussed in this entire document. However, the agency has been reluctant to fully achieve the results of the *Goals and Objectives of the Land Stewardship Program* as authorized by Congress. Let’s start by explaining the Land and Resource Stewardship Program.¹¹⁴

Congress created the Land and Resource Stewardship Program to give the Forest Service [Department of Agriculture] and Bureau of Land Management [Department of Interior] the authority “to perform services to achieve land management goals for the national forests and the public lands that meet local and rural community needs.” The seven land management goals include:

1. Road and trail maintenance or obliteration to restore or maintain water quality.
2. Soil productivity, habitat for wildlife and fisheries, or other resource values.
3. Setting of prescribed fires to improve the composition, structure, condition, and health of stands or to improve wildlife habitat.
4. Removing vegetation or other activities to promote healthy forest stands, reduce fire hazards, or achieve other land management objectives.
5. Watershed restoration and maintenance.
6. Restoration and maintenance of wildlife and fish habitat.
7. Control of noxious and exotic weeds and reestablishing native plant species.

Stewardship Contracts may be used for treatments to improve, maintain, or restore forest or rangeland health; restore or maintain water quality; improve fish and wildlife habitat; and reduce hazardous fuels that pose risks to communities and ecosystem values.¹¹⁵

The Good Neighbor Authority.¹¹⁶ Through Shared Stewardship, the Forest Service is coming together with tribal governments, states, and other partners to address these challenges and explore opportunities to improve forest health and resiliency across a wide-range of landscapes. This *Good Neighbor Authority* allows the Forest Service and the Bureau of Land Management to authorize states, counties, and federally recognized Indian tribes to conduct certain projects on federal lands in pursuit of specified land management goals (16 U.S.C. §2113a).¹¹⁷

¹¹³ <https://www.fs.usda.gov/managing-land/forest-stewardship/program>

¹¹⁴ https://www.nationalforests.org/assets/files/Stewardship-Authority-Overview_2014-7-24.pdf

¹¹⁵ <https://forestsandrangelands.gov/stewardship/index.shtml>

¹¹⁶ <https://crsreports.congress.gov/product/pdf/IF/IF11658/3>

¹¹⁷ <https://www.govinfo.gov/app/details/USCODE-2015-title16/USCODE-2015-title16-chap41-sec2113a>

Stewardship Contracts vs. Timber Sale Contracts. First, all stewardship contracts and agreements include both forest product removal and service work items. Stewardship work is also awarded on a “best value” basis, and excess funds remain on the forest as “retained receipts,” whereas timber contracts go to the highest bidder and excess funds are returned to the United States Treasury or collected in trust funds.

Master Stewardship Agreements [MSAs] with Supplemental Project Agreements [SPAs] are used to designate large areas, typically at the regional level, where a series of projects may take place across a landscape, and may be entered into at the region or forest level. SPAs tier from a MSAs and outline the details of a specific project. SPAs cannot serve as standalone agreements. MSAs with SPAs are useful mechanisms for partners who intend to have multiple stewardship agreements with the agency. These MSAs are typically tiered from the National Forest Plans.¹¹⁸

In the Bureau of Land Management. “Stewardship” refers to the ability to trade forest products for land management and services. For example, in exchange for thinning the forest and keeping the trees to sell, a contractor or organization performs service-work that helps to achieve key land management goals such as improving wildlife habitat or reestablishing native plant species. The intent of stewardship is to improve, maintain, or restore forest or rangeland health; restore or maintain water quality; improve fish and wildlife habitat and reduce danger from wildfires.

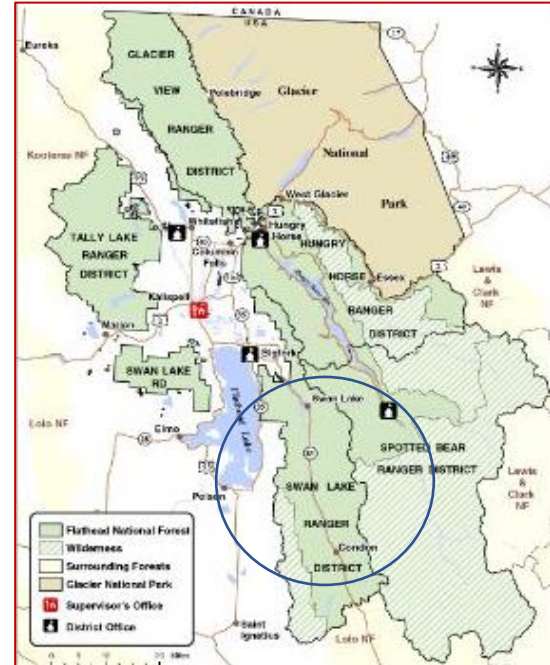
Stewardship projects are created through an open, collaborative process that involved local communities and interested organizations. Stewardship contracting authority includes agreements with nonprofits, best-value contracts, and always include a goods for services arrangement. Congress permanently authorized stewardship contracting through the 2014 Farm Bill, ensuring that the Forest Service and Bureau of Land Management will always have this valuable tool available.

The most important aspect of Stewardship Authority, is that the Forest Service and Bureau of Land Management can use the value of the natural resources themselves and not depend upon the Annual Congressional Appropriation Process which has been highly influenced by non-partisan politics and woefully underfunded for well over three decades.

¹¹⁸ <https://www.federalregister.gov/documents/2016/12/15/2016-30191/national-forest-system-land-management-planning>

Example:

The Dewey Stewardship Sale Project^{119,120} on the Swan Lake Ranger District is one of several projects on the Flathead National Forest that are excellent examples of forest maintenance to improved forest resiliency -- albeit may differ due the geographic differences from other stewardship projects across other Regions of the America. This specific project includes broadcast burning in timber harvest units located within the Wild Bill drainage near Blacktail Mountain south of Kila, MT. These treatments will use prescribed fire for fuels reduction, vegetation regeneration, and wildlife habitat improvements – a terrific strategy to help reduce large, high intensity wildfires. The Flathead National Forest has become a national leader in forest maintenance. America is grateful.



REGION 1. THE FLATHEAD NATIONAL FOREST: SWAN LAKE RANGER DISTRICT, DIXIE STEWARDSHIP SALE PROJECT

There are some concerns. The Stewardship Authority has had lots of growing pains in the United States Forest Service and the Bureau of Land Management. And, several shortfalls in execution, as discussed by Cassandra Hemphill, Dissertation 2015, and the University of Montana.¹²¹

The Forest Service, Region 1 and Montana Department of Natural Resources has common Goals and Objectives¹²² which have made it easy for the two land management agencies to work together on several small and large landscape scale programs and projects. With adequate resources, more of these projects could be pursued to increase the ability of this joint venture to further manage, protect, and ensure forested landscape become more resilient to large, destructive wildfires. And encourage private land owners and organizations to collaborate for a common purpose.

The Forest Plan. As one can see from the map above, there are lots of mixed ownership that can provide great protection from wildland fire with a cohesive program. The *Call to Action* provides the foundation for this cohesive approach as augmented by the Flathead National Forest Plan.¹²³

“Fire managers strive to manage the natural role of fire while protecting values from adverse impacts of fire. This can be accomplished by implementing a coordinated risk management approach to promote landscapes that are resilient to fire-related disturbances and preparing for and executing a safe, effective, and efficient response to fire. Treatment of vegetation for fuels mitigation should focus on creating conditions in which fire can occur without devastating

¹¹⁹ <https://www.fs.usda.gov/detail/flathead/news-events/?cid=FSEPRD957653>

¹²⁰ https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3843429.pdf

¹²¹ <https://scholarworks.umt.edu/etd/4594/>

¹²² <https://www.fs.usda.gov/managing-land/shared-stewardship/northern/case-study-montana>

¹²³ <https://www.fs.usda.gov/detailfull/flathead/home/?cid=stelprdb5422786&width=full>

consequences. Treatments focus on restoring and maintaining natural fire regimes and reducing the negative impacts of wildfires to watershed health, wildlife habitat, and community values at risk. Refer also to the Terrestrial Ecosystems and Vegetation section for plan components related to vegetation treatments; these also apply to fuel reduction treatments.”¹²⁴

State Plans. The Montana Forest Action Plan also provides a strong strategy, in concert with the National Forest Plan to address the *Call to Action* and effectively address this National Emergency.¹²⁵

“While fire will always play an important and necessary natural role in Montana’s forests, the current state of the forests has created a fire-prone landscape more susceptible to high-severity wildfires. Today, over 85% of Montana’s forests are at elevated risk of wildfire (DNRC, 2020). Similar to other states throughout the West, Montana’s fire seasons are becoming longer and more severe (Holden et al., 2018). More than ever, Montana now experiences megafires (fires over 100,000 acres) and the average fire season is 40 days longer than it was 30 years ago (Freeborn et al., 2016).”¹²⁶

“Prioritize lands within Priority Areas for Focused Attention when planning wildfire risk reduction projects and increase community protection efforts by promoting active forest management on landscapes adjacent to high-risk WUI areas.

Use the Montana Wildfire Risk Assessment¹²⁷ to focus community risk reduction, community preparedness, fire adaptation, and watershed protection efforts on areas of greatest risk within the Priority Areas for Focused Attention. Invest in agency capacity to implement a variety of treatment types, including mechanical treatment, prescribed fire, and grazing, to increase the pace and scale of hazardous fuels treatments in Priority Areas for Focused Attention.”¹²⁸

Community Wildfire Protection Plan [CWPP], Flathead County, 2022.¹²⁹ “...Future efforts in planning and implementation of prevention, mitigation, and response projects should be closely coordinated with FireSafe Flathead and their cooperating partners; MT-DNRC¹³⁰, Forest Service, Glacier National Park, Flathead County, and Flathead County Fire Departments. It is likely that some projects would be more effective if implemented on the lands of two or more jurisdictions rather than by a single entity. Cooperation and coordination will also result in avoiding duplicating efforts or overlooking opportunities to protect values at risk. In an effort to reduce new fire starts during periods of very high or extreme fire danger, there is a statewide process for instituting fire restrictions and closures by zone in the Northern Rockies Geographic area. Flathead County and its co-operators are coordinated in this process through the Northwest

¹²⁴ Flathead National Forest Plan, page 52.

¹²⁵ <https://www.montanaforestactionplan.org/>

¹²⁶ Montana Forest Action Plan, page 41.

¹²⁷ <https://mwra-mtdnrc.hub.arcgis.com/>

¹²⁸ Montana Forest Action Plan, page 44.

¹²⁹ <http://dnrc.mt.gov/divisions/forestry/fire-and-aviation/cwpps>

¹³⁰ Montana Department of Natural Resources and Conservation.

