AMERICAN STEWARDS of Liberty

July 20, 2023

Director
Policy Office
201 14th Street SW, Mailstop 1108
Washington, DC 20250–1124

Dear Director,

Attached are comments on the USDA Forest Services Advance Notice of Proposed Rulemaking regarding the managing the National Forests for Climate Resilience (Docket No. FS-2023-0006-0002). These comments are being submitted on behalf of the following entities:

Chaves County New Mexico
Garfield County Colorado
Jackson County Colorado
Kane County Utah
Lea County New Mexico
Modoc County California
Moffat County Colorado
Otero County New Mexico
San Juan County Utah
American Stewards of Liberty
Center for a Constructive Tomorrow
Center for Energy & Environment, Competitive Enterprise Institute
Coalition of Arizona/New Mexico Counties
Kansas Natural Resource Coalition
Protect the Harvest

We appreciate the opportunity to provide the Forest Service with these recommended forest management practices for the purpose of meeting the agency's statutory obligations, which include reducing wildfires, generating quality habitat for wildlife and species, and ensuring productive use of the lands to support robust local economies.

Warm regards,

Margaret Byfield
Executive Director

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COMMENTS ON THE USDA FOREST SERVICE'S ADVANCE NOTICE OF PROPOSED RULEMAKING REGARDING MANAGING THE NATIONAL FORESTS FOR CLIMATE RESILIENCE

Docket No. FS-2023-0006-0002

July 20, 2023

The following comments regarding the USDA Forest Service's advance notice of proposed rulemaking on adapting the agency's policies to manage the national forests for climate resilience, 88 Fed. Reg. 24497 (April 21, 2023) (the "ANPR"), are provided by Chaves County, NM; Garfield County, CO; Jackson County, CO; Kane County, UT; Lea County, NM; Modoc County, CA; Moffat County, CO; Otero County, NM; and San Juan County, UT, as well the American Stewards of Liberty, the Center for a Constructive Tomorrow, the Center for Energy & Environment - Competitive Enterprise Institute, the Coalition of Arizona/New Mexico Counties, the Kansas Natural Resource Coalition and Protect the Harvest (collectively, the "Counties").

As summarized by the Forest Service, the focus of the ANPR is the following topic:

> Given that climate change and related stressors are resulting in increasing impacts with rapid and variable rates of change on national forests and grasslands, how should the Forest Service adapt current policies to protect, conserve, and manage the national forests and grasslands for climate resilience, so that the Agency can provide for ecological integrity and support social and economic sustainability over time?

ANPR, 88 Fed. Reg. 24498. The ANPR also requests information on a variety of additional questions/topics. *See* ANPR, 88 Fed. Reg. 24502-03. However, the additional questions are largely irrelevant to the ANPR's central topic. Many of the national forests are in extremely poor condition, with unnaturally high tree densities, extreme fuel loads, and disease and insect infestations. The adoption of new "adaptation" planning and practices and "braiding" Indigenous Knowledge with western science will not address this forest health crisis. Instead, intensive management is needed, including a program to aggressively harvest timber and reduce tree densities in order to restore the forests to a healthy, sustainable condition. That should be the focus of the agency's rulemaking.

Healthy forests are vitally important to social and economic fabric of the western states. A substantial portion of the West's forested land is located within the National Forest System ("NFS") administered by the Forest Service. The bulk of the NFS, which contains some 193 million acres, is managed under principles of multiple-use and sustained-yield. *See*, *e.g.*, Congressional Research Center, *Federal Lands and Related Resources: Overview and Selected Issues for the 118th Congress*, CRS Report R43429 (updated Feb. 23, 2023). Many residents and businesses in the western states, particularly in rural areas, depend on their ability to use the national forests and their resources for a variety of purposes, including timber production, livestock grazing, energy and mineral development, outdoor recreation, and habitat for fish and wildlife. In short, how the national forests are managed is vitally important to the western states and to the people who reside and work there.

Historically, the West's national forests were a major source of sawtimber and other wood products in most western states. Many national forests supported a robust forest products industry that was important to many rural communities, providing high-paying jobs and other economic benefits. Timber sales also provided a means to manage the forests by reducing tree densities and promoting healthy, sustainable forest conditions. Unfortunately, in many parts of the West, the volume of timber sold by the Forest Service has fallen dramatically, as forest management policies have shifted to maintaining overgrown and unnaturally dense forest conditions. Those policies have directly contributed to the forests' deteriorating condition, while preventing forest products companies from accessing timber needed to operate their businesses.

It has long been recognized that the forests in the western United States are severely degraded and in need of significant restoration. More than a decade ago, the Western Governors' Association issued a report describing the forest health problem in the eleven contiguous western states and providing recommendations for addressing that situation. Forest Health Advisory Committee, Western Governors' Ass'n, *Forest Health Landscape-scale Restoration Recommendations* (Dec. 2010) (copy enclosed). The report stated:

