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Redefining the Military's Role in Wildfire Suppression

ALEC EVANS Progressive Policy Institute

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EXECUTIVE SUMMARY

Wildfires are becoming more widespread, frequent, and destructive due to climate change and historical malpractices in forest management. As civil agencies become overwhelmed, U.S. firefighting efforts have become more dependent on military resources. Between 2017 and 2021, the National Guard's man-hours spent fighting wildfires grew more than tenfold; wildfire costs ballooned to almost \$82 billion over the same period.¹

Redefining the Military's

Role in Wildfire Suppression

The armed forces field unique capabilities that can benefit firefighting efforts, particularly the ability to rapidly deploy large forces to remote locations. However, overrelying on the military to combat wildfires could impair its capacity to ensure U.S. national security. If the current model of double-tasking military units persists, the country would be unable to mount an adequate response if faced with both a high-intensity conflict and a severe wildfire season. Therefore, given the armed forces' increasing commitments abroad and the expanding threat of wildfires to the homeland, other government agencies and private contractors should shoulder the growing burden of fire suppression and implement more efficient fire practices so that military units can remain dedicated to their core missions.

INTRODUCTION

Climate change, coupled with flawed historical forestry practices that left forests vulnerable to large fires, has exacerbated the frequency and intensity of wildfires in the United States. Each passing year, the country must contend with roughly 100 more large wildfires than the last.² Military resources are ever more frequently deployed for fire suppression; for instance, helicopters, ground units, navy divers, and Coast

Guard vessels were activated to respond to last summer's blazes in Maui.³ Between 2017 and 2021, deployments of National Guard units to mitigate wildfires skyrocketed, with personnel days spent on wildfires growing more than tenfold.⁴

The military, which fields an unmatched inventory of aircraft and can quickly dispatch large forces to remote locations, provides unique capabilities for wildfire suppression. However, U.S. armed forces' extensive commitments abroad show no indication of abating, especially considering Russian aggression in Ukraine and China's burgeoning military strength.⁵ Sizable as it may be, the U.S. defense budget is insufficient to meet the plethora of goals the military is tasked with, which necessitates a reduction in commitments or an increase in spending. In the case of addressing the expanding threat posed by U.S. wildfires, the military's role must remain limited. This especially applies to units that are tasked with both firefighting and conventional defense roles; these forces would be unable to address both priorities in a crisis scenario. In lieu of military units, Washington must expand the firefighting capabilities for other civil agencies and private contractors; the U.S. must also implement modern forestry and fire reduction techniques on a national scale. This strategy will bolster the nation's ability to respond to intensifying wildfires, while leaving the armed forces with leeway to pursue their intended tasks and avoid mission creep.

Wildfires are a natural phenomenon that is crucial for the life cycle of many ecosystems, and prescribed burns can lower the risks of more significant conflagrations. However, the rapid expansion of U.S. wildfires poses a substantial threat to the country's human and national security. Over the last ten years, they have burnt an average of roughly 11,250 square miles per year, an area larger than the state of Maryland.⁶ Military facilities are frequently threatened by conflagrations; for example, a wildfire near Fort McCoy in Wisconsin last April burned thousands of acres and prevented thousands of soldiers from conducting weapons training.⁷ Wildfires also incur economic and health costs for Americans: federal agencies estimate that the annual costs caused by U.S. wildfires range from tens to hundreds of billions, and billion-dollar weather and climate disasters alone have cost the country more than \$2.475 trillion since 1980.8 Medical expenses from wildfire smoke cost the U.S. \$16 billion annually, a nd wildfires have the potential to cause tens of thousands of excess deaths by mid-century.9 Moreover, wildfire emissions form an expanding portion of the U.S. CO2 footprint: as emissions from other sources are reduced and wildfires grow, they are becoming a more significant source of U.S. greenhouse gasses that legislation alone cannot curtail (see Appendix).¹⁰ According to Giuliana Vigleone, global wildfire emissions in 2022 added "around 5.3bn tonnes of CO2 to the atmosphere...more than any country contributed from fossil-fuel burning that year, except China."11