Zone of the Northern Rockies Coordinating Center, to ensure close communications and common actions occur during critical periods of fire danger.”¹³¹

Lincoln County, Montana.¹³² There are numerous sources that can help with shared stewardship – even at a small, local level. A world class source of information is the Evergreen Foundation under the leadership of Jim Petersen.¹³³

On August 6, 2021, Evergreen posted “Counties on Fire, Lincoln County, Montana. It was a call to action to create forest-to-community health within the Wildland Urban Interface and an overview of the current state of the forest, wildlife risk, needed treatment, and landowner and community resources in Lincoln County. It is a classic on what needs to be done to help address this National Emergency in a local area. And what if all the local areas banded together under a *Call to Action* to cohesively address this National Emergency we have but seem to not be able to corporately face?

¹³¹ Flathead Country, CWPP, 2020, page 96.

¹³² ["Counties on Fire" 1st Issue - Lincoln County \(mailchi.mp\)](#)

¹³³ <https://www.evergreenmagazine.com/>

Appendix A.4. An Email to a Wide Range of Interests in Wildfires¹³⁴

Note: The following is an email I sent to a wide-range of interests. I was encouraged to include this is the *Call to Action*. **The basic premise:** things have changed. The Driving Question is: Why can't our approach to wildfire suppression also change? The email begins as follows:

Democracy sure can be inefficient, to be sure. But it is a great concept, no doubt.

I would like to respond to your message by referring to the Murry Taylor's piece – "...*How one Forest had 120 fires in the last two years but only burned a total of 70 acre: Standing tall and making a difference on the Rogue River–Siskiyou National Forest.*" To be sure, it is a very instructional piece. My compliments to Murry. **Web Link:** [How one Forest had 120 fires in the last two years but only burned a total of 70 acres - Wildfire Today](#)

And, letting you know that under the right circumstance, letting a fire burn "...to the next best ridge" can be helpful. But NOT NOW.¹³⁵

In the current "Call to Action" [rev. 10.0], there are two "call out" boxes that are very informative. These are:

"... These are different times. With the current land conditions and the impacts of a changing climate, the notion of allowing a fire to burn anywhere, for whatever reason, for the foreseeable future, is unacceptable and must be stopped now; no exceptions."

"...Putting all fires out immediately is very cost effective; large fires are unimaginably expensive and destructive. On average, total economic losses can range between 15 to 30 times direct suppression costs. So, at this point in time, it is critical to put all fires out quickly with an aggressive Initial Attack. The losses in life and land from wildfires are completely unacceptable. It does not have to be this way. A *Call to Action* is required now. Please help!"

The aforesaid two conclusions are from a person who wrote an essay in 2018 entitled, "...Restoring Fire as a Landscape Conservation Tool: Nontraditional Thought for a Traditional Organization." Then, the fire seasons of 2020 and 2021 emerged. Since that essay was written, I have consistently said, "...but NOT NOW." I thought the recent piece by

Murry Taylor included a line that said it all: "...it's clear that, for the time being, we need to

¹³⁴ Sent by Michael T. Rains on December 8, 2021 to a wide-range of interests in today's wildfire situation.

¹³⁵ Note From Michael T. Rains. Regarding my consistent declaration of "Not Now", is this what I really mean? For now, the answer is "yes." I am not about "never", but for now and the foreseeable future, I am for prescribed fire *and against the current concept of managed fire*. I just cannot see the land conditions changing to a level that would allow for managed fire – probably in my lifetime. Am I hedging at bit? Yes. But, I have come a long way in recent years. Thus, my hedge of "Not Now" or like Murry Taylor says, is "for the time being."

put out all fires during fire season as quickly as possible.” I keep asking myself, “...why is it so hard to understand that things have dramatically changed with the [it’s a tie for a top spot]:

1. Lack of forest maintenance over the past three decades
2. Impacts of a changing climate.
3. Expansion of the Wildland-Urban Interface...

Why cannot we [the American people] collectively understand that with these dramatic changes, our past approaches to “fire management” much change – at least for the time being. For now, the concept of “managed fire” or letting the fire burn “...to the next best ridge” is a fool’s errand. It must be stopped; no exceptions.

Recently, I wrote a piece entitled, “...Caring for Our Forests: The Key to Less Destructive Wildfires”. It talks, in part, about local people in harm’s way. It is very easy to intellectualize an argument about the benefits of added fire on the landscape when you are not in the eye of the storm. But people in Placerville, Sly Park and Pollock Pines California, for example, simply want the fires to be put out immediately and do not understand why they cannot be.

In the “Call to Action”, there are ten action items. The following four I read almost every day:

2. The concept of “managed fires” must be taken off the table for now; no exceptions.
3. The goal is to put out every fire immediately. Reduce response time by 80 percent!
4. Smoke is also a killer. We must keep it to a minimum.
7. Fully utilize smokejumpers and other specialized firefighters to augment Initial Attack.

There is a very important statement in Murry Taylor’s piece. It says: “...When it comes to safety, this is something Merv George Jr. [Forest Supervisor of the Rogue River–Siskiyou National Forest] thinks about a lot. It’s a calculated risk to encourage vigorous IA [Initial Attack], since it can mean extra exposure early in most fire suppression efforts. Such actions can put people in harm’s way. But, to hold back and risk a fire growing large where it can really do a lot of damage for a long duration, is not—in Merv’s opinion—the most responsible choice.”

Further, “...as Merv made clear, we all know that fire needs to be returned to the forest landscape. The Rogue River-Siskiyou N.F. is on pace to have a record year with prescribed fire. But fire does NOT need to be there in summers of record low fuel moistures and record high fire danger, or in the hottest times of the year. These fires must be put out early and fast.”

For me, that pretty much sums it up: for the time being, under the current conditions we are facing, putting all fires out immediately – not exceptions – is the answer.

Some say the wildfire problem in the West is the most important environmental issue of our time. They’re right. Actually, it is a national emergency. The piece by Murry Taylor describes the issue perfectly. The “Call to Action” charts a way. Current proposed legislation by Congress could provide important funding to address this national emergency.

Simply put, there is a perfect storm developing. It is time for America's Chief Forester to take the mantle and lead this effort. He can. I know he can. His name is Randy Moore. He could be the "...legacy Chief" for the United States Forest Service if he aggressively addresses the tenants of the "Call to Action." Call him through roseanna.wary@usda.gov. Let him hear your voice. I will do the same.

Appendix A.5. Calculations of Acres That Should Not Have Burned in 2020.¹³⁶

Context: A recent evaluation by this author suggested that up to 20 percent of the acres burned in 2020 [about 2 million acres] might have been avoided if a more agile, aerial approach to fire suppression would have been deployed throughout. Current estimates for 2021 suggest that figure is now closer to 25 percent. I was asked for my calculations. There were two questions: first, the “20 percent statement” on page 22. And, a second water quality question. The following is my response:

Allow me to attempt to answer your two questions. **First, the second question:** For me this is easy.

Earlier in my career with the Forest Service I was a hydrologist on the [Plumas, Six Rivers (both in California) and the Grand Mesa-Uncompahgre (Colorado)]. In simple terms, fires increase sedimentation into waters. A nice link for me is by the United States Geological Survey: <https://ca.water.usgs.gov/wildfires/wildfires-water-quality.html>

This issue is largely unquestioned. Sedimentation, smoke contaminants, leaching from retardants; heat island impacts due to loss of vegetation; impacts of a changing climate; watershed efficiency; restoration costs delayed, lack of forest maintenance over the past 30+ years – I could go on and on. Simply put, wildfires and improved [or at least sustained] water quality do not mix. And with about 80 percent of the freshwater supply in our country originating from forest lands, this makes forest maintenance – the single item we have the most control over at this point in time -- ever so more critical to help reduce large, intense wildfires. This notion is largely accepted. Why we seem to be so reluctant to address this is unclear, thus my “Call to Action.”

The first question [from the inquirer]: “...Your point on page 22 that I have highlighted is of interest to me. Can you send me the math behind it? It’s the section about how we could have reduced the acres burned by 2million acres!!.” **My response:** This is a bit more difficult.

I looked up as much research as I could and came up with weighted factors based on published science; my experience; talking to experts; and some intuition. I did these on a plus [+] and minus [-] basis:

Plus [Loss of Additional (+) Acres]:

1. Larger Aerial Inefficiency: $+25$ [percent] \times 1.5 [weighted factor due to criticality and control] = $+37.5$
2. Fire Fighter Skill Set Reduction [over time]: $+5 \times 1.0 = +5.0$
3. COVID-19 Impacts: $+10 \times 1.5 = +15.0$
4. “Managed Fire” Escapes”: $+20 \times 2 = +40.0$
5. WUI Influence: $+10 \times 1.5 = +15.0$

¹³⁶ Prepared by Michael T. Rains.

Subtotal: +112.5

Minus [Less (-) Acres Burned, *if* Better Addressed]:

1. Climate Change: $-10 \times 1.5 = -15.0$
2. Lack of Forest Maintenance: $-35 \times 2 = -70.0$

Subtotal: -85.0

Difference: $+112.5 + (-85.0) = +27.0$ (percent). Rounded to +20 percent to allow for error adjustments [page 22 of the “Call to Action”]:

Thesis: Do a better job by reducing the “plus” categories and less acres will be burned. For example, reduced the +37 percent inefficiency in “Larger Aerial Tactics Inefficiency” by using small more agile aircraft [“top 10” Action No. 5 in the “Call to Action”].

Anyway, that is the basis of my calculations. If someone has something better, I can replace in the next revision of the “Call to Action.”

Note: I [Rains] strive to ensure that every number in the “Call to Action” is cited or at least has some rationale behind it/them, in case anyone wants to challenge or provide a better figure/figures.

As I always say, “...I give way to superior expertise.” So, you know, my 20 percent figure [page 22 of the latest “Call to Action”-- or over 2 million acres in 2021] of acres that did not have to burn due to inefficiencies -- is conservative. **By my own calculations, it is 27 percent.** But I thought I would error on the side of caution. Thus, my 20 percent figure. I stand by it!

Appendix A.6. 10-Year Strategy to Confront the Wildfire Crisis [United States Forest Service] Wildfire Crisis Strategy Implementation Plan (usda.gov)

PHOENIX, Jan. 18, 2022 – Agriculture Secretary Tom Vilsack and Forest Service Chief Randy Moore will today launch a comprehensive response to the nation’s growing wildfire crisis – “**Confronting the Wildfire Crisis: A Strategy for Protecting Communities and Improving Resilience in America’s Forests.**” The strategy outlines the need to significantly increase fuels and forest health treatments to address the escalating crisis of wildfire danger that threatens millions of acres and numerous communities across the United States.

The Forest Service will work with other federal agencies, including the Department of the Interior, and with Tribes, states, local communities, private landowners, and other partners to focus fuels and forest health treatments more strategically and at the scale of the problem, based on the best available science.

The strategy highlights new research on what Forest Service scientists identified as high risk “firesheds” – large, forested landscapes with a high likelihood that an ignition could expose homes, communities, infrastructure and natural resources to wildfire. Firesheds, typically about 250,000 acres in size, are mapped to match the scale of community exposure to wildfire.