> Intact, healthy functioning forests are vitally important to the environmental, social, and economic fabric of the Western states. Yet, large areas of Western fire-adapted forests are in need of restoration. A century of fire suppression has resulted in many forest types seeing dramatic increases in tree densities, understory brush and "ladder fuels" that can carry fire into the tree crowns and spread rapidly. A tripling of insect and disease mortality along with dead trees, scorched watersheds, and stagnant, overgrown forests are but a few of the symptoms of the widespread forest health problem in the Western U.S.
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> In the eleven Western states, acres burned by wildfires have increased dramatically over the past 20 years . . . . The forest health problem is widespread and increasing, affecting wildlife habitat, water quality and long-term soil productivity, while placing human life and property in harm's way. Climate change is exacerbating the forest health crisis. The absence of clear and cohesive federal policies and leadership on climate adaptation, the use of biomass for energy production, and the sustainability of forests perpetuates the declining condition of Western forests. . . .
>
> ***The West needs an ambitious landscape-scale restoration agenda that will help forest ecosystems to adapt in the face of changing climate conditions, restore critical wildlife habitat, ensure healthy functioning watersheds, and safeguard our communities. Pursuing this agenda will generate tremendous environmental and social benefits, create much-needed jobs and revenue for rural economies, and save hundreds of millions of dollars that would otherwise be directed to wildfire suppression efforts.***

Id., "The West's Forest Health Problem," at unnumbered page 1 (emphasis added).

Much earlier, in 1993, the Forest Service issued a report that described the deteriorating conditions in the national forests in the agency's Southwestern Region based on documented changes taking place during the 25-year period between 1962 and 1986. USDA Forest Service,

Changing Conditions in Southwestern Forests and Implications on Land Stewardship (1993) (copy enclosed). In that report, the Forest Service explained that wood volume had increased significantly on NFS land in the region, the number of trees had increased in virtually all size classes, and the forests had become much denser and susceptible to catastrophic wildfires, insects, and disease. "Today's forests have more volume, more trees in nearly every diameter class, and more canopy layers than ever before. Recent research verifies this fact. Dense stands are difficult to maintain in a healthy condition and, in unmanaged condition, are susceptible to catastrophic crown fires and pest/beetle epidemics when they are not properly managed." *Changed Conditions in Southwestern Forests*, at 3. The Forest Service also explained:

> Because of extreme fuel loading most stands cannot be safely burned to return them to a sustainable condition. In dense stands wildfires are extremely large, hot, and catastrophically destructive to the forest, soil, and endangered wildlife. The most practicable and controllable way to return forests to a healthy, sustainable condition and to maintain and enhance threatened and endangered species habitat is through timber harvest. ***Thus, the forest management tool best suited to provide long-term health of the forests and for endangered species habitat is tree harvest. Providing jobs and multiple resources is an additional, important benefit of these harvests***.
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> The current low level of harvest and cultural (pre-commercial thinning) treatments cannot prevent aging and increasing small-tree density of Southwestern forests. They will become older, denser, and perhaps more extensive. However, at some point, ecological limits will be reached, resulting in extensive forest destruction from insects, diseases, and fires. Similar losses are well-documented throughout the Interior West where the same circumstances have prevailed, such as most recently in the Blue Mountains of eastern Oregon.

Id., at 5 (emphasis added).

When the Forest Service issued this paper, the "low level" of timber harvests and cultural treatments in the Southwestern Region were removing about 300 million board feet ("mmbf") of timber annually. Estimated annual growth on the Region's national forests was about 700 mmbf annually. But within two years, the Region's timber sale volume had dropped by nearly 90 percent, and the major forest products companies were driven out of business by the lack of commercial-grade timber. And as the Forest Service predicted, the number and magnitude of wildfires on the Region's national forests increased dramatically. In fact, the 10 largest wildfires in Arizona history have occurred since 1996, and eight of those fires have occurred since 2002. And in many cases, these fires have destroyed areas that contain important habitat for endangered species. *See* Norman D. James, *Managing to Burn – Redirecting the ESA's focus from Land Use Regulation to Species' Recovery* (2012) (copy enclosed).

The Forest Service's ANPR suggests that these problems are getting worse. The ANPR, for example, explains: "Climate change is leading to increasingly extreme storms and droughts, extensive pest and disease occurrence, more widespread chronic stress, and shifting fire regimes

across forests and grasslands in the United States." 88 Fed. Reg. 24498. The ANPR goes on to state:

> More ecosystems and watersheds are becoming vulnerable to severe disturbance, with some geographies and ecosystem types experiencing more rapid and compounding impacts than others. Some ecosystem services provided by forests are functioning, while others are at significant risk. In some places, high severity burns are resulting in long-term loss of forest cover, along with the loss of associated plant and animal communities dependent upon those forest ecosystems, including MOG-forest communities and at-risk species.

Id. The basic problem today is the same problem that the Forest Service identified in *Changing Conditions in the Southwest* 30 years ago – the Forest Service is not allowing sufficient quantities of timber to be harvested, including larger-sized trees that can support forest product companies' operations, which provide good-paying jobs and contribute to strong local economies while reducing the risk of catastrophic wildfires and insect and disease outbreaks.

The ANPR explains that "currently the Forest Service commercially harvests one tenth of one percent of [all] acres within the National Forest System each year," which amounts to only 190,000 acres per year. 88 Fed. Reg. 24499. That is incredible. The Forest Service has not disclosed the volume and types of timber being harvested, nor does it disclose the volume of tree growth occurring annually. But it is safe to say that annual growth on the national forests is far, far greater than the volume of timber being harvested each year, meaning that conditions are worsening.

The ANPR also states that over 25 percent of the 193 million acres of land within the NFS has been adversely impacted by wildfire and insects and disease within the past 15 years. The notice goes on to explain:

> This rapidly changing environment is now the primary driver of forest loss and type conversion. Wildfire alone causes approximately 80 percent of reforestation needs on National Forest System lands, and we expect those needs to continue to grow: More than half of the 4 million acres of potential reforestation needs on National Forest System lands stems from wildfires in 2020 and 2021.