FIGURE 1: GROWING ACREAGE OF U.S. WILDFIRES, 1985-2022



Source: National Interagency Fire Center

FIGURE 2: RISING FIRE SUPPRESSION COSTS (USFS AND DOI), 1985-2022



Note: Costs adjusted for 2022 values. USFS costs include MAFFS operation. Source: National Interagency Fire Center

This paper will first evaluate the military resources used for wildfire suppression, the circumstances under which they are deployed, and the amount of time they spend fighting fires instead of conducting their standard defense and peacekeeping missions. It will then examine the legal and command framework behind military wildland firefighting assignments. The following section will detail the military's growing commitments abroad, the danger of mission creep, and the potential for conflicting demands for units to participate in their usual missions as well as wildfire suppression. The paper will conclude by offering recommendations for reforming the military's role in combating wildfires and reducing the risk of severe fire seasons.

WILDFIRE SUPPRESSION RESOURCES

The U.S. Forest Service, private entities, and state-level organizations provide the majority of resources for fire suppression, with military units offering "surge" capacity when other forces are overstretched. The Forest Service and the Department of the Interior operate or contract roughly 34 airtankers and 200 helicopters that are used to battle wildfires.¹² Civil and statelevel agencies also offer firefighting resources; Cal Fire, the largest civil operator of firefighting aircraft in the U.S., fields a fleet of 60 aircraft that outnumbers most nations' militaries.¹³ A military non-compete clause ensures that private companies and civil agencies receive initial requests for fire suppression, and the majority of high-capability firefighting resources in the U.S. are contracted.¹⁴ If military support is required, the National Guard is generally the first source of manpower, followed by the Reserves and USNORTHCOM for active-duty units.¹⁵

Aerial Units

Aircraft are the most prominent military resource deployed for wildfire mitigation. The most visible (and active) platforms in this role are Air Force National Guard (ANG) and Air Force Reserve C-130 transport aircraft. These planes are fitted with the Modular Airborne Fire Fighting System (MAFFS), which can quickly be installed in an unmodified C-130 to convert it into a medium-lift airtanker (authorities are also considering fielding a similar successor system, CAFFS).¹⁶ The U.S. Forest Service owns and budgets for eight MAFFS systems and uses them in conjunction with 3 ANG and 1 Air Force Reserve squadron; up to four additional C-130s are operated as cargo aircraft in support of those outfitted as airtankers.¹⁷ These resources can be activated by the National Interagency Fire Center or the governors of the states where they are based.¹⁸

It is important to note that MAFFS aircraft are only deployed when no civilian and government firefighting aircraft are available for wildfire suppression, but they have been activated in eight of the last ten years due to worsening fire conditions.¹⁹ The planes drop an average of 757,000 gallons of retardant per year; water is another common payload.²⁰ MAFFS units undertake rigorous initial and yearly training to perfect the dangerous art of aerial firefighting, and they are often fully committed to fire suppression for more than three months a year. The experienced pilots chosen for MAFFS missions undergo specialized training and will often fly nonstop for weeks at a time.²¹

The military also operates several other aircraft types in a firefighting capacity, albeit on a more ad-hoc basis. Military helicopters are frequently used for evacuations or fitted with water buckets to battle fires. These aircraft,

most commonly the UH-60, CH-46, CH-47, and CH-53, are generally operated by the Army National Guard (ARNG) or Air Force Reserve, although active-duty units are occasionally utilized.²² The National Guard can call upon hundreds of helicopters during the most severe fire seasons.²³ Reconnaissance aircraft with sophisticated infrared sensors such as the MQ-9 also contribute to wildfire monitoring.²⁴

Ground Units

The National Guard supplies the majority of ground forces committed to fire suppression, although Reserve and active-duty units are occasionally deployed as well. According to the National Interagency Fire Center, "Military resources for ground firefighting are normally requested in battalion strength, which is equivalent to 25 20-person crews and their command and control elements. Each battalion fields about 550 personnel."²⁵

Thousands of Guardsmen in Western states can expect to battle fires on a yearly basis. Guard ground forces are deployed to fight fires directly, provide logistical support, and assist with evacuations and medevacs.²⁶ These units require specialized training programs to construct fire lines, operate fire engines, and use fire shelters.²⁷ In some states such as California, the National Guard has created dedicated wildland firefighting teams, who deploy with Cal Fire for the fire season from May through October. These troops are also engaged in fire mitigation through the winter, during which time they remove excess fuel from high-risk areas.²⁸