The Forest Service will use this risk-based information to engage with partners and create shared priorities for landscape scale work, to equitably and meaningfully change the trajectory of risk for people, communities and natural resources, including areas important for water, carbon and wildlife.

The groundwork in this new strategy will begin in areas identified as being at the highest risk, based on community exposure. Additional high-risk areas for water and other values are being identified. Some of the highest risk areas based on community exposure include the Pacific Northwest, the Sierra Nevada Range in California, the front range in Colorado, and the Southwest.

The strategy calls for the Forest Service to treat up to an additional 20 million acres on national forests and grasslands and support treatment of up to an additional 30 million acres of other federal, state, Tribal, private and family lands. Fuels and forest health treatments, including the use of prescribed fire and thinning to reduce hazardous fuels, will be complemented by investments in fire-adapted communities and work to address post-fire risks, recovery and reforestation.

The Bipartisan Infrastructure Law provides nearly \$3 billion to reduce hazardous fuels and restore America’s forests and grasslands, along with investments in fire-adapted communities and post fire reforestation. Funds will be used to begin implementing this critical work. In 2020, 2017, and 2015, more than 10 million acres burned nationwide, an

area more than six times the size of Delaware. In the past 20 years, many states have had record catastrophic wildfires, harmed people, communities and natural resources and causing billions of dollars in damage. In 2020, Coloradans saw all three of their largest fires on record. The running 5-year average number of structures destroyed by wildfires each year rose from 2,873 in 2014 to 12,255 in 2020 – a fourfold increase in just six years. “The negative impacts of today’s largest wildfires far outpace the scale of efforts to protect homes, communities and natural resources,” said Vilsack. “Our experts expect the trend will only worsen with the effects of a changing climate, so working together toward common goals across boundaries and jurisdictions is essential to the future of these landscapes and the people who live there.”

“We already have the tools, the knowledge and the partnerships in place to begin this work in many of our national forests and grasslands, and now we have funding that will allow us to build on the research and the lessons learned to address this wildfire crisis facing many of our communities,” said Moore. “We want to thank Congress, the President and the American people for entrusting us to do this important work.” The Forest Service remains committed to sustaining the health, diversity and productivity of all of America’s forests. Visit the Forest Service website to read [the full strategy document](#). If you would like to partner with the Forest Service, visit the National Partnership Office website at www.fs.usda.gov/working-with-us/partnerships.

USDA touches the lives of all Americans each day in so many positive ways. In the Biden-Harris Administration, USDA is transforming America’s food system with a greater focus on more resilient local and regional food production, fairer markets for all producers, ensuring access to healthy and nutritious food in all communities, building new markets and streams of income for farmers and producers using climate smart food and forestry practices, making historic investments in infrastructure and clean energy capabilities in rural America, and committing to equity across the Department by removing systemic barriers and building a workforce more representative of America. To learn more, visit www.usda.gov. Also, see page 6 of this document.

Appendix A.7. The Use of “Managed Fire” [Dialogue]

Note: This is an e-mail dialogue by some national leaders regarding the concept of “managed fire.” This was previously sent to the Chief of the Forest Service from the National Wildfire Institute in a letter dated July 23, 2021. The “dialogue” is incredibly informative, instructional and so critical to the “Call to Action.” And, the current stance regarding the use of “managed fires”. The “dialogue” suggests that not much has changed over the past decade or more. Unfortunately, this is probably true. Thus, the need to aggressively deploy a “Call to Action.”

1. Has “Managed Fire” been used in the past?

Ray Haupt, haupt@sisqtel.net, 5/22/2021

Prior to 2010, the year I retired managed fires **were only allowed in Wilderness** (emphasis added), the ignition must be from lightning and had to be recorded under a G Code. OMB reprogrammed Suppression dollars, P-Code for this purpose at the beginning of the fiscal year. Resource benefits recorded in FACTS database was prohibited. In these days the process was highly regulated. It required a LMP that allowed it, an approved Fire Management Plan outlining the parameters, a documentation process that looked at short/long term fire behavior, a checklist of signatures documenting ignition and compliance with all the above, a trained DR with fire quals including Wilderness policy and advanced fire behavior and the courses leading to this level, an equally trained District Fire Management Officer who is also a current ICT 3 who trained with the DR at Marana in Advanced Fire Applications and the same training and qualifications for the Forest FMO. I know this well as I was the only line officer in R5 to qualify in those years and wrote R5's handbook Fire/Wilderness policy implementation in 2007. The whole thing was turned on its head shortly after 2010. I believe due to limited line requisite qualifications as the agency got dummied down.

2. Managed Fire in 2012 expressed concerns over use of managed fire:

Email from Bill Derr[billlecfm@me.com] June 3, 2012 to Jim Hubbard.

Hi Jim:

It seems that the field has failed to heed the policy direction that you so well-articulated to retirees on numerous occasions in the past two years that: "All wildfires on or threatening NFS lands, regardless of cause or location, would receive full suppression during fire season". The R-3 fire now at 190,262 acres, which was caused by lightning on May 9th and allowed to burn by the Forest Service, is one of many recent examples of cases where the direction you so well expressed in not being followed by the field.

Can you enlighten me on any changes since we last spoke which may have altered the policy direction you indicated to retirees that you intended to convey to all field personnel?

What efforts are planned to assess definitively the forest ecosystem benefits referred to in the Gila National Forest News Release of May 17th (following email) on the Whitewater/Baldy Complex?

There is a growing concern among retirees about the unintended consequences and damage to valuable natural resources and private property resulting from the escape of let burn fires managed by the Forest Service to achieve ecosystem benefits.

There is the potential for civil and even criminal liability exposure to the Forest Service and its officials when decisions allow wildfires that could have been easily suppressed in their incipient stages to escape causing unacceptable natural resource damage and damage to private property and threaten and/or take the lives of persons.

It would be unfortunate if retirees, who are wildland fire experts, were asked to investigate the aforementioned incidents and subsequently testify as expert witnesses for plaintiffs who had brought legal action against the Forest Service for recovery of damages alleged to have been the result of negligent acts by Forest Service officials. We would not welcome this role, but, in good conscience, we would have no choice.

I strongly recommend that the Forest Service:

1. "Stand Down" from the current practice of allowing selected fires to burn to accomplish management objectives.
2. Adhere to the policy direction you have previously stated to "immediately suppress all wildfires regardless of cause or location during fire season".
3. Appoint an independent group of wildland fire suppression experts to conduct an objective and comprehensive review of the Whitewater/Baldy Complex Fire and other recent fires where the Forest Service has allowed them to burn in lieu of immediate full suppression. The review should address:
 - a. The soundness of Forest Service policy to not take immediate full suppression actions on the subject fires and an assessment of damages to natural resources and property resulting therefrom.
 - b. The decision process and identification of Forest Service officials involved in making the subject decisions including their wildland fire suppression qualifications, and,
 - c. A reassessment of Risk Management criteria which appears to be impeding responsible initial attack fire suppression actions, thereby, increasing overall risks to firefighters by placing more firefighters on more acres over longer periods of time.
 - d. Charter a study group of wildland fire experts (including retirees) to assess current and past wildland fire control and management practices and make specific recommendations to ensure that the National Forest System's valuable natural resources are: "Properly

protected, consistent with the Organic and Multiple Use Acts, to ensure that the American people continue to benefit from the valuable goods and services that the National Forests provide in perpetuity".

- e. The Forest Service and its leaders have the opportunity to exercise bold leadership at this time by addressing this issue in an objective and forthright manner. Failure to do so will, in my opinion, not bode well for the Forest Service in the long run.

In closing, I must inform you that in my opinion, it is only a matter of time before States, County's, and private parties damaged by Forest Service decisions to allow some fires to burn by not taking immediate full suppression action will bring legal action against the Forest Service requesting a Restraining Order to halt the Forest Service policy and practice of allowing some fires to burn in lieu of full and immediate suppression. Further, the concerns expressed herein, absent a definitive response from the Forest Service, will be shared with the Press, Congress, State politicians, and other parties of interest by like-minded individuals who have grave concerns regarding the protection and management of the National Forests today.

I look forward to your response. Retirees would be happy to discuss further our concerns.

Best Regards, Bill

Response from Jim Hubbard

From: "Hubbard, James E -FS" <jehubbard@fs.fed.us>

Subject: Re: Whitewater/Baldy Complex

Date: June 3, 2012 at 8:02:45 AM PDT

To: "billlecfm@me.com" <billlecfm@me.com>

I've been out all week Bill, but read your email and sent on to Tom Harbour. We have been to the RLTs [Regional Leadership Team Meetings] this spring emphasizing aggressive IA [Initial Attack] and elevating multiple objective strategy decisions to the RFs [Regional Foresters]. More work to do and I'll take a closer look next week.

3. Managed Fire in 2016 expressed concerns over use of managed fire:

Email from Bill Derr [billlecfm@me.com] 4/12/2016 to Jim Hubbard:

Hi Jim: The forthrightness and candor in your discussions with retirees on F&AM [Fire and Aviation Management] and related issues is much appreciated. In that regard, I believe we have an obligation to respond in kind on the issue of using fire suppression funds to perform work on wildfires wherein the USFS is allowing them to burn to reduce fuel loads and benefit the resource.

Whatever term and/or how it is defined to describe this activity and how it may be referenced in Forest Plans may not be sufficient to provide authority to spend said funds without violating

Federal laws governing the use of appropriated funds. It appears, based on the Chief's April 5, 2016 Letter of Intent, "expand the use of fire", that the USFS may be planning to increase "the use of fire" as a method of reducing fuel loads and to provide other beneficial outcomes associated with forest management. The risks (escapes and exposure to criminal and civil liability) and environmental restrictions associated with prescribed fire have curtailed this activity sufficiently to cause the USFS to explore other methods of accomplishing prescribed fire objectives.

I am concerned that those persons or groups who may object to any aspect of the Chief's intent to, "expand the use of fire", may elect to voice their concerns to Congress, OMB, OIG, OSC, and the Press. Besides a general objection, I would expect that they would allege that the USFS was guilty of misappropriation of funds.

As to a general objection, that could cover many aspects of, "expanding the use of fire", such as:

1. Smoke pollution and associated health and economic impacts.
2. Unacceptable resource damage, including damage to wildlife and their habitat.
3. Unnecessary risk to firefighters, especially when fires escape.
4. Lack of pre-planning and pre-approved burn plans.
5. Decisions to allow wildfires to burn made by persons without the necessary KSA's [Knowledge, Skills and Abilities] to be qualified to do so.
6. Potential for loss of life and damage to private property creating exposure to criminal and civil liability.
7. The depletion of firefighting resources engaged in managing "the use of fire" from availability to respond to emerging wildfires which require immediate containment.

As you know I share many of the above concerns. Establishing direction in the form of guidelines and standards to implement a program for "the use of fire" is very complex and fraught with a host of variables, many of which are unpredictable by nature. Further, the consistency of application is equally variable given the different KSA levels of the decision-makers involved.