88 Fed. Reg. 24499. Similarly, the caption to Figure 2 in the ANPR states that "National Forest disturbance has increased over the past 15 years driven primarily by overstocked forests that are susceptible to insects, disease and wildfire." 88 Fed. Reg. 24500.

The bottom line is that the forests are becoming more and more overgrown, creating extreme fuel loads, overstocked patches of small-sized and stunted trees, increased canopy closure and fuel ladders, diminished nutrient cycles, decreased on-site water availability, and increased disease, insect infestation and parasites. Undoubtedly, climate change may exacerbate these conditions. But current forest conditions are the result of the Forest Service's management choices, including the agency's failure to authorize timber harvesting at a level sufficient to control tree densities and eliminate overstocked conditions. The Forest Service must reverse course and, as the Western Governors' Association urged in its report, develop and implement an aggressive

landscape-scale restoration program that emphasizes increased commercial timber harvesting and pre-commercial thinning in order to reduce tree and brush densities and create healthy forests that are resilient to climate change. Such a program would have the added benefit of supporting social and economic sustainability in rural communities in the western states.

In order to achieve healthy forests, and to promote social and economic sustainability, it will be necessary to allow timber companies to cut some larger-sized trees, including trees in mature and old growth ("MOG") forest communities. In many cases, MOG-forest communities are overstocked, overgrown, and contain high fuel loads and other conditions that will lead to large, hot wildfires that are catastrophically destructive. When they burn, these forests will destroy the forest, the soil, and the wildlife found there, in addition to releasing massive quantities of carbon into the atmosphere.

An example of this problem is described in the *Managing to Burn* paper, which discusses how the Forest Service's management of the Southwestern Region's forests to promote unnaturally dense, multi-story stands for the Mexican spotted owl by stopping virtually all timber harvesting was accompanied by a dramatic increase in catastrophic wildfires, destroying large blocks of critical habitat for the owl and harming other species of fish and wildlife as well. As the Forest Service recognized in *Changing Conditions in the Southwest*, healthy forests support biodiversity, including habitat for wildlife.

Moreover, the overgrown, multi-story conditions often found in MOG forests facilitate the spread of disease and insect infestation, which kill and stunt trees, making them unsuitable for wildlife habitat. Put simply, the promotion of conditions that destroy large tracts of forest are not "nature-based climate solutions." If the Forest Service proceeds with this rulemaking, it needs to take a hard look at impacts caused by promoting decadent, overgrown forest conditions. The bulk of the discussion in the ANPR and other information regarding the deteriorating forest conditions in the West indicate that the preservation of MOG forests is part of the problem, not a solution to the West's deteriorating forests.

Finally, it should emphasize that it is not necessary to cut all or even most larger-size trees in order to have sufficient sawlogs to support a viable forest products operation. Indeed, it may be desirable to create a mosaic of trees of different sizes and ages, as well as forest openings, in order to mimic natural conditions and enhance biodiversity. These management prescriptions should be developed on a forest-by-forest basis, as appropriate based on the particular ecological conditions and features of the area. On the other hand, it is necessary to provide forest companies assurance that commercial-grade timber will be available for their operations. It is a matter of maintaining a reasonable balance.

In conclusion, the Forest Service should reevaluate its policies for the management of the national forests in the West. As the ANPR itself acknowledges, the national forests have become unnaturally dense and prone to extremely large, highly destructive wildfires, as well increased infestations of insects, parasites, and disease that kill or stunt large numbers of trees. These unhealthy conditions were recognized decades ago, and are getting worse due to the absence of aggressive forest management. The Forest Service should address the unhealthy condition of the national forests as soon as possible, beginning with increases in timber harvesting to reduce tree

density and fuel loads. To aid in achieving this goal, the Counties recommend that the Forest Service consider the following actions in its rulemaking:

- Develop and implement guidelines for large-scale landscape treatments that focus on reducing tree densities and fuel loads, including the removal of diseased and dead trees and understory materials.

- Increase the quantity of timber harvested annually from national forests to a level that equals or exceeds estimated annual growth, at least for the near term.

- Identify forested areas that are most in need of restoration and prioritize timber sales and other restoration treatments in those areas.

- In planning timber sales, include larger-sized trees to incentivize private companies and ensure that the sale makes economic sense to the purchaser, in addition to requiring other types of forest restoration activities.

- Coordinate forest restoration activities with state and local governments, including collaboratively developed landscape-scale restoration plans.

- Create a system that ensures a dependable supply of timber, including trees over 9 inches dbh, to encourage companies to invest in facilities and equipment and to hire and train employees for their operations.

- In conjunction with state economic development programs, provide financial support for the construction of infrastructure necessary to support commercial timber harvesting and related restoration activities, including adequate mill and operational capacity. (This could include loans and grants through funding provided by the Infrastructure Investment and Jobs Act (P.L. 117-58) and the Inflation Reduction Act (P.L. 117-169).)

The agency's primary goal must be the creation of healthy, sustainable forests. The best way to do that is to implement management policies that prioritize and facilitate timber harvesting and in the process support rural communities and their economies that depend on the national forests.