Elements of active duty and Reserve forces are also called upon to support firefighting efforts on the ground. This generally occurs as a last-resort option or if military bases are threatened by fire. Engineering units are the most common active duty troops called upon for wildfire suppression, as their equipment and more relevant training can offer significant capability to fire commanders. Active-duty Army engineers were dispatched to the wildfires in Maui and have been utilized in California and Washington.²⁹ However, combat units are also sometimes deployed for fire suppression; for example, artillery crews were trained on firefighting and dispatched to fires in Washington for 30 days, and Stryker-based mechanized infantry units were active on the front line of California's Dixie Fire.³⁰



Army Infantrymen from Joint Base Lewis-McChord's 1-2 Stryker Brigade Combat Team approach the 2021 Dixie Fire in California. Photograph by Sgt. Deion Kean, Joint Base San Antonio News Photos.

Units in Other Domains

Military forces are most active in mitigating wildfires on the ground and in the air, but other elements of the U.S. defense apparatus also contribute to firefighting efforts. Although naval assets are inherently limited in their ability to respond to fires ashore, they can help with conflagrations nearer to the ocean. For instance, Navy divers and Coast Guard units searched for survivors and conducted salvage operations during the Maui fires.³¹

Intelligence and other government agencies can also leverage unique capabilities for fire detection and suppression. Satellites operated by the National Reconnaissance Office for missile launch detection and infrared surveillance can spot fires in their early stages. Furthermore, CIA surveillance assets have been used to track wildfires in Alaska.³² Although private entities are launching increasing numbers of satellites, these government assets currently hold an edge in early detection of new fires. Usage of these assets is extremely limited, as the intelligence agencies are reluctant to redirect their satellites for firefighting purposes. State governors must seek emergency authorization on a yearly basis to collaborate with the agencies.³³

Space assets used by NASA and the National Oceanographic and Atmospheric Administration (NOAA) are more accessible for firefighters. The Biden administration has raised NOAA's funding to bolster its fire detection capabilities, and the agency has been more willing (and available) than its intelligence-focused counterparts to provide fire information.³⁴ Furthermore, the Biden administration has increased funding for NASA to develop new space-based capabilities for fire detection and management.³⁵ The National Geospatial-Intelligence Agency has also developed a program called FireFly which

interprets fire data from multiple space and aerial sensors. This information is managed by FireGuard, a team of Air Force and National Guard intelligence analysts. They use the information collected through FireFly to create near real-time fire maps, which is not a novel capability but enhances the information available to fire commanders.³⁶

Due to the national shortage of wildland firefighters, prison crews form a core source of manpower for firefighting in several regions. In California, inmates form 30% of California's wildland fire force, with thousands deployed to conflagrations yearly.³⁷ Prison crews also work on the front lines in Oregon and Nevada, among others.³⁸ Some states allow inmates to volunteer for wildfire duty, while others leave them no choice.³⁹ Prisoners often earn as little as \$1.45-6 dollars per day and are four times more likely than other firefighters to suffer injuries on the job, largely due to insufficient training.⁴⁰

According to David Fathi, Director of the ACLU's National Prison Project, "The best way to protect prisoner workers is to treat them as much as possible like non-incarcerated employees. There's no reason they shouldn't be paid a real wage, protected by occupational health and safety laws, and compensated for injuries on the job. The hundreds of prisoners risking their lives on the fire lines deserve nothing less."⁴¹ The widespread use of prison labor is indicative of both a disregard for inmate safety and rights and a general shortage of trained wildfire professionals that policy can and should address.