The "Window of Opportunity" during fire season when the full criteria of guidelines and standards were met would be slim indeed, notwithstanding the issue of appropriation integrity. Further, engaging in "expanding the use of fire" would put the USFS on a dangerously slippery slope.

To some degree, masking the "the use of fire" in terminology and Forest Plans could look like a shell game and would compound sanctions leveled at the USFS and/or it's officials should appropriation integrity become an issue.

The greatest danger to the USFS would be a public accusation of misappropriation of funds which could tarnish the USFS reputation and severely inhibit Congress's inclination to properly fund the USFS in subsequent years.

Just a few thoughts to follow-up on the related question I raised in our meeting today. No doubt, the USFS has considered much of the above, however, perhaps a careful second look could be a wise investment.

Best Regards, Bill

Response from Jim Hubbard

From: "Hubbard, James E -FS" <jehubbard@fs.fed.us>

Subject: Re: NAFSR Fire Committee Meeting 4/12/16

Date: April 13, 2016 at 4:47:31 AM PDT

To: william derr <billlecfm@gmail.com>

All good points Bill. Thank you for the thinking.

4. Managed Fire in 2021 expressed concerns over use:

Email from Frank Carroll] fcarrolls1@msn.com 7/13/2021 on OP-ED by Gabbert.

Responding to commenters on Wildfire Today's Bill Gabbert's Op-Ed on putting fires out quick. July 13, 2021.

The issue for me is that large fire teams are using offensive backfiring to extremes in the name of "risk management." The history of large fires around Globe, AZ in Gila and other counties is a case in point. If we start late in the chain of large managed fires with the 2017 Pinal Fire, the FS was completely clear that the objective for the fire was to allow the area to burn to "reintroduce fire to fire-depleted ecosystems." The 4000-acre fire burned for three weeks and did significant damage to riparian areas and woodland communities. In April 2018 Forest officers met with the Gila County Cattle Growers Association to inform them (not ask their opinion) that the FS intended to "burn every acre of public land" in the county over the next several years as opportunities arose. The Woodbury fire in 2019 was an extension of that declared intent. But the Bush fire in 2020 along with Salt and Griffin and others really showed FS intent. Those fires were nursed and lit on purpose to cover hundreds of square miles to meet some aspirational objective of land and resource management. The practice of aggressive and offensive burning continued unabated to the present day, most recently when the FS used two fires started by military aircraft, the Telegraph, and Mescal, to burn off East Mountain and Six-Shooter Canyon among other pristine places in a massive burn that should have been put out southwest of Miami. It's not just managed fires being allowed to drift around and burn where they will; it's also backfiring big fires to make them bigger on purpose.

Thanks, Bart. Yes, we do. We have the annual Chief's letter describing "restoration wildfire" objectives for each year. We have the FSM and handbooks. We have the detailed National Fire Plan. We have regional and local unit documents and correspondence that detail how the policies will be implemented. We have done and are doing extensive analyses of every iteration of every WFDSS, every Letter of Intent, every Delegation of Authority, and documents, letters, and observations of affected people, and communications between and among people actively engaged on these fires. We have one blow-by-blow account by a senior air attack supervisor over the fires who gave us aircraft use and impact reports detailing how air tankers were used for point protection and herding fires away from communities but pulled and grounded when the fires began to die or interfere with backfiring plans. We have interviewed leading ops people and line officers, often on a daily basis, across the spectrum (who you know very well and began fire careers in the early 70s just as I did in Arizona). We have meeting notes and handouts from permittees, local government officials, and elected reps. We have the direct observations of wildlife conservation groups and their officers, state officials, and others with intimate knowledge of the difference between declared intent and outcomes. We have forest plan standards and guidelines, records of what plans call for versus what is actually happening, and the legal and regulatory framework against which the current fire policy must be judged. We have prepared an extensive document detailing the conduct of these fires, including the recent cynical renaming of "managed fires" to "defensive fires" which differ from each other in no material way. We will present this information to almost 50 interested and affected groups and organizations in Phoenix on July 27 preparatory for a major lawsuit designed to enjoin the FS from continuing the "managed fire" program absent required legal planning and records of decision. To understand that part, remember that the fire-retardant program had to pass the NEPA, NFMA test for the same reasons "managed Fire" does; They are premeditated and preplanned major federal actions, and the cumulative effects must be disclosed in advance. We are joined in the suit by forest users across the spectrum of organizations and elected officials. You are correct that the FS does not want to intentionally burn the Sonoran Desert, and yet their backfiring on the Bush Fire alone destroyed tens of thousands of saguaros and thousands of protected Arizona cypress trees, not to mention thousands of acres of critical habitat for flycatchers and other wildlife. When you fall back to the next best lakeshore or state highway, you're not able to cleave to your stated intent to protect things that need protecting. Our intent is to help the FS and the fire program managers get back in line with law, regulation, and policy as quickly as they can. By "our" I mean a dedicated group of former ICs, line officers to the Chief's level, deputy chiefs, associate chiefs, fire program managers, district rangers, forest supervisors, wildlife conservation groups, grazing associations, the list goes on. Stay tuned.

5. "Monitoring Fires" another term for Managed Fires?

Dave Nelson, dknelson@comcast.net, 08/01/2020

I am not judging the validity of the monitoring of the 17 monitored fires as I do not know their location or the specific conditions. I do agree with Mike and Stub about the analysis that "managing wildfire for resource benefits" has its place. However, some questions, observations of past practices, planning, lack of specific established satisfactory results, cost analysis of the program (total, not just fire by fire, etc. are:

1. First, how are 17 fires being allowed to burn with no suppression action considering the Chief's "put the fire out" at least for the 2020 fire season?
2. And as to some of Bill's concerns:
 - a. How does this meet current appropriation limits on EFF (may be called something else now)? Has new legislation or appropriation guidelines been approved by Congress?
 - b. What about environmental analysis other than a blanket approach in the Forest Plan? Or how is the analysis done in the Plan? By large contiguous units or smaller sub-units such as were established in the 1980-90 planning process?
 - c. What criteria have been established to determine whether or not to allow the burning to continue such as time of year, preparedness level, fire danger rating, other fire activity, resource availability, public vulnerability, etc.?
 - d. What criteria are used to determine when and how the fire is allowed to continue or suppression to begin? I have witnessed several fires that were less than an acre, in the rocks, and determined to not be going anywhere that didn't follow the script and burned out of the wilderness or Park and destroyed private property.
 - e. What analysis goes into the risk of requiring suppression resources when they are needed for new starts and fires that do threaten the WUI or other areas requiring the fire to be suppressed?
 - f. What is the level and completeness of any "After Action Analysis (AAA)" is done on "managed wildfires" or any fire escaping IA and extended attack?
 - g. Does the AAA analyze the costs vs. benefits, the impact of suppression resource diversion, the impact on the public, etc.?
 - h. Does the AAA adequately analyze the end vs. anticipated results?
 - i. Is there a requirement to develop an annual report for the "managed fire" program documenting the overall results of the program?
 - j. Are or will these AAA's include any non-Agency evaluators?
 - k. Are these AAA's and annual reports readily available to the public?
3. And what about limiting the size of a managed wildfire so that when it does get into the wrong area and/or increases the intensity and spread you actually have the necessary suppression resources to do something about it?

4. And why, if using wildfire for managing resource benefits is such a good deal do you have to wait for a lightning bolt to start it? Wouldn't it make more sense to just go out there and manage it like an Rx burn depending on the randomness of lightning?

This is not intended to be a comprehensive list and I am sure it can be easily expanded. It is just a number of items that come to mind easily that I think should be a part of a "managed wildfire" program. As well as for an Rx Burn program. Why should they be any different? As always the old adage of "playing with fire" does not usually reference the good that can occur.

David K. Nelson [RIP]

6. "Let fire play it's natural role on the landscape" terminology means let it burn in managed fire concepts:

Ted Stubblefield, highdesertstub@gmail.com, 06/13/2021

Subject: Re: | Gila NF: Johnson Fire Update for June 13, 2021NM Fire Info. Ah ha, a new term for "managed fire:" *let fire play it's natural role on the landscape*. They just forgot to mention the additional millions of dollars their playing around will cost the public.

Costs really don't seem to matter anymore; spend it like you got it is their new motto.

I mean this very seriously. The ones directing this kind of "management of fires" (and I include ICs) have forgotten WHO THEY WORK FOR, and it sure as hell isn't the agency!

Dave Nelson, dknelson@comcast.net, 06/15/2021 response to Ted Stubblefield note above.

Stub – not that it changes anything, but they have referred to these "let burn (my term)" fires as "*let fire play it's natural role on the landscape*" from the beginning back in the early 1970s as I remember.

This fire was started by lightning at noon on May 20. Wonder what the Initial Attack amounted to? My guess is that they evaluated and decided to "let it burn" with a contain/confine strategy. By 5/21 it was 250 acres w/ 1 Hotshot Crew, 1 Ten-person hand crew (HC). 1 T3 Engine, 1 T1 Helicopter, and a 10 Person Fire Use Module on order.

By 5/24 it was 6,093 acres with 1 Hotshot crew, 1 ten-person crew, a 10-person Fire Use Module, and 1 T3 Helicopter.

A week later on 6/1 it was 34,944 acres with 2 Hotshot crews, 1 Ten person HC, 3 Ten-person Fire Use Modules, 3 T3 engines, 2 T6 engines, 1 WT, and 2 T3 Helicopters.

On 6/14 it was 65,289 acres with 11% of the perimeter lined and 3 Hotshot crews, a 12 person HC, 1 10-person Fire Use Module, a 20 person HC, a 20 person IA Crew, 5 T6 engines, 4 water tenders, 2 T3 Helicopters, and a T2 Helicopter.

They say their strategy is confine/control, but sounds to me more like “let burn/managed fire” to me. The confine/control strategy is more a strategy dictated by the fire as opposed to just letting the fire take its course. However, if a fire is to be “managed to benefit resources” what they are doing here is how I would suggest doing it. But it again raises the questions of in declared fire season, having an EA or EIS, setting limits, using FF dollars, setting objectives and evaluating how well they are met, etc.

Didn't know there were so many different hand crews – hotshots, 10-, 12 - and 20-person hand crews, fire use modules, 20 person IA Crew. Looks to me like maybe the ICS terminology has slipped somewhat.

Nice gig when you can spend over 3 million which wouldn't be budgeted in a millennium.

7. **Current fires of concern:**

Ron Raley, ronrale@comcast.net 07/18/2021

- **Lava Fire** - The initial attack resources left the fire after the first operational period violating a long-standing principle “Never leave a fire until 24 hours after the last observable smoke” On the second day it ran and threatened the communities of Lake Shastina, Weed and Mt Shasta. People are very upset because it was until day three that they began a robust fire suppression effort.
- **Beckworth Complex** – Once again, as has been reported, the original Sugar fire was contained then allowed to escape days later due to neglect. The community of Doyle suffered a large number of homes and businesses lost
- **Tamarack Fire** - The Tamarack fire was ignited by a lightning fire on July 4th. It was being “monitored” until July 16th when it blew up and threatened the community of Markleeville and others.