Attachment A

Forest Health Advisory Comm., W. Governors' Ass'n, *Forest Health Landscape-scale Restoration Recommendations* (Dec. 2010)

Western Governors' Association
Forest Health Advisory Committee

Forest Health Landscape-scale Restoration Recommendations

December 2010

The West's Forest Health Problem

Intact, healthy functioning forests are vitally important to the environmental, social, and economic fabric of the Western states. Yet, large areas of Western fire-adapted forests are in need of restoration. A century of fire suppression has resulted in many forest types seeing dramatic increases in tree densities, understory brush and "ladder fuels" that can carry fire into the tree crowns and spread rapidly. A tripling of insect and disease mortality along with dead trees, scorched watersheds, and stagnant, overgrown forests are but a few of the symptoms of the widespread forest health problem in the Western U.S.

In the eleven Western states, acres burned by wildfires have increased dramatically over the past 20 years (Figure 1). The forest health problem is widespread and increasing, affecting wildlife habitat, water quality and long-term soil productivity, while placing human life and property in harm's way. Climate change is exacerbating the forest health crisis. The absence of clear and cohesive federal policies and leadership on climate adaptation, the use of biomass for energy production, and the sustainability of forests perpetuates the declining condition of Western forests.

Much has been accomplished over 10 years of implementing the National Fire Plan, but the need for forest restoration is larger than can be effectively addressed given current treatment sizes, rates of restoration treatments, and typical planning and implementation processes. We are losing ground.

The West needs an ambitious landscape-scale restoration agenda that will help forest ecosystems to adapt in the face of changing climate conditions, restore critical wildlife habitat, ensure healthy functioning watersheds, and safeguard our communities. Pursuing this agenda will generate tremendous environmental and social benefits, create much-needed jobs and revenue for rural economies, and save hundreds of millions of dollars that would otherwise be directed to wildfire suppression efforts.

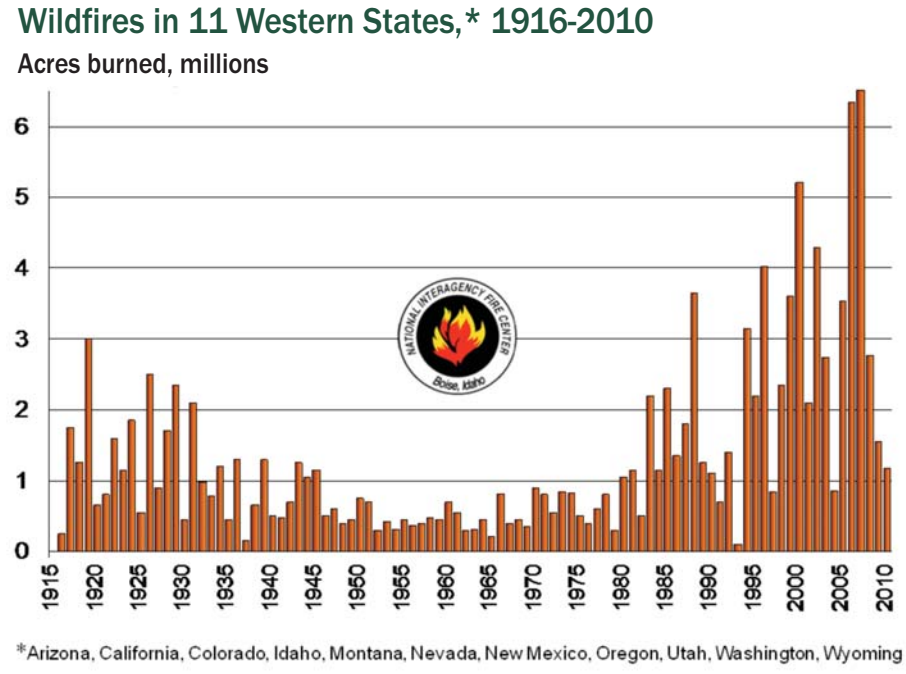

Figure 1. In the 11 Western states, the acres burned by wildfires have increased dramatically over the past 20 years. Such wildfires are larger and more severe, expensive, damaging and difficult to control.

A New Direction to Restore Healthy Forests

Forest restoration is paramount, given the enormous negative impact unhealthy forests have on communities and economies and the potential positive impact that landscape-scale restoration can have on local, state and tribal interests. Federal, state and local interests must be coordinated and focused on restoration at a scale that matters. Planning and implementing small and sometimes disconnected projects may be necessary to lay the groundwork for larger efforts, but will not suffice by themselves when unhealthy forests span millions of acres and unnaturally severe wildfires burn hundreds of thousands of acres at a time.

Forest restoration planning and implementation should occur at a scale commensurate with the scale at which dominant disturbances (i.e., unnaturally severe fire) are occurring. At these scales, restoration can and should provide predictable supplies of forest products, including small diameter timber and woody biomass. These predictable supplies are necessary to build or maintain the infrastructure and industry needed to implement forest restoration treatments in a cost-effective manner. Restoration at these scales should also facilitate cross-ownership planning and implementation, which would provide needed balance among local, state and federal cooperators in management decisions.

Landscape-scale forest restoration must be supported by meaningful, ongoing collaboration that serves to accelerate the restoration process in a socially, ecologically and economically viable fashion. "Collaboration" is simply people working together to address a shared problem that no one of them could effectively resolve alone. Each participant brings to the effort knowledge, skills, ideas, and resources. The more inclusive the group and the greater the diversity of interests involved, the more likely it is to be representative of the community as a whole and to find broadly acceptable, mutually agreeable solutions.[1] Such collaboration can help to identify areas of greatest need, focus treatments for maximum benefit, increase participation in management decisions, and provide more opportunities to reach agreement on management practices. "Restoration" of forest health should be defined by collaborators in a specific place. This will help to identify a "zone of agreement" that will avoid the gridlock challenging many public lands management initiatives.