MILITARY AUTHORIZATION AND COMMAND STRUCTURE

Military assistance for wildfire mitigation can be requested by state governors and the National

Interagency Fire Center. Given the power vested in governors to activate their state's National Guard units, these policymakers generally turn to the Guard if civil and federal firefighting assets prove insufficient or overstretched. Soldiers that have been activated for State Active Duty in this manner can assist with wildfires in other states at the authorization of their governor. Additionally, National Guardsmen can be "federalized" under Title 10 orders from the President. The National Interagency Fire Center must request the use of state authorized soldiers before requesting Title 10 "federalized" soldiers.⁴² This is most evident with MAFFS crews, who are nominally under the command of the state government where they are based but are frequently deployed to other states. State governors can also file year-long emergency requests with federal agencies such as the CIA; California Governor Gavin Newsom has used this mechanism to access CIA and National Reconnaissance Office satellite data during several fire seasons.43

The National Interagency Fire Center, or NIFC, is based in Boise and guides the nation's wildland fire response, coordinating resources from the Forest Service, Department of the Interior, Department of Defense, and other organizations. Planners at the National Multi-Agency Coordinating (NMAC) Group are responsible for soliciting military support.44 Unlike state governors, the NIFC is authorized to request participation from active-duty and reserve military units, and there are no domestic geographical constraints for where these forces can be deployed. They can also command "federalized" National Guard units, which have received permission to work across state lines from the DOD.⁴⁵ Since 2008, a DOD liaison has been stationed in Boise to facilitate cooperation

between departments. The majority of requests detail either MAFFS units or ground forces in battalion strength.⁴⁶

Once a military unit reaches a fire area, it is generally placed under the command of an NIFC Incident Management Team (IMT), which is responsible for controlling the response to large wildfires.⁴⁷ A military liaison, under the direction of the IMT, will coordinate the military response to the fire. Military operations, especially aerial missions, are guided by a rigorous process defined by NIFC materials.⁴⁸ Demobilization requires 72 hours following the fire.⁴⁹ The process is somewhat different for state-level National Guard units, who are sometimes placed under the command of FEMA or statelevel emergency management agencies.⁵⁰ In cases where both reserve and active-duty units are deployed for wildfire suppression, they are generally commanded by the senior Guard officer of the state where they are operating, who is correspondingly directed by the NIFC or emergency management agencies.⁵¹

In 2021, The Biden administration created the Wildland Fire Mitigation and Management Commission, an interagency working group tasked with coordinating the federal response to wildfires.⁵² This group's findings are not binding; however, they offer assessments and recommendations that could influence military behavior concerning wildfires. Their body of work concerning the military is thus far limited primarily to airtanker strategy and surplus aircraft and component sales.⁵³

MISSION CREEP, GROWING COMMITMENTS, AND THE MILITARY'S IDENTITY CRISIS

U.S. armed forces operate hundreds of bases around the globe, and Washington maintains

mutual defense treaties with more than 50 nations.⁵⁴ Over 170,000 active-duty U.S. service members are currently deployed abroad, along with 22,000 National Guard personnel.55 Moreover, the military has become more frequently involved with border control, nationbuilding, and counternarcotics operations.⁵⁶ These factors, combined with the rapid expansion of the DOD's role to address climate change and natural disasters, mean that the U.S. military is overstretched and underfunded for the missions asked of it, despite a defense budget edging towards the trillion-dollar mark.⁵⁷ Washington faces a difficult decision: either raise spending further in an attempt to fulfill its plethora of military missions, or pare back commitments to reflect capabilities.

The increasing demand for the military's firefighting resources threatens to undermine global force posture in a climate of growing instability and multipolarity. This task also extends to the National Guard: according to the Chief of the National Guard Bureau, General Daniel Hokanson, operations overseas form a core component of the Guard's role. He emphasized that the Guard's core purpose is to "...fight and win our nation's wars. At the end of the day, that's why the National Guard exists."58 The Constitution prohibits the Guard from overseas deployments except during wartime, yet Guardsmen have been dispatched on long assignments abroad for decades.⁵⁹ Western states have become highly reliant on National Guard units to mitigate wildfires domestically; if the force is overextended internationally, that will obviously impair Washington's ability to respond to wildfires closer to home.



Photograph by Tech. Sgt. Brian Christiansen, North Carolina National Guard.