Appendix A.8. The Impacts of Wildfire on Water Yield and Quality¹³⁷

Post-fire watershed impacts

Decisions to “let it burn” must be tempered with an understanding of the adverse consequences of large wildfires on the direct impacts to water resources, downstream consequences and related loss of fish and wildlife values. In the late 1970’s Forest Service research hydrologists developed a comprehensive cumulative watershed impact analysis procedure, published in 1980 by the EPA called WRENNS (An Approach to Water Resources Evaluation of Non-Point Silvicultural Sources), 1980 (EPA -600/80/012), of which I authored the chapter on Sediment. A major update to this watershed-based assessment was called WARSSS, Rosgen, 2006 (Watershed Assessment of River Stability and Sediment Supply), approved by the EPA for national application for clean sediment TMDL’s. Regardless, both procedures quantify the impacts to water resources due to vegetative changes, roads and surface disturbance activities including wildfires. The quantitative assessments include water yield and peak flow increases, surface and mass wasting erosion processes and channel source sediment due to streambank erosion, channel enlargement, floodplain/alluvial fan abandonment and increased sediment supply that were directly related to *increased peak flows*.

Following two major wildfires in Colorado, the WARSSS assessment was recently conducted in detail on the Pike-San Isabell N.F.’s in Colorado to determine the extent of water resource impacts to prescribe restoration scenarios and set prioritization for application. I used the WARSSS watershed assessment methodology to quantify and validate the post-fire watershed impacts on both the large Hayman fire, and the more recent Waldo Canyon Fire, both near Colorado Springs, Co. *Three orders of magnitude of sediment yield/year* by thousands of tons were still being delivered downstream as well as extreme stream channel instability, loss of river function and fish habitat degradation on the Hayman fire *that had been recovering for over 12 years*. Both fires resulted in similar processes directly responsible for the sediment and downstream impacts which was *not surface erosion* (less than 15percent of the problem) but was related to *increased peak flows* and *channel source sediment* from *streambank erosion and channel incision*.

Although there was good ground cover density by grasses and forbs within the Hayman fire, the accelerated sediment yield was primarily due to increased peak flows with only moderate precipitation events that were routed through unstable stream channels. Our restoration approach as implemented, was to reconnect incised and eroding channels to alluvial fan surfaces and reconnect floodplains to better distribute the frequent, unusually high peak flows. The change in normal water losses from crown interception and evapotranspiration resulted in increased peak flows from wildfires in these watersheds that would take approximately 75-90 years to regain a forested stand to establish pre-fire hydrologic conditions. The long period of recovery is related to a slow growing season at higher elevations in Colorado and other areas within the Rocky Mountain west. The eastern US would have a much faster forested stand recovery potential, but lower wildfire incidence.

¹³⁷ Dave Rosgen, P.H., Ph.D, Wildland Hydrology, Ft. Collins, Colorado, February 14, 2022.

Unfortunately, there is a common misconception within the Forest Service that post-fire recovery occurs within 2-3 years, related to ground surface reestablishment of grasses and forbs. We have found this to be incorrect as the focus has been on surface erosion (rill and gully) processes that makes up a small percentage of the sediment and downstream impacts. Thus, most BAER teams that prescribe aerial mulching are treating a very small percentage of the post-fire water resource impacts.

Stream restoration on a watershed scale is an expensive proposition, thus *prevention* of such large-scale wildfires with an aggressive initial attack approach was the direction in my 20 years field experience with the Forest Service...keep them small...at all costs! The unfortunate build-up of fuel with effective fire control should be managed by good silvicultural and forest health practices as well as salvage and fuel hazard reduction timber sales. As I remember with the creation of the Forest Reserves in the late 1800's, the main purpose was to provide a timber source and to "secure favorable conditions of water flows" These long-term post-wildfire water resource impacts have *created anything but favorable flow conditions!*

We have the tools to accurately predict these adverse water resource impacts, but don't have the funding or management direction to correctly restore the extensive and long-term adverse effects. It is not a short-term issue! We do however, have the opportunity to redirect fire prevention and forest management efforts which will be the most effective to revisit this major goal in the creation of the forest reserves. To continue the management direction of "let it burn" must be directed by someone totally unfamiliar with understanding the cause and consequence or post-fire water resource impacts, including the extensive loss of fish habitat and riparian function.

Appendix A.9. Proposed Legislation Halting “Managed Fire”

Rep. McClintock and Rep. LaMalfa Introduce Legislation Requiring the U.S. Forest Service to Immediately Suppress Wildfires

WASHINGTON, D.C. – On March 3, 2022, Congressman Tom McClintock (CA-04) and Congressman Doug LaMalfa (CA-01) introduced legislation directing the U.S. Forest Service to immediately suppress wildfires on National Forest System lands and put an end to the policy of letting fires burn.

“This ‘let burn’ policy of federal land managers began in 1972, during the height of the radical environmental movement,” McClintock said. “Essentially, it holds that ‘fire is our friend.’ It stems from the premise that fire is nature’s way of cleaning up forests, and that active suppression of fires leads to a build-up of excess fuels. As we have tragically witnessed firsthand, it is dangerous nonsense to ‘monitor’ incipient fires in today’s forest tinderbox. The U.S. Forest Service was formed to remove excess growth before it can burn and to preserve our forests in a healthy condition from generation to generation. It’s time they did.”

“The days of ‘monitoring’ fires must end – Northern California is burning up at a record rate. The Forest Service’s monitoring policy and ‘watch and wait’ has allowed multiple catastrophic fires to unnecessarily escalate and devastate our wildlands and rural towns,” LaMalfa said. “In 24 hours, what starts out as a small blaze can expand to consume thousands of homes, municipal facilities, and businesses. Drought stricken, unmanaged, overgrown forests are a ticking timebomb for another massive fire. In addition to aggressive initial attacks on fires, we must properly manage our forests by thinning near towns and infrastructure, clear a wider buffer zone around power lines, as well as use roads as firebreaks. Our forests are overgrown, the long-term solution is to return to proper management and aggressively thin them. Why is America the number 2 importer of wood while our own forests burn to the ground - causing untold damage to families, pollution that chokes half the country, and destroying the environment?”

Congressman McClintock and Congressman LaMalfa sent a [letter](#) to Chief of the U.S. Forest Service Randy Moore urging him to implement these policies for the upcoming wildfire season.¹³⁸

[H.R. 6903](#) requires that “to the extent practicable, use all available resources to carry out wildfire suppression with the purpose of extinguishing wildfires detected on National Forest System lands not later than 24 hours after such a wildfire is detected.”

¹³⁸ Each year, the Chief of the United States Forest Service develops a *Letter of Intent* that attempts to outline the vision for wildfire suppression. This year, Representatives McClintock and LaMalfa provided input for the pending letter to be considered by America’s Chief Forester.

Appendix A.9.1. Additional Proposed Legislation to Address Fire Suppression [Senator Alex Padilla (D-CA)]¹³⁹

Fire Suppression Improvement Act.

In light of year after year of increasingly catastrophic wildfires in the West, it has become clear that the federal government must do more to support state and local firefighters with their initial attack in order to get fires under control quickly and stave off increased spread and destruction.

The existing Fire Management Assistance Grant (FMAG) Program is available to state, local, and tribal governments for the mitigation, management, and control of fires on publicly or privately-owned forests or grasslands that threaten such destruction as to constitute a major disaster. However, this program currently does not reimburse the pre-deployment of assets to prevent fires from growing out of control, and it does not currently allow for any flexibility in the federal cost share the way other FEMA disaster grant programs do.

What the Fire Suppression Improvement Act would do:

- **Pre-deployment of Local Assets:** This bill would explicitly allow for state or local governments to use FMAGs for the pre-deployment of assets and resources. These pre-deployed assets are critical to suppression of fires and are sometimes the only way to contain a fire before it gets out of hand and needs a major disaster declaration. Currently, FMAGs can only be used to reimburse expenses incurred after is it granted. This bill would simply allow for FMAGs to help state and local governments cover the cost of fighting incidents from the beginning of the high-risk event.
- **Fire Management Assistance Cost Share and Eligible Activities:** This bill would make FMAGs consistent with other FEMA disaster assistance by stating that the federal cost share of FMAGs shall be not less than 75 percent of the eligible cost of such assistance. This bill does not mandate any increase but simply allows for flexibility and increased federal assistance where necessary. As states and locals attempt to fight and contain more frequent and more dangerous fires, it is imperative that the federal government has the flexibility to meet the current crisis conditions on the ground.

padilla.senate.gov

¹³⁹ [Padilla Introduces Slate of Bills to Help California Respond and Recover from Wildfires](#) - Senator Alex Padilla (senate.gov). May 2022.

Appendix A.10. H.R.5631 - Tim Hart Wildland Firefighter Classification and Pay Parity Act

A critical need to help address America's unplanned wildfire National Emergency is adequate pay and housing for firefighters. Ximena Bustillo, a food and agriculture policy reporter at POLITICO developed an excellent article of this issue dated March 15, 2022. Appendix A.10 highlights this issue and proposed legislation as a potential solution. As stated by Bustillo:¹⁴⁰

The United States Forest Service has had chronic staffing shortages for over a decade. But amid rising wages and a fierce competition for labor across the U.S. economy, the agency faces a particularly bleak hiring picture.

Workplace conditions like low and non-competitive wages and housing availability and affordability have long been issues for the Forest Service recruitment. The Forest Service administers 3,320 housing units for USDA and other emergency personnel nationwide. But many Forest Service employees say these units are not maintained, and some are unlivable.

The bipartisan infrastructure bill that Congress passed in the fall contains \$600 million to help [USDA and the Interior Department increase wages](#) and convert seasonal employees to full time. USDA said it has already transitioned 1,000 employees. The infrastructure law also directed the Office of Personnel Management to reclassify the agency's employees so they are eligible for higher pay.

Congress is weighing a standalone Forest Service bill, called [Tim's Act](#) after wildland firefighter Tim Hart, who died while fighting a fire in 2021, which would increase firefighter minimum pay to \$20 an hour and provide a housing allowance and other benefits. Proponents of the bill hope parts of the legislation will be included in the 2023 omnibus spending or National Defense Authorization legislation.

USDA's [10-year wildfire mitigation plan](#) acknowledges the staffing needs, stating that "next steps will include building our workforce capacity in the Forest Service and with partners to accomplish the work at the scale needed and establishing the large multijurisdictional coalition needed to support the work." It said the agency is working to implement the new firefighter job series classification, increase salary base pay, and convert more than 1,000 seasonal firefighters to permanent positions. The [implementation plan emphasizes](#) cross-government collaboration on training and workforce-sharing. USDA said the OPM, Forest Service and DOI have convened a workgroup that is meeting regularly to work on a new wildland firefighter pay structure mandated by the infrastructure law. The group will hold focus group sessions in March, with the work required to be completed by May 2022.