Scaling up to thinking and working at the landscape level – necessary to address the issues outlined above – will require new approaches for collaboratively bringing science into forest assessment, planning and management. Proven scientific approaches can provide multi-scaled analysis to support efficient planning and decision making, as well as to capture new efficiencies in project implementation, monitoring and adaptive management. Creative approaches, grounded in high quality science and forged through a collaborative process, have been demonstrated in the Western states. These approaches are ready to go and can be incorporated into all phases of ambitious new efforts with relative ease and enormous payback, ranging from increasingly accurate predictions regarding landscape-scale treatments, to empowered stakeholders and expanded zones of agreement.

Achieving ambitious landscape-scale restoration objectives is challenging, but eminently doable. The recommendations contained in this document address needs and opportunities for more effective and efficient planning, collaboration, networking, adaptive management and monitoring, as well as coordination with restoration-supporting industries. Addressed together and promptly, these recommendations should greatly enhance capacity for existing efforts, while catalyzing new efforts. They can and should begin to carry forward a program of mutually reinforcing landscape-scale forest restoration efforts across the West. Investment in these efforts requires more visionary and strong leadership.

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[1] *Community Guide to Preparing and Implementing a Community Wildfire Protection Plan, 2008*

We hope and expect that this leadership will be directed now towards healing the forests, communities and economies across the West that so desperately need it.

Collaborative partnerships among former combatants over federal land management have sprung up across the West to begin defining a new direction for landscape-scale forest restoration. WGA has polled the members of these groups to discern common threads, successes and failures, and remaining barriers to reaching consistent, full-scale restoration actions. The analysis of these interviews is published in a report titled "Large Scale Forest Fuels Projects and Collaborative Groups Improvement Study" and can be found on the WGA website www.westgov.org. The WGA survey effort was followed by an in-person working session among WGA Forest Health Advisory Committee members and the collaborative group participants to develop a set of recommendations which make up a restoration agenda for Western forests. This process was designed to combine on-the-ground knowledge and an understanding of real-world challenges to create a formula for broad-scale restoration success, as described in this document.

During the WGA Winter Meeting held in December 2010, the Western Governors' Association accepted the Forest Health Advisory Committee recommendations. More detailed information on each recommendation follows the list below.

Recommendations

1. **Provide guidance regarding enhanced collaboration in NEPA analysis and planning.**
2. **Incorporate broad, substantive stakeholder involvement in all project phases.**
3. **Enhance landscape-scale, science-based collaboration in practice.**
4. **Create a learning network to enhance synergies and learning opportunities among landscape-scale restoration initiatives.**
5. **Incorporate collaboratively developed landscape-scale restoration plans and Community Wildfire Protection Plans into federal agency Forest and Resource Management Plans.**
6. **Develop explicit guidelines for implementing Adaptive Management programs to ensure efficient, effective and continually improving landscape-scale restoration.**
7. **Consistently interpret, implement and adapt stewardship contracting to better facilitate large-scale treatments.**
8. **Create a risk-pool authority or other mechanism to reduce the required funding set-aside for "cancellation ceilings" for multi-year stewardship contracts.**
9. **Retain existing forest infrastructure and capacity by helping contractors obtain performance and payment bonds through a state authority.**
10. **Coordinate state and federal economic development programs to retain and increase the mill and operator capacity necessary for large-scale forest health restoration.**
11. **Create a predictable supply of goods and services flowing from landscape-scale restoration initiatives.**
12. **Create a three-tiered system of restoration funding that supports development of new collaborative projects, sustains funding for established landscape restoration projects, and makes significant investments in large-scale restoration treatments.**

Recommendations – Detailed Actions

1. Provide guidance regarding enhanced collaboration in NEPA analysis and planning.

A 2007 report by the Council on Environmental Quality clearly states that collaborative problem solving is a central tenet of the National Environmental Policy Act (NEPA), and that active collaboration can and should occur through virtually all phases of the NEPA process, short of making the final decision. Nevertheless, many landscape-scale forest restoration efforts are hindered by agency and stakeholder assumptions that collaboration must be narrow and limited once project planning enters a formal NEPA process. There is a clear need for the Secretaries of Agriculture and Interior to develop practical guidance and directives for conducting collaborative problem-solving within all phases of NEPA in landscape-scale forest restoration efforts. Clearer direction and approval for collaborative problem solving will bring the considerable skills and experiences of collaborating organizations and citizens to bear in the agencies' efforts to conduct NEPA analysis in a socially, ecologically and economically responsible manner.

Therefore, we recommend:

A. The Secretaries of Agriculture and the Interior, with participation by the WGA, should form a Collaborative Forest NEPA Working Group composed of top legal, scientific and planning experts and practitioners to translate existing NEPA guidance (e.g., CEQ's Collaboration Handbook) into:
   1. formal clarification of the latitude available for collaborative problem-solving within the NEPA phases of landscape-scale forest restoration efforts;
   2. a directive to the field to implement these approaches in landscape-scale restoration efforts and other appropriate NEPA planning efforts;
   3. strategies for avoiding legal (Federal Advisory Committee Act and NEPA) violations during the collaborative process.

B. The Secretaries and WGA should develop a communication strategy to convey the results of the Collaborative Forest NEPA Working Group to agencies and others.