Another factor inhibiting wildfire response is the rising threat of other natural disasters, such as earthquakes, hurricanes, and severe storms. These events often necessitate the deployment of tens of thousands of troops: "In response to Hurricane Sandy in the fall of 2012, 24,000 DoD personnel were mobilized, a larger force than the active-duty military of Norway."60 Similarly to wildfires, these disasters often strike with little warning and necessitate immediate action; this exacerbates the difficulty of planning disaster response missions and accounting for domestic requirements when dispatching troops internationally. However, military personnel deployed for other disasters do not always require the same level of specialized training as those sent to wildfires.⁶¹

If the U.S. were involved in a significant conflict during a severe fire season, it could lack the resources to adequately address both tasks. This issue has already manifested in several examples: firefighters in Oregon often rely on National Guard Chinook helicopters to assist with fire suppression, but when large blazes broke out in 2021, these resources were nowhere to be found. Instead, the helicopters were deployed in Afghanistan to support the U.S. withdrawal.⁶² According to California Guardsman Carl Trujillo, overseas commitments have reduced his unit's capacity to respond to wildfires: "The (fire) crew we're with today - they've lost several people temporarily to deployments. We've got folks in the Middle East."⁶³

Conversely, when active-duty troops from artillery or Stryker units are deployed as firefighters, they become unavailable for their core missions and train on fire suppression rather than warfighting.⁶⁴ California's National Guard plays a pivotal role in the state's wildfire mitigation; even when equipped with high-

pressure hoses, these troops cannot quell blazes in their home state while deployed on training missions in Ukraine.⁶⁵ The current model of double-tasking military units means that Washington would face a difficult choice if faced with a high-intensity conflict: it could either risk enduring large-scale wildfires and their commensurate security effects at home, or reduce the nation's military capability abroad.

Of course, the military already provides crucial capacity for firefighting when they aren't engaged in other missions. If military units are otherwise unoccupied, they do provide unmatched capabilities and a ready source of manpower. Creating or bolstering separate non-military forces dedicated solely to wildfire suppression would incur increased expenses and create the appearance of duplicative effort, but the core purpose of a military is warfighting - there is little chance that significant military resources would be available for firefighting during a major conflict. The cost issue can be mitigated to some extent by working with private entities rather than developing government capabilities, which can remain profitable in the U.S. off-season by redeploying to at-risk countries in the Southern Hemisphere.⁶⁶ Using proactive forestry practices that mitigate the potential for high-cost fires can also reduce overall costs.⁶⁷ Yet the upfront additional costs incurred constitute a public investment that will return significant savings as the cost and intensity of wildfire impacts continues to grow.

Former U.S. defense officials have raised concerns over the dual tasking of military units. Erin Sikorsky, a former member of the National Intelligence Council and current Director of the Center for Climate and Security, argues that "many of those same troops (used for

firefighting) are the ones that would be called upon in case of a conflict. And so there would be a challenge there if they were being deployed at the levels they have been in recent years domestically and needed on the front lines."68 Furthermore, it is unclear how guickly troops engaged in firefighting could be redeployed in a crisis situation. According to Dr. Marc Kodack, who spent over 30 years with the Department of the Army addressing environmental issues, "the opportunity cost to a unit's primary mission of being deployed to fight wildfires has not been determined. It could lessen the unit's readiness and availability if the response to a wildfire is unplanned when a military emergency somewhere in the world emerges that requires that unit to deploy to address that emergency."69 Given the inherent uncertainties of wildfire response and the risk of relying on military units to be available for firefighting, some apparent duplication of efforts is necessary.

Although wildfire suppression is a seasonal task that traditionally takes place between late spring and early fall, climate change is extending the window when large fires can take hold. According to the Department of Agriculture, the fire season is already two months longer now than it was in the 1970's.⁷⁰ The largest fire in Texas history, which consumed more than a million acres, ignited in February 2024, and almost a thousand homes in suburban Denver were destroyed by a wildfire in late December 2021.⁷¹ Furthermore, militaries also face different climate disasters outside of fire season; for example, a 1998 ice storm in Canada necessitated the largest deployment of Canadian troops since the Korean War.⁷² Lastly, wars persist through the fire season; if the U.S. is engaged in a protracted conflict and continues to rely on military resources for fire suppression,

military units might need to be redeployed domestically to battle fires instead of playing an active role in the conflict.

RECOMMENDATIONS

1. Increase investments in civilian firefighting resources, reduce the role of active-duty and reserve units in wildfire suppression, and clearly delineate the firefighting role of the National Guard.