¹⁴⁰ XIMENA BUSTILLO

Appendix A.11. A Creative Movie: Forest Under Stress by Rachel Lee Hall

The “Call to Action” wants to include a short-animated film developed by one of our colleagues – Rachel Lee Hall.¹⁴¹ Many of you have seen it. But there has been such an overwhelming response to its content, we wanted to include it in this “Call to Action” to ensure its highlight and continuance.

Forest Under Stress (FUS) is a short film about Southern Oregon forest health, and Rachel’s observations regarding the forest’s diminishing resiliency caused by the continuous disruption in the hydrological water cycle during the last four decades. This disruption adversely affects root systems, aquifer recharge, and in turn, the terrestrial story, causing brownout and volatile fuel load ignited by man or nature resulting in mega wildfires. Rachel understands that nature will strive to correct this imbalance with wildfire, until the fuel load is exhausted as outlined in [What Happened to Southern Oregon Forests in Spring 2020](#).

The story takes place in Southern Oregon’s forest plagued by decades of competitive vegetative buildup, which contributes to chronic soil dehydration and follows a trio of mycelium fungi as they struggle to broker an exchange for nutrients, minerals, and moisture to the desperate root system in exchange for carbohydrates. Through the eyes of the mycelia, the film encourages viewers to consider factors that caused stress in the terrestrial story, which helped create the conditions for devastating wildfires. This story asks the audience to remember this clarion call: Remember, the forest is more than just trees.

The movie: Forest Under Stress [FUS]: <https://healthyforests.org/2022/03/short-film-forest-under-stress/>. This movie has already won several awards. Check it out!

My thanks to Rachel for developing this as part of our overall campaign to make a change and strive to ensure America’s forests can again become healthy and indeed remain with us.

¹⁴¹ Rachel Hall: fanfourplus@gmail.com

Appendix A.12. Sometimes Things Just Go Wrong

Often in this “Call to Action” we talk about the benefits of “Prescribed Fire” vs, “Managed Fires or Beneficial Fire.” The conclusion is: Go with “Prescribe Fire” and take “Managed Fire” off the table. But even with the best intentions, thing can go wrong. See the link below I think it is quite relevant:

[U.S. Forest Service takes blame for Hermits Peak Fire \(krqe.com\)](http://krqe.com)

The fire started as a prescribed burn in the Santa Fe National Forest near Las Vegas last week and quickly got out of control. It’s something the District Ranger acknowledged and apologized for at the start of a community meeting. “Our prescribed burn from last Wednesday was the cause of the Hermits Peak Fire. With that said, we take full responsibility and with a heavy heart, we are really sorry for what happened,” said Steve Romero, District Ranger, Pecos, of the Las Vegas Ranger District.

Sometimes things go wrong. But clearly, our best bet to use fire to address this National Emergency through more resilient landscapes in forest maintenance, including Prescribed Fire – not “Managed Fire of Beneficial Fire”.

Appendix A.13. Transitioning the *Call to Action* Into 2022 [through Revision 13.6].

Note: Appendix A.13 is the original text for “Transitioning the Call to Action into the 2022” unplanned wildfire season. The authors wanted to capture the ideas thoughts and sustain these within the original document. The text is as follows:

Transitioning the Call to Action into 2022.¹⁴² The 2021 wildfire season is over and 2022 has begun. As with every year during the past decade, it was destructive – almost 8 million acres burned in 2021; thousands of structures incinerated; entire towns lost; so many lives disrupted; millions of wildlife creatures eliminated; and thousands of people gone due to direct fire and smoke. Damages were in the hundreds of billions of dollars.

Now, winter is concluding. And, unfortunately most still tend to forget the horrific destruction over the past spring, summer and fall. The emphasis to adjust; every year it diminishes. Rhetorically, can most recall the Camp Fire and Paradise, California? What about Greenville? We simply cannot allow this complacency to continue. Yes, there has been some action and even additional funding secured. But no cohesive approach has emerged. This is what the *Call to Action* is trying to address: declare a National Emergency and form an effective coalition to address this National Emergency. That is, due to the lack of forest maintenance, wildfires have become larger and more destructive than ever before. This document outlines a way to resolution.

We need your help. Share your voice, please. The wildfire season for 2022 has begun with a vengeance. Let us not, please, be part of another cycle of destruction-concern-complacency. That is, a horrific fire season destroys property and lives. We become enraged. Winter sets it and we forget. Help break this cycle whereby “concern and action” prevail for at least the next decade.

Revision 13.6. So, with this Revision 13.6 of the *Call to Action*, let us continue this story that could easily be changed and strive for resolution in 2022. That is, deploy a “...campaign of our campaign” to begin making America’s forests healthy and more resilient to wildfires so one day in the foreseeable future, fire can again become a conservation tool across a wide-range of landscapes.

So, to not be confused, the USDA Secretary recently released a 10-year strategy to address wildfires.

¹⁴² As the 2021 fire season had ended, the “Transitioning the *Call to Action* into 2022” will be used, in part, to capture current, relevant thoughts to help make changes as the 2022 fire season approaches. We must pledge to keep the momentum going to address this National Emergency.

See Appendix A.6. [Wildfire Crisis Strategy Implementation Plan \(usda.gov\)](#)

With all due respect, this is not an “Implementation Plan.” It is a “Political Statement.” See page 6. A very credible colleague recently asked me, “what do I think” of this plan? In part, this is what I said: “...I re-read the 10-year strategy again. This is such an “empty uniform” and it did not have to be. As you read the document, it is everything and it’s nothing. Pure political rubbish.”

Perhaps Too Harsh. I admit this is probably far too harsh. My apologies for allowing my [Rains] mouth to overload my brains. Still, it is a “plan” without specifics. Thus, there must be a detailed action plan that must be crafted to fill in the gaps. This is fundamental. Candidly, in discussions with senior leaders, I do not get the impression that a true implementation plan is eminent. If true, this would be a misjustice.

With so many contributions, the “Call to Action” needs to gain more traction to help with this action plan; respectfully, the “Call to Action” is so superior than what is being advanced by the USDA Secretary. I know I am being very politically incorrect. This – large intense wildfires due to lack of forest maintenance -- is a National Emergency. We should act accordingly. Maybe a visit to Greenville, CA might jog our compass a bit.” No more rhetoric. Let’s be specific to address the needs of the American people.

Instead of all the varied opinions during these volatile landscape [s] times, I do not really understand why America’s Chief Forester cannot issue the following order: “...Until further notice from me, the Forest Service goal shall begin to suppress all unplanned wildfires within 24 hours of initial ignition.” This is so basic.

Stray Voltage. Maybe the reason is the concept of “stray voltage.” I heard this recently from a very respected colleague. It means lack of corporate focus resulting in wasted energy. Within the Forest Service, for example, there is not a corporate stance on managed fire; lots of *stray voltage*, if you will. For example, some may conclude, “...aggressive initial attack has resulted in a degradation of the land we have stewardship over, which has created a series of goal conflicts that our field-going personnel must wade through at the point of work.”¹⁴³ No doubt there are a series of “goal conflicts” when it comes to this National Emergency we face. *The Call to Action* strives to end this and seek a corporate position.

After a discussion with a Forest Service senior leader, she agrees with the notion of “stray voltage.” Not to place any blame, the wish of the *Call to Action* is to band together to advance a corporate and effective program direction.

A Quick Note to Examine. There is a statement in the USDA Secretary Vilsack’s January 18, 2022 Press Release that seems to be quite elegant:

¹⁴³ [El Dorado Incident – Organizational Learning Review \(wildfirelessons.net\)](#)

“The negative impacts of today’s largest wildfires far outpace the scale of efforts to protect homes, communities and natural resources,” said Vilsack. “Our experts expect the trend will only worsen with the effects of a changing climate, so working together toward common goals across boundaries and jurisdictions is essential to the future of these landscapes and the people who live there.”

Now, specifically what does this mean? Will the agency, for the foreseeable future, pull out all stops to ensure that all fires are put out immediately? They better. By my calculations, 27 percent of the acres burned in 2021 did not have to burn. I know this estimate is very conservative. Some suggest as high as 50 percent. Clearly, we could do better. And, it is not just about acres. For example, the notion of “managed fire” creates lots of smoke. Estimates are as many as 14,000 to 50,000 people are dying due to wildfire smoke each year. Does not this require us to be better?

THIS IS KEY.

The USDA 10-Year Strategy. As many have tried to convey in earlier messages, the new “...10-year strategy” by the USDA is not a strategy at all. It is a set of prose – some very good – designed as a political statement that USDA is on top of this National Emergency – destructive wildfires, especially on the west. To be clear, USDA is not [on top of this National Emergency].

First, let’s not strive to make a logical argument that this is a “strategic plan.” It is not, no matter how often you place the words under a microscope in hopes to see better and illuminate a logical stance. Maybe, it could be used as a foundational document to develop a real action plan. However, it is currently laced with such a strong bias that fire is good for landscape scale conservation, heavily influenced by the Research and Development mission area. As a foundational document, this would need to be much more balanced.

It [the so-called “10-year strategy”] is – at best – a policy document that concludes unplanned wildfire can be a good thing. Under the current conditions [lack of forest maintenance over the least 30+ years; drought; development; lack of home hardening and defensible space; inadequate funding from Congress to address preventative issues], unplanned wildfires are NOT a good thing, and this should be a centerpiece stance by the Forest Service. The facts are obvious: excessive destruction, including lives lost – directly from fire and indirectly from smoke.

Yet, it seems clear to that corporately, the Forest Service is not willing and/or able to take this stance [unplanned wildfires are not a good thing]. Thus, as some conclude, perhaps the only answer is strong and precise legislative sanction.

2022 is going to be a horrific wildfire year, based on all current indicators. We simply cannot understand why the Forest Service does not approach the upcoming wildfire season with a stance that concludes, “...our goal will be to put out all unplanned wildfire ignitions within 24 hours, no exceptions.” And, make this a cornerstone of the Chief’s annual Letter of Intent for the next decade, at least.

The credibility this stance will afford the agency, if corporately deployed, will be immeasurable. We believe the American people expect this. But most of us do not know what we don’t know. So, we look to America’s Chief Forester as the guide: he knows! Thus, it is incumbent on America’s Chief Forester – the USDA Forest Service Chief – to lead the way. And, for unplanned wildfire ignitions, this means:

1. Create a real Action Plan to address our wildfire National Emergency, NOW.
2. The Action Plan must be clear that “managed fire or beneficial fire” will NOT be allowed; “...all unplanned ignitions will be put out within 24 hours, no exceptions.”
3. Continue to work with those who “decide” [i.e., Members of Congress and other state leaders] to secure adequate funding that will effectively implement a cohesive 10-year action plan to address the current wildfire National Emergency.
4. Use the current “Call to Action” as a guide. Lots of people have worked on it for a very long time. Attached is the current revision and summary [13.0] for information.