C. The Secretaries should concurrently establish an office to provide advice and consultation on collaborative problem-solving within NEPA, so that planning and project-level staff and their partners in large landscape efforts can quickly and efficiently address and resolve any problems related to NEPA analysis that might emerge as collaborative approaches are implemented and refined.

2. Incorporate broad, substantive stakeholder involvement in all project phases.

Collaboration is increasingly the governance model of choice for addressing complex restoration undertakings. Legislation and/or administrative direction frequently mandates its use when restoration activities are being considered for state or private lands (see, for example, the Collaborative Forest Landscape Restoration Program). Landscape-scale restoration efforts, especially those on public lands, will benefit tremendously from collaboration through all phases of planning, implementation and monitoring of activities and outcomes. Such collaboration will bring together adjacent and nearby landowners, as well as a variety of regulatory agencies, tribal and local governments, stakeholder interest groups, and concerned individuals. Working with these groups to establish zones of agreement will allow ambitious restoration to move forward with a shared vision, broad-based support and substantially augmented capacity. Public land managers need not initiate the collaborative efforts, but do need to actively support and participate in them. In many cases, collaborative groups already exist and can expand their work to facilitate newly emerging

landscape-scale efforts. A framework is needed for ensuring that all concerned stakeholders, whether they are local or not, have access to the process and an opportunity to participate actively in it.

Therefore, we recommend:

A. Federal agencies should develop a collaboration plan for large landscape restoration projects that include federal lands to ensure open, inclusive, transparent, accessible and meaningful stakeholder involvement. The plan should address, at a minimum, the following elements:
   1. Commitments by agencies to collaborative problem-solving throughout the restoration planning, implementation and adaptive management process;
   2. Assessment and identification of concerned interests (including but not limited to local governments, tribes, public and private land managers, environmental and/or conservation groups, scientific and educational organizations, industry, farmers and ranchers, and concerned individuals);
   3. Collaborative group formation and facilitation;
   4. Organizational, procedural, and administrative matters, including federal and non-federal roles and responsibilities;
   5. Assessment of current landscape conditions;
   6. Development of a common vision of desired future landscape conditions;
   7. Development of a plan for achieving that vision;
   8. Monitoring of activities and assessment of measurable outcomes;
   9. Multi-party monitoring and adaptive management.

3. Enhance landscape-scale, science-based collaboration in practice.

State and federal land management agencies have made unprecedented investments in collaborative forest restoration efforts over the past decade. Many prominent projects have emerged and developed to the stage where success is possible at scales previously not imagined, and where lessons learned from early efforts are numerous and relevant to many emerging projects. It is essential that early projects mature to implementation, so that lessons learned are effectively conveyed to others, and that science-based learning, traditional knowledge, experience and collaborative problem solving continue to be fostered so that initial investments by all parties will result in desired outcomes.

Therefore, we recommend:

A. The Secretaries of Agriculture and the Interior should convey a unique and elevated status to ongoing collaborative landscape efforts that supports their continuation and provides clear expectations that they will have maximum flexibility for innovation and enhanced budget stability. This status would also allow access to and opportunities for engaging topical experts and high-level decision makers and directors within the agencies and among the collaborating organizations.

B. The USDA, working with key federal, state and non-governmental organization (NGO) partners, should convene a highly skilled task force to draft a “new playbook for landscape restoration,” as called for by leaders within the Forest Service and Department of Agriculture. This playbook would assist collaborative groups by identifying the needs that often emerge in collaborative landscape-scale assessment and planning efforts and providing clear and practical guidance in two challenging areas:

1. Identifying issues, challenges and questions that typically emerge when working at a landscape scale, and that might not be anticipated by participants accustomed to working at the project level.
2. Providing scientific and technical guidance and practical examples that illuminate, inform and answer questions relevant to analysis and interpretation of planning data.

In both areas, the numerous issues and examples surfaced by the task force will be addressed through a focused and pragmatic exposition of challenges, followed by concrete options for moving forward. This will not take the form of a prescriptive handbook, rather it will resemble a playbook, with techniques and tools that might be applied in specific situations by the collaborative group and its leadership structure.

4. Create a learning network to enhance synergies and learning opportunities between landscape-scale restoration initiatives.

Participants in various landscape-scale restoration initiatives across the West are struggling to overcome many similar challenges related to planning, collaboration, monitoring and adaptive management, wood product utilization and funding. In many cases, they are developing innovative solutions to these challenges. Enhancing the networking and systematic learning capacities of current and future initiatives will ensure that lessons learned can be shared widely, and that common remaining challenges can be identified and addressed at appropriate levels.

Therefore, we recommend:

A. Federal agencies establish, in conjunction with WGA and private sector partners, a learning network that would regularly convene collaborators from among the active landscape restoration initiatives in the West, as well as land managers, researchers and policy experts, in order to address emerging challenges and find synergies and efficiencies among efforts. This network will serve to facilitate a collaborative learning process, disseminate information, share effective tools and approaches via a network of engaged collaborators, and promote systematic analysis and reform of policy and practice guiding ongoing initiatives.

5. Incorporate collaboratively developed, landscape-scale restoration plans and Community Wildfire Protection Plans into federal agency Forest and Resource Management Plans.

Numerous collaborative processes have emerged around the West that translate former resource conflicts into actionable solutions. These solutions range from landscape-scale ecological restoration plans in some areas, to community wildfire protection plans in others. These plans vary widely, and it is not always possible or desirable for federal agencies to fully adopt collaboratively developed plans in their own Forest and Resource Management Plans. Nevertheless, such plans must be meaningfully considered in every federal agency planning process, including federal Fire Management Plans, even if they are not fully incorporated.