The military's ever-growing to-do list places intrinsic limits on how much aid the force can offer in wildfire suppression, especially during wartime. Active-duty and reserve units are in high demand for foreign deployments and other traditional military missions, and tasking these units for wildfire mitigation offers the most direct negative impact on U.S. force readiness and deterrence. Therefore, active-duty and reserve units should deploy to fires only as a last resort, and criteria should be established to take them off the fire line as quickly as possible. This is especially true for ground units, which are more time-consuming to deploy and are generally dispatched for lengthy periods.⁷³

Given its unique purview over domestic military missions, the National Guard should shoulder the vast majority of the military's firefighting duties; however, it should remain an option of last resort, only used when other resources prove insufficient. Guard forces, especially aircraft, offer flexible and rapidly deployable options to fire crews, and the MAFFS program provides an exemplary case of intergovernmental collaboration. Guard members are, by definition, not frontline combat troops and can thus be tasked and trained with a wider variety of missions, including fire suppression. However, the National Guard is often deployed en masse to frontline deployments overseas; therefore, some limits must be placed on its firefighting activities. Since the 1990s, the National Guard has often been tasked as if it were another branch of the Reserve forces, which threatens its ability to address wildfires along with many other domestic priorities; however, reforming the relationship between the Guard and the Reserves is a much broader and more complex policy issue that incorporates other important factors beyond its growing firefighting duties.

To ease the strain on the National Guard, a combination of the Forest Service, the Department of the Interior, and other regional civil agencies such as Cal Fire must further expand their firefighting forces in response to the growing wildfire threat. This is most applicable for ground crews, who are both underpaid and undermanned, especially in the case of inmate firefighters.74 However, Washington should incentivize private entities to provide the majority of new high-end systems such as airtankers. Unlike federal or civil firefighting fleets, private firms can turn a profit during the off-season by redeploying to the Southern Hemisphere and suppressing fires in nations such as Australia and Chile, although there are increasing benefits to maintaining the U.S.-based fleet as the fire season lengthens.⁷⁵ Furthermore, private companies are involved in commercial firespotting satellites and other resources that could reduce the strain on military and intelligence agencies once deployed.⁷⁶

Washington can facilitate the growth of the private fire industry by offering incentives, technological cooperation, and guaranteed contracts for emerging and established firms. Furthermore, the military can help to expand the private and civil airtanker fleet by providing

surplus aircraft that have limited military utility, as advised by the Wildland Fire Mitigation and Management Commission.⁷⁷ These actions should be budgeted in expanded annual Forest Service and the Department of the Interior appropriations funding; cost estimates, force requirements, and private sector partnership agreements should be informed by federal studies such as the Aerial Equipment Strategy Report.⁷⁸

2. Create contingency plans for wartime wildfire suppression.

DOD force planning cannot overlook the role that military forces play in wildfire mitigation. This is especially true for high-value units with significant firefighting and warfighting capabilities, like the MAFFS-equipped C-130s. DOD plans must avoid double-counting these resources so that contingency plans can be implemented in their absence. For other military units that are highly involved in wildfire management, such as the California National Guard crews that spend the majority of the year on fire containment and prevention, the DOD should consider transferring these units to civilian entities like Cal Fire or creating contingency plans to staff them with trained civilian volunteers in times of conflict.79

The U.S. Forest Service and Department of the Interior should develop contingency plans for mobilizing civilians to fight wildfires when U.S. military forces are fully engaged in their primary missions. Civilian volunteers can form a critical component of a national fire response;⁸⁰ however, creating these plans before they are necessary is imperative for three primary reasons:

• A large-scale conflict would necessitate an immediate military response, leaving little

time for military units to redeploy from fires and be replaced by civilian entities, which would not be able to respond as quickly.

- These contingency plans might be better able to replace low-cost firefighting resources like ground units, but would struggle to procure high-end systems such as airtankers, which are already in short supply with few spares available for reserve status.
- The high-intensity training regimen necessary for wildland firefighting could also stymie efforts to field a large civil reserve force, especially regarding highend systems.⁸¹ Civilian volunteers must be provided with basic firefighting training long before being deployed to active fires; otherwise, the usage of volunteers might actually detract from short-term firefighting capability, as dedicated resources might need to be withdrawn from the fire line to train new recruits.