The current “implementation plan” by the USDA, as written, falls short. Thus, let us link the specifics of this *Call to Action* with the foundational principles of the *Wildfire Crisis Strategy Implementation Plan*, now. America’s Chief Forester must the lead. This action – combining both -- will make a significant difference.

Advanced Biomass Uses. A key feature of the *Wildfire Crisis Strategy Implementation Plan* is entitled *Forest Products*. In the *Call to Action*, page 25, this is *Advanced Biomass Uses*. These science-based innovations are critical to forest maintenance, thus healthy forests. The greater the level of hazardous fuels that can be economically removed, the more efficient the forest maintenance campaign becomes.

Let us recognize it is just April 2022 and already 18,085 fires have burned 777,406 acres – a far greater pace than last year. Help make a change in what has become a National Emergency. Sign on to this petition or share your voice in other ways. Your help is essential.

Impacts on Water Resources. Recently, the *Call to Action* received some very instructional input. To most effectively highlight this contribution, I wanted to place it within this “Transitioning the *Call to Action* into 2022” section. The specific input is from Dave Rosgen, former Forest Service employee and legendary hydrologist. In summary, it concludes:

“...As part of the Forest Service (Forest Reserves) creation act, the purpose in part was to *secure favorable conditions of water flow*. With 20-years of experience with the Forest Service and 30+ years since, as a consulting hydrologist/geomorphologist, Colorado fires, for example, have showed 3-4 orders of magnitude increases in post-fire sediment yields, major loss of the aquatic resource, and long-term recovery of evapotranspiration with continued peak flooding -- with only moderate precipitation events.

Allowing the large fires to take place not only promotes loss of property and life, but long-term watershed damage. If the Forest Service wants to meet its founding purposes that prompted historical fire prevention and control to maintain favorable conditions of water flow, then their lack of fire suppression and watershed management has prompted just the opposite! Fire suppression, in my history with the Forest Service, demanded to keep them small!”¹⁴⁴

See [Appendix A.8](#) for a more detailed explanation of the impacts of wildfires on water yield and quality.

Proposed Legislation. On March 3, 2022, Congressman Tom McClintock (CA-04) and Congressman Doug LaMalfa (CA-01) introduced legislation directing the United States Forest Service to immediately suppress wildfires on National Forest System lands and put an end to the policy of letting fires burn. See Appendix A.9. [H.R. 6903](#) requires that “to the extent practicable, use all available resources to carry out wildfire suppression with the purpose of

¹⁴⁴ Dave Rosgen, P.H., Ph.D. With sincere apologies to Dr. Rosgen, I have greatly summarized his input in this “Transition” section. His more detailed contribution is provided in Appendix A.8.

extinguishing wildfires detected on National Forest System lands not later than 24 hours after such a wildfire is detected.”

2022 Letter of Intent. Further, both Members sent a [letter](#) to the Forest Service Chief urging him to implement specific policies for the upcoming wildfire season.¹⁴⁵

Could This Be a National Emergency Commitment – The First Step in the *Call to Action*?

The Departments of Agriculture, the Interior and the Federal Emergency Management Agency (FEMA) announced the formation *Wildland Fire Mitigation and Management Commission*. The commission is tasked with forming federal policy recommendations and strategies on ways to better prevent, manage, suppress and recover from wildfires.

The commission will represent federal agencies, state, local, and Tribal governments, as well as the private sector. Together, their recommendations will be submitted as part of required reports to Congress within a year of their first meeting.

[Applications](#) for Commission membership are being accepted now [until March 25, 2022].

Short-Staffed and Poor Facilities for Firefighters. The United States Forest Service has had chronic staffing shortages for over a decade. But amid rising wages and a fierce competition for labor across the U.S. economy, the agency faces a particularly bleak hiring picture. Workplace conditions like low and non-competitive wages and housing availability and affordability have long been issues for the Forest Service recruitment.

The Forest Service administers 3,320 housing units for USDA and other emergency personnel nationwide. But many Forest Service employees say these units are not maintained, and some are unlivable. The bipartisan infrastructure bill that Congress passed in the fall contains \$600 million to help. Further, Congress is weighing a standalone Forest Service bill, called [Tim’s Act](#) after wildland firefighter Tim Hart, who died while fighting a fire in 2021, which would increase firefighter minimum pay to \$20 an hour and provide a housing allowance and other benefits. See Appendix A.10.

“... I told them about you and the group and that I support everything you have shared. If I were the Forest Service Chief, I would take the *Call to Action* and find a way to “operationalize” and execute. I’m not naïve enough to think any of it would be easy, but someone needs to step up and demonstrate leadership in this area. The public deserves better....”

A Senior State Leader in Fire Suppression for California [2/11/2022]

¹⁴⁵ Each year, the Chief of the United States Forest Service develops a *Letter of Intent* that attempts to outline the vision for wildfire suppression. This year, Representatives McClintock and LaMalfa provided input for the pending letter to be considered by America’s Chief Forester.

Appendix A.14. An Opinion Piece¹⁴⁶

Note: This is an opinion piece sent by a colleague. Further, there is a cautionary note by the Director of the National Wildfire Institute that follows.¹⁴⁷

I [Carroll] am very concerned that none of the academic and research community understand the Forest Service deferred fire suppression strategies and how those strategies are burning forests and communities. We estimate FS [Forest Service] firefighters lit 60 percent¹⁴⁸ of the Dixie Fire on purpose. They did indeed let the Tamarack Fire burn and it's not just politicians who think so. They said so themselves. It happens all the time. The August Complex. The North Complex. Pole Creek and Bald Mountain in Utah. Don't take my word. Read Dave Whittekiend's FLA on Pole Creek.

Deferred fire suppression is the single biggest factor in large fire growth today and none of you are looking at it. Second independent factor is big boxing and lighting big fires on purpose to make them bigger in the interest of "safetiness" and natural resource management benefits. It's not safer for firefighters to light millions of acres on fire on purpose. It's not healthy for the public to live in months of intentional smoke. It's not safe to let the Tamarack Fire burn through two states."

The current large fire problem is only partially climate driven. Drip torches are the single biggest factor. Fire drones. Helitorches. Very pistols. Shoulder fired ignition devices. Do you have the slightest idea how heavily deferred suppression and purposeful ignition are used to manage fire today? I don't think you have a clue. Please go to a big fire in Arizona soon and go out with the hotshots on several shifts. You'll be shocked and awed.

Don't take my word for it. The CBD Center for Biological Diversity is preparing a Notice of Intent to sue the Forest Service for deferred fire suppression. The agency has never disclosed the cumulative effects of their outrageous burner policies. Those fires are now burning down everything CBD has achieved in 50 years. The FS is burning critical habitat, core habitat, riparian areas, hundreds of thousands of saguaro cacti, the biggest contiguous stands of Arizona cypress, buffer areas for owls, you get the point, yes?

Why don't you guys in Research wake up and look in your own house for solutions to the worsening fire problem. It is National Forest management of big fires that is the independent factor in burning houses and private lands. Doesn't happen on state fires or county fires.

It doesn't happen on the Rouge River Siskiyou NF where Forest Supervisor Merv George and his people have held a couple of hundred ignitions to less than 100 total acres in three years.

¹⁴⁶ Frank Carroll, Managing Partner, PFMc Wildfire Pros, Frank@WildfirePros.com [April 2022].

¹⁴⁷ Bruce Courtright, Director, National Wildfire Institute.

¹⁴⁸ See Appendix A.5. This helps quantify acres that did not have to burn. Very conservative estimates suggest 27 percent of the wildfire acres in 2021 did not have to burn if there was a more aggressive initial suppression response.

Why is that, do you think? Please investigate. He doesn't claim small fires are dangerous. He puts them out. Weird.

Have a great day and I hope you and your agency develop some situational awareness and an honest curiosity about how a handful of forestry techs in high places are burning our forests and our communities to the ground.

Response Note [From Bruce Courtright, National Wildfire Institute]: It's a really good piece! The things I think he [Carroll] may have missed the following;

1. FS needs to back up their talk about partnering with States and Counties. That could make a difference!
2. An issue is that the FS is so understaffed at the field level, that it's a wonder they get anything done.
3. The other issue is that FS Leadership is not leading. The Rogue River-Siskiyou [National Forest] is a perfect example of what could be done if staffing was directed to the most critical issues [confirmed by Carroll and many others].

Appendix A.15. Letter to America’s Chief Forester from the Association of Fire Ecology¹⁴⁹

Promoting Fire Ecology Research, Education, and Management

PO Box 50412 Eugene, OR 97405 USA 541.852.7903
www.fireecology.org | office@fireecology.net

June 6, 2022

Randy Moore, Chief
US Forest Service
Sidney R. Yates Federal Building
201 14th St SW,
Washington, DC 20227

Dear Chief Moore: We fully support the USDA Forest Service’s (FS) concerns over the safe and effective application of prescribed fire and your leadership to reverse a century of fire exclusion in the context of a rapidly warming climate. As fire scientists and land managers affiliated with the international Association for Fire Ecology (AFE), we share your concerns about wildland fires and the ecological and human communities they impact and understand the intent of this pause.

Prescribed fires are a critical tool for “Confronting the Wildfire Crisis: A Strategy for Protecting Communities and Improving Resilience in America’s Forests” that you and Secretary Vilsack launched in January. Thank you for your leadership on this important document. The Bipartisan Infrastructure Law and its explicit investment in prescribed fire, ecosystem health, and safeguarding human communities provides strong support to the American people for living more securely with the inevitable return of fire.

Today, we ask you to consider re-instating prescribed burning in areas on US National Forests that are not in extreme drought during the 90-day pause. For example, Regions 8 and 9 are not currently experiencing drought, have a long history of success stories with prescribed fire, and show strong need for growing season burning. The recent NOAA drought forecast for the US shows that much of the area of Regions 8 and Region 9 will be amenable to continued burning actions. Moreover, allowing FS scientists to collect data on prescribed burns conducted by non-federal partners during this period would likewise maintain a national leadership stance in the study of prescribed fire. Once the national review is complete and it is deemed safe to do so, we

¹⁴⁹ Note: Appendices A.15; A.15.1; and A.15.2 are linked. They focus of the issue of “Prescribed Fire” and a designated “pause.” The basic thesis in this “Call to Action” is to “pause” for the rest of the 2022 fire season. There is only one answer. That is, strive to put out all unplanned wildfire ignitions immediately; no exceptions. WE SIMPLY CANNOT EQUOCATE OF THIS STANCE – NOT NOW.

ask that you consider re-instating prescribed burning in the American Southwest and the western US, even if this occurs before the end of the 90-day pause.