Therefore, we recommend:

A. Federal agencies should ensure that Forest and Resource and Fire Management Plans meaningfully consider and incorporate the plans of local and regional collaborative groups that address landscape-scale restoration and community wildfire protection. Specifically, the federal agency rules for Forest and Resource Management Planning should require consideration of:
   1. Collaboratively developed plans for landscape-scale restoration, as well as Community Wildfire Protection Plans;

2. Interagency and/or public/private coordination needed to accomplish large-scale treatments; and
3. Suitability of lands for wildfire with protection and resource benefit objectives;
4. Uses of collaboratively developed monitoring plans and data for continuous learning about restoration treatments at increasingly larger scales.

6. Develop explicit guidelines for implementation of Adaptive Management programs to ensure efficient, effective and continually improving landscape-scale restoration.

The challenges of landscape-scale restoration cannot be met without embracing the uncertainties associated with operating at larger scales than has been done in the past. Adaptive management is a powerful approach that relies on feedback data to continually evaluate and refine actions based on progress toward explicitly identified goals. This iterative cycle of monitoring progress and adjusting management based on results is necessary for the West to "learn our way" through new challenges by acting on the best available information, acknowledging that current information is incomplete and committing to adapting our efforts as our knowledge increases.

Current practices of adaptive management usually fail to provide actionable information to managers in a timely manner, and often managers have no clear framework for employing new information when it is available. Across the West, considerable time, effort and expense are committed to poorly conceived monitoring programs that are not sufficiently integrated into an adaptive management framework. Without careful attention to the feedback loop and its link to decision making, monitoring can be an empty data-gathering exercise. Furthermore, without the clear commitment and participation of top decision makers, even a well-designed adaptive management program is ineffectual. Key officials must embrace this approach and demonstrate long-term commitment to learning and acting based on the feedback provided by a robust monitoring program. Implementation must be transparent and collaborative in nature.

Therefore, we recommend:

A. The Western Governors' Association, USDA and DOI, should jointly commission a six-month review of adaptive management programs that have been implemented within the past 10 years and that are attempting to improve the effectiveness of large-scale forest or ecosystem health restoration efforts. This review should be undertaken by a scientifically credible and independent contractor and should evaluate the design, implementation and effectiveness of the adaptive management programs, including:
   1. level of commitment from key parties and constituencies;
   2. clarity of goals and objectives;
   3. design of the feedback loop and monitoring effort;
   4. rigor and objectivity of the data collection and analysis efforts;
   5. degree to which regular assessment and adaptation are implemented by decision makers; and
   6. whether/how adaptive management programs are designed to reduce scientific and economic uncertainties.

B. The USDA and DOI, in conjunction with the WGA, should use the results of the six month review to develop guidelines for implementing an adaptive management approach for all landscape-scale restoration efforts in the Western states. Recognizing that landscapes and forest health needs vary widely, flexibility to design and implement adaptive management is necessary. However, the guidelines below should clarify the following basic elements of adaptive management:
   1. *Clear Objectives* – Management objectives should be specified in the form of desired outcomes that can be quantitatively assessed.

2. *Landscape Approach* - Changes in management should be based on the evaluation of conditions across the entire project area, so that overall program objectives remain the reference point for adaptation.
3. *Appropriate Indicator Selection* - The suite of indicators selected for monitoring should be practical and informative; inclusion of too many or poorly considered indicators can result in an effort that is overly broad and uninformative.
4. *Robust Sampling Design* - Monitoring should follow a statistical design that is efficient and rigorous, and delivers sufficient statistical power to guide important management decisions.
5. *Clearly Identified Triggers of Management Action* - The design phase should identify a range of values for each indicator that, if exceeded, will trigger unambiguous management responses.

7. Consistently interpret, implement and adapt stewardship contracting to better facilitate large-scale treatments.

Stewardship end-result contracting is a flexible tool that can be particularly valuable in implementing multi-year and large-scale treatments. Two federal agencies, the Forest Service and the Bureau of Land Management, were given broad authority in 2003 to use stewardship contracts and agreements. Since then, a number of field-level projects have demonstrated the potential of stewardship contracting to facilitate the effective and efficient accomplishment of a broad range of activities within large-scale treatment projects. However, interpretations and uses of the special authorities available through stewardship contracting have varied between the agencies and among field units, unnecessarily restricting use of the tool in many instances. For example, the authorization from Congress allows for "retained receipts" from stewardship contracting, yet the administrative policy prohibits the use of retained receipts for planning and monitoring, which are essential to stewardship contracting success. The current stewardship contracting authority will sunset in 2013, and the re-authorization process should provide an opportunity for Congress and the agencies to use successful field experiences, which have been continually monitored, as a guide to improve the tool and improve its effectiveness in the future.

Therefore, we recommend:

A. The WGA establish, in conjunction with state and federal agencies, tribes and private sector partners, a sharing of lessons learned about stewardship contracting authorities and implementation opportunities across state and regional boundaries and among collaborative groups, partners, contractors and federal and state agencies. The WGA should convene workshops where agency field staff, contractors and contracting officers, partners and other concerned stakeholders can learn together about stewardship contracting tools and their adaptable and effective application. The WGA is well-positioned to share information about the best practices of stewardship contracting and to capture the lessons learned for use in the re-authorization process. This work should be used to support near-term changes in administrative policy (e.g. the use of retained receipts) and be conducted in time to be incorporated into planning for the 2013 Stewardship Contracting Authority reauthorization.