It is vital to bolster the role of civilian volunteers in firefighting contingency plans, but given these caveats, the highest priority must be to field a sufficiently capable dedicated firefighting force and avoid the current strategy of implementing half-fixes and band-aid solutions.

3. Increase interagency cooperation and clearly delineate resources that should remain military-specific.

In many instances, interagency cooperation on wildfire mitigation is efficiently executed. The National Interagency Fire Center has streamlined the firefighting efforts of a plethora of government actors, and the MAFFS system showcases rapid and effective interagency

collaboration. However, cooperation between some government actors remains lacking, especially in the realm of space-based systems.

The space-based resources of several intelligence organizations are vital for U.S. national security and should be reserved for military and intelligence tasks. For instance, California's reliance on CIA and National Reconnaissance Office assets involves both a painstaking approval process and reduces the availability of satellites for traditional security purposes. Therefore, government agencies like the NOAA and National Geospatial Intelligence Agency, which can provide similar capabilities in fire detection and mapping, should be more closely incorporated under the National Interagency Fire Center, while agencies like the CIA and National Reconnaissance Office should utilize their space-based resources explicitly for

intelligence purposes, unless such systems offer an unmatched or novel capability for firefighting. This issue will be partially alleviated by the introduction of civilian fire-spotting satellites, but clear delineations between military/intelligence assets and multipurpose assets would allow government departments to pursue their mission sets more closely.

The Wildland Fire Mitigation and Management Commission has created a framework for evaluating whether military surplus aircraft and components should be made available to firefighters and contractors.⁸² This model assesses the needs of allied governments, other civil agencies, and force planning. Similar theoretical frameworks should be applied to other dual-use assets in the defense apparatus to assess their optimal uses.



A NASA infrared photo shows smoke from Western wildfires enveloping the northern U.S. during the 2017 fire season. Active fires are highlighted in red.

Photograph courtesy of Jeff Schmaltz, NASA.

4. Conduct more rigorous studies to evaluate firefighting effectiveness and implement modern fire prevention practices.

The national security impacts of fire studies and practices are undoubtedly not a paramount priority for most foresters. Nevertheless, if the policies designed to prevent and respond to large fires falter, military resources must be called upon to fill gaps in firefighting capability. A recent report on firefighting effectiveness found that the effects of different firefighting techniques such as airtanker usage were understudied. Although DHS, DOA, and DOI recently released a study on airtanker effectiveness, the document noted a distinct lack of data and evidence on the effectiveness of different firefighting techniques. Reports have been created by GAO and the RAND Corporation, but these reports face similar issues with insufficient data.⁸³ A comprehensive review of firefighting effectiveness could provide information on the most impactful tactics and procedures, thereby increasing the effectiveness of firefighting resources and reducing the necessity for military units to fill the gaps.

Implementing modern fire techniques to prevent large wildfires reduces the need for the military to respond to these events. For decades, U.S. foresters attempted to rapidly extinguish wildfires before they could grow beyond control.⁸⁴ As a result, an unnatural and dangerous overabundance of flammable material accrued in many U.S. forests.⁸⁵ Modern forestry techniques, which prioritize prescribed burns, fire-resistant building techniques, and thinning dense forests, have been proven to reduce the probability of severe fires.⁸⁶ Some of these measures may have high initial costs, but they pay their dividends by reducing wildfire risk (and correspondingly lowering the military's role in fire response). The Wildland Fire Mitigation and Management Commission's most recent report, *On Fire*, offers policy prescriptions to implement controlled burns, fuel reductions, and other modern forestry management practices.⁸⁷ The Commission's findings are not binding; it is, therefore, of paramount importance for relevant actors such as the Forest Service (a core member of the Commission) and state agencies to consult this resource to inform their fire management practices.

5. Pass proactive forestry measures such as the Save Our Sequoias Act.

Mitigating fire risk in U.S. forests is imperative for reducing the military's wildland firefighting requirements. The Save Our Sequoias Act provides a pertinent example of a modern fire mitigation strategy.