Prescribed fire is implemented on ~10 MM ac annually, exceeding the extent of US wildfires in most years. Across many diverse applications and a large suite of practitioners, prescribed burning escapes are exceedingly rare. Our best data suggest that 99.7 to 99.8% of all prescribed fires stay within their boundaries and achieve the intended prescription; an even larger percentage avoid any damage to homes and other assets. Due to the excellent leadership of your agency and other state, NGO, and federal partners, escapes have declined precipitously in recent decades. Escaped prescribed fires are thus newsworthy. However, the data support their extreme rarity and speak to the advances in training and implementation that the Forest Service and their partners have led.

Our nation's forests need prescribed fire now more than ever. Prescribed fires are a primary tool to abate wildfire risks, to expand strategic and tactical locations for more effective suppression actions, and to maintain fuels in a state that is easier and safer to manage. Prescribed fires are critical to restoring ecosystem resilience of native plant and animal communities and to other stressors, and to improving the vigor of forests warmed and dried by climate change. Maintaining managers' abilities to implement prescribed fire is vital to our shared future.

Much like the well-intentioned fire suppression policies of the past, we will never reach a "no escapes" prescribed burning future. We applaud pressing agency scientists and managers to continuously improve knowledge and practice with prescribed fire, fire behavior modeling, fire weather prediction, and continued investment in world-class fire training. The Association for Fire Ecology is committed to partnering with you to build these tools and their scientific underpinning.

Respectfully,

[Co-signed by members of the Association for Fire Ecology]

Appendix A.15.1 Response E-Mail to the Association of Fire Ecology

To: Administrative Director, Association for Fire Ecology
(541) 852-7903, office@fireecology.net
From: Michael T. Rains <mtrains7@verizon.net>
Sent: Monday, June 13, 2022 6:56 AM
Subject: Wildland Fires: Striving to Reach Out to the "Association for Fire Ecology"

My Issue: Your recent letter to America’s Chief Forester [Appendix A.15].

Regarding the thesis of your letter to America’s Chief Forester, congratulations, you have provided so many good points. Please allow me to differ on a key aspect. That is, the predominate need of putting out all fires immediately. So, you know, I am a fan of “fire on the landscape.” I urge you to see: “...193 Million Acres, Toward a Healthier and More Resilient US Forest Service [page 129-164], SAF, 2018.” The words that were written with my co-author, the great Tom Harbour, have not changed. But, NOT NOW.

The conditions of the landscapes, especially in the western part pf America, dictate that we depart from an intellectual argument and face reality. That is:

“...The goal is to put out every fire immediately. Reduce response time by at least 80 percent! Smoke is a killer; please know this. We must keep it to a minimum. More fully utilize smaller, more agile aircraft and helicopters. They come with much less people needed to effectively operate, thereby reducing the COVID-19 risk profile. Use larger aircraft in a more appropriate role; their response time is slower [see “Call to Action”, page 8].

For the rest of the 2022 fire season – which I predict will be horrific – the is only one answer. That is, strive to put out all unplanned wildfire ignitions immediately; no exceptions. WE SIMPLY CANNOT EQUIVOCATE ON THIS STANCE – NOT NOW. TOO MUCH DESTRUCTION WILL RESULT AND THE USDA FOREST SERVICE WILL BECOME A PARIAN IF THEY DO NOT TAKE THIS STANCE – believe me! Clearly, we must band together to never allow this to happen.

So, you know, the National Wildfire Institute [NWI] and its Director Bruce Courtright, have forwarded the NWI’s thoughts on the Chief’s recent letter calling for a “pause” on Prescribed Fire. Simply put, we recommend that the 90 day “pause” on the use of Prescribed Fire should be extended to the end of the 2022 Fire Season. The use of *Managed Fire* is included in this “pause.” The primary reason: the extreme conditions on the western landscapes.

While we acknowledge the eastern part of the country is different, NWI simply believes that any exceptions to the “pause” for this 2022 fire season will be confusing and not appropriate.

For Now, Put Out All Unplanned Wildfire Ignitions Immediately; No Exceptions

CALL TO ACTION

I will continue to attempt to contact you,. Please feel free to forward all of the attached information [i.e., the “Call to Action”] to the Association for Fire Ecology as you deem appropriate. Please know that I am copying this email to America’s Chief Forester.

Be safe and well, please.

Very respectfully,

Appendix A.15.2. Letter to America’s Chief Forester from the National Wildfire Institute on a Prescribed Fire “Pause”



NATIONAL WILDFIRE INSTITUTE

Supporting Healthy Forests That Resist Catastrophic Fire

To: Forest Service Chief Randy Moore
From: Bruce Courtright, Director, National Wildfire Institute
Date: June 11, 2022

The National Wildfire Institute [NWI] would like to acknowledge your May 20, 2022 decision to pause the use of Prescribed Fire.

We note that your April 14, 2022 *Letter of Intent* allowed for the use of *Managed Fire* with Forest Supervisor approval during Preparedness Levels 1, 2, and 3. And, during Preparedness Levels 4 and 5 with Regional Forester approval.

Since the use of *Managed Fire* has a far greater risk of escapes than Prescribed Fire, the NWI believes the use of *Managed Fire* must be halted, as well. Doing so will reduce risks to people, property, and communities. We also believe the agencies exposure to civil liability will be limited.

A 90-day “pause” will end on August 20, 2022, the middle of what is likely to be the most severe fire season ever. Hence, extending the “pause” to the end of fire season for both Prescribed and *Managed Fire* is essential.

Following is our recommended update to your April 14, 2022 *Letter of Intent*. Thank you for considering our input:

To: Regional Foresters:

This is an update to my May 20, 2022 direction which placed a 90-day pause on the use of Prescribed Fire and the April 14, 2022 Wildland Fire Direction *Letter of Intent*.

“...The 90 day “pause” on the use of Prescribed Fire shall be extended to the end of the 2022 Fire Season. The use of *Managed Fire* is included in this “pause.”

This direction is based on the expected severity of the 2022 fire season and limiting the risks to people, property, and natural resources. I want our goal to put out every fire immediately. Clearly, these are different times. With the current land conditions and the impacts of a changing climate, the notion of allowing a fire to burn anywhere, for whatever reason, for the foreseeable future, is unacceptable and must be stopped now; no exceptions. Our initial attack of wildfires will include immediate dispatch of sufficient air and ground firefighting resources to all wildfires designed to contain them as soon as possible while providing for firefighter and public safety.

Please deploy this update immediately.

Thank you. I am indebted to you for your contributions to the safety of America and the care of our landscapes.

Randy Moore
Chief, USDA Forest Service”

Appendix A.16. Suppress All Unplanned Wildfire Ignitions Immediately.

Note: The following exchanges and weblinks refer to some recent discussions on goal No. 3 of this “Call to Action.” That is: With the current landscape scale conditions, we must strive to put out all fires immediately.

On June 20, 2022, Michael Archer¹⁵⁰ wrote:

“...Gentlemen, this article will be in today's forthcoming *Wildfire News of the Day*, but I thought I would share it with you ahead of time. It shows a perfect example of how early initial attack limited the size of a wildfire which ignited in the Tahoe National Forest to only 1/0 of an acre. In a prime example of how early initial attack can turn a megafire into a minor incident, the Tahoe National Forest Service reported that firefighters quickly squelched the 1/10-acre Lost Fire two miles south of Forks House, after being spotted by lookouts located on Duncan Peak and Bald Mountain.”

See the following weblink:

<https://fox40.com/news/local-news/lookouts-provide-for-a-quick-response-to-a-fire-in-the-tahoe-national-forest/> [“Lookouts provide for a quick response to a fire in the Tahoe National Forest”].

Two immediate responses to the article were:

1. This is how it’s supposed to work!¹⁵¹
2. I will include this link in the next update of the “Call to Action.” Nice work by the Tahoe National Forest. Most of the sites included in the link I have been on. By the way, I was able to get a copy of the “Call to Action” [rev. 13.4] to the White House. But, I must say, it is hard to compete with America’s Chief Forester when he concludes, the big problem that we have today is because we put out fires too quickly citing the “10:00 AM Policy” instituted by a former Forest Service in 1935.”¹⁵²

See the following weblink [CBS Saturday Morning, 1:57 minutes into the video]:

<https://wildfiretoday.com/2022/06/18/cbs-probes-recruiting-and-retention-problems-in-the-us-forest-service/>

Candidly, the messages on what to do are very mixed and terribly confusing.¹⁵³ The “Call to Action” attempts to provide focus. Clearly, the Forest Service has not been practicing the “10:00 AM Policy” – striving to put out unplanned wildfires within 24 hours after ignition -- for the last century. More recently, the agency has deployed the concept of “Managed Fire.” See page 9. Under the current land conditions, especially in the western part of America, “Managed Fire” has

¹⁵⁰ “Wildfire News of the Day.”

¹⁵¹ Brett L’Esperance, CEO Dauntless Air, June 20, 2022.

¹⁵² Michael T. Rains, mtrains7@verizon.net, June 20, 2022.

¹⁵³ Some additional thoughts by Michael T. Rains, June 21, 2022.

been a disaster – unbelievable destruction of lives, property and wildlife that did not have to happen.

This “Call to Action” emphasizes the following fundamental points for the foreseeable future – minimally for the next decade – to address the current wildfire situation:

1. Strive to put out all unplanned wildfires within 24 hours after ignition; no exceptions. We must understand that these are different times. With the current land conditions and the impacts of a changing climate, the notion of allowing a fire to burn anywhere, for whatever reason, is unacceptable and must be stopped now.
2. Stop the concept of “Managed Fire” immediately. Using fire as a tool for forest maintenance, Prescribed Fire is *the* standard, which is conducted under very specific conditions.
3. Maintaining America’s forestlands through a wide-range of tactics including timber harvesting, thinning, pruning *and* Prescribed Fire are fundamental to the maintenance of trees, forests and forest ecosystems – the “brass ring” that we seek.

In the CBS Saturday Morning interview¹⁵⁴ [2:30 minutes into the video], America’s Chief Forester calls for “thinning 50 million acres over the next 10 years.” That’s a good start but about 30 million acres short. See page 19.

Getting back to Mr. Archer and the goal to put out all unplanned ignitions as soon as possible. Archer stated that getting alerts on wildfires within less than an hour of ignition is critical. Some *Wildfire News of the Day* subscribers at Ororatech in Germany will be launching satellites over the next few years that can help with early detection, regardless of lookouts or wildfire camera coverage of the area. The CEO at Munich-based OroraTech discussed how satellites they will be launching into space over the next few years will form a constellation that can detect the outbreak of wildfires anywhere on the globe within 30 minutes.

See the following weblink:

https://www.einnews.com/pr_news/577485145/wildfire-monitoring-satellite-ororatech-successfully-proves-technology-in-space [Wildfire Monitoring Satellite: OroraTech Successfully Proves Technology in Space].

¹⁵⁴ <https://wildfiretoday.com/2022/06/18/cbs-probes-recruiting-and-retention-problems-in-the-us-forest-service/>