The giant sequoia, the world's most massive tree, is found only in the United States.⁸⁸ Although these unique organisms rely on wildfires for their germination and growth, the increasing severity of fires, as well as the overaccumulation of combustible materials in sequoia groves through forest mismanagement, have left them vulnerable.⁸⁹ More than 20% of the mature sequoia population has disappeared due to wildfires during the 2020s, and scientists predict continued rapid forest loss.⁹⁰

Fire suppression in Sequoia forests has also necessitated military involvement. California National Guard troops were active on the frontlines of the KNP Fire Complex in Sequoia National Park in 2021, MAFFS-equipped C-130s were used heavily to battle the Pier Fire in Sequoia National Park in 2017, and active-duty Marine Corps CH-46 and CH-53 helicopters joined Reserve C-130's to quell the Piute Fire in 2008.⁹¹

Given the rapid pace of sequoia forest loss and the strain that protecting these areas has placed on military resources, a timely solution is vital to safeguard remaining groves. The Save Our Sequoias Act, introduced by Representatives Kevin McCarthy (R-Calif.) and Scott Peters (D-Calif.), would devote \$325 million to fire prevention and mitigation measures in critical sequoia habitats, primarily through modern forestry techniques such as prescribed burns and thinning overcrowded forests to reduce fuel.⁹² It would allow a more timely delivery of aid; current resource constraints and bureaucratic hurdles have prevented forest treatments from keeping pace with fires, whereas this legislation would allow for large-scale protection of remaining groves.93

The Save Our Sequoias Act is supported by large conservation groups including The Nature Conservancy, and while other environmental organizations have criticized it for creating exceptions to NEPA and Endangered Species Act reviews, these reviews impose significant delays on forest treatments that could threaten the survival of remaining sequoia groves.94 NEPA reviews for Forest Service forest treatments require, on average, 3.6 to 7.2 years to complete; with 13-19% of all mature sequoias lost in 2020 and 2021 alone, this process cannot keep pace with intensifying wildfires in its current form.95 2024's fire season is fast approaching, and this bill would offer the most rapid response to sequoia deforestation.



FIGURE 3: FIRES IN SEQUOIA GROVES, 2015-2021

Fire boundaries are outlined in red. Affected sequoia groves are displayed in maroon. Source: National Park Service

CONCLUSION

Military forces have served an indispensable role in U.S. fire suppression, providing essential capacity in the face of intensifying wildfires. However, creating fire management plans that assume that these units will always be available for fire response in the face of mounting commitments abroad is a dangerous endeavor, especially as the most devastating conflict in decades persists in Ukraine and China continues to rapidly expand its military capabilities.⁹⁶ By bolstering civil and contractor wildland firefighting forces and implementing modern forestry practices in critical regions, Washington can sidestep a major impediment to military readiness. In contrast, should the military's wildfire and disaster response commitments continue to grow, U.S. deterrence, force posture, and availability to respond in times of conflict will suffer as a result.

This project has a relatively narrow scope, so it is important to highlight other important issues in wildfire suppression and the U.S. military's role in disaster response that are worthy of consideration. First, it is focused on domestic fire suppression; fires abroad can affect healthcare in the U.S. (smoke from Canadian fires last summer led to increased visitation to U.S. hospitals).⁹⁷ Moreover, U.S. military firefighting resources are occasionally dispatched internationally, and foreign firefighting units sometimes battle U.S. blazes.⁹⁸ The paper also examines wildfires alone; military units often respond to other natural disasters, such as hurricanes, tornadoes, and earthquakes.⁹⁹ It is also important to note that wildfires pose significant direct impacts on the U.S. military, such as by burning bases and delaying military training; this project is devoted more to evaluating military unit usage rather than the potential for fires to impact the force itself.

While the U.S. has taken bold steps to reduce its greenhouse gas emissions and mitigate the effects of climate change, the road to decarbonization remains difficult. Alreadyemitted GHGs will continue to warm the planet for as long as they remain in the atmosphere, and emissions by more intense, frequent, and expensive wildfires will constitute a growing portion of global emissions. Given these challenges, as well as the growing difficulties posed by fire management, the U.S. must implement proactive reforms now to prevent greater catastrophe in the future.

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Appendix

WILDFIRES' CONTRIBUTION TO NATIONAL EMISSIONS OF CARBON DIOXIDE

Wildfires account for a growing share of national carbon dioxide emissions because wildfire emissions have increased as other emissions have declined.



Percentage of total gross CO2 emissions. Source: Congressional Budget Office

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