8. Create a risk-pool authority or other mechanism to reduce the required funding set-aside for "cancellation ceilings" for multi-year stewardship contracts.

Multi-year contracts are a vitally important tool for large-scale restoration, but they are significantly underutilized because of the Federal Acquisition Regulation (FAR) requirement for a contingent liability or "cancellation ceiling" reserve. Specifically, the agency must calculate the startup, training

and other nonrecurring costs that will be incurred by a contractor awarded a multi-year contract. That amount must be set aside from the agency's current year funds so if a contract has to be canceled, there will still be funds available to reimburse the contractor for any such costs that remain unamortized. Thus, the more multi-year stewardship contracts that are issued, the more funding that must be held in reserve at the forest level, which is unavailable for use in carrying out fuels treatments and restoration work.

The Government Accountability Office studied this issue and noted in November 2008 that the Forest Service needs to find new strategies to fund the cancellation ceiling. The basic "Termination for Convenience" language of the FAR Clause 52.249-2 already provides for the coverage of costs incurred in the performance of the work terminated, including initial costs and preparatory expense allocable to the contract work. The suggested risk-pool authority to cover the cancellation ceiling requirement for multiple projects is one of several possible mechanisms to provide a better structure and put more project funding to work on the ground.

Therefore, we recommend:

A. Congress and/or the current Administration create a national risk-pool and explore other mechanisms to cover the "cancellation ceilings" associated with stewardship contracts for large-scale treatments. This will allow the agencies to fulfill their contingent liability responsibilities by assessing the national risk of contract termination, calculating the associated liability, and setting aside a national pool of funding to cover the risk.

9. Retain existing forest infrastructure and capacity by helping contractors to obtain performance and payment bonds through a state authority.

Collaborative efforts to develop large-scale treatments have been proliferating at the same time as the flagging U.S. economy has left many forest products companies and restoration contractors teetering on the knife edge between failure and survival. When the housing "bubble" burst, the already-stressed forest products industry contracted sharply. Profits evaporated and employment fell. Forest contractors who invested in the equipment and training needed to do fuels treatments and other restoration work and the mills that had retooled to utilize the byproducts of that work all are now hard pressed to survive.

Federal and state land management and restoration contracts require timber purchasers and service contractors to provide performance and/or payment bonds to ensure completion of their work. Few surety companies now offer such bonds, which are considered high risk, and their underwriting standards make it impossible for many contractors to qualify. The alternative of providing cash or a letter of credit as security is beyond the financial means of many contractors and small, independent mills. The federal government and some states provide assistance for other key industries such as construction, agriculture and mining by offering needed insurance programs. Affordable, appropriate bonding resources for timber and restoration contractors are vital if a restoration economy is to be developed and sustained.

Therefore, we recommend:

A. States should adopt legislation to establish a bonding authority that enables contractors to obtain affordable and appropriate bonding for timber and stewardship contracts. Washington and Idaho are well-positioned to take the lead in developing appropriate state legislation in 2011 as an economic development measure with a high likelihood of enactment. Legislation from these states could serve as a model for other states where large-scale treatments are underway and the needed growth of the restoration economy is inhibited by the inability of local contractors to meet the bonding requirements for the timber sale, stewardship and service contracts being offered.

10. Coordinate state and federal economic development programs to retain and increase the mill and operator capacity necessary for large-scale forest health restoration.

Today's human, infrastructure and resource capacities are insufficient to deal with the scale of the forest health problem in the West. Competitive forest product markets must be retained and enhanced to enable large-scale forest health restoration treatments. Yet sawmills and other manufacturers who utilize wood products across the West are closing at an alarming rate or barely hanging on. The loss of skilled workers in the woods and mills and the dismantling of processing equipment and related infrastructure have compromised the ability of communities and local businesses to retain existing markets and infrastructure and threatens the economic viability of re-tooling and rebuilding this type of capacity. In the long-term, because the scale of the problem is so large, the West must add additional capacity to use products from landscape scale forest health restoration projects.

Therefore, we recommend:

A. In the short term, the urgency of this issue requires a proactive approach. Rather than creating programs and expecting customers to come to them, economic development agencies should directly contact individual mills and operators, discuss their needs and, as much as possible, match existing program assistance to the needs of the individual mills and restoration contractors. The Governors and the Secretaries should direct all granting and economic development agencies (e.g., USDA Rural Development, Department of Energy, state economic development agencies, etc.) to work cooperatively and proactively, share information about their programs, and develop an efficient outreach system.

B. As the needs of individual mills are inventoried, additional needs beyond those addressed by current programs should be identified and captured. Economic development agencies should strive to understand the nature of the restoration work that needs to be done and increase the local capacity to utilize the byproducts that are likely to result. State and federal agencies should report their findings back to the Governors and Secretaries so the information can be used to modify existing programs and create new programs that will help match the location and scale of mill and operator capacity to meet future forest health restoration needs. States and federal agencies should work together to support critical wood processing infrastructure that is necessary for forest health restoration treatments to be economically viable.

11. Create a predictable supply of goods and services flowing from landscape-scale restoration initiatives.

Funding constraints and high treatment costs pose a significant barrier to implementing on-the-ground actions, even when a project has achieved a high level of consensus among partners. A lack of well-developed markets, local forest product industries, and human infrastructure can create higher per-acre treatment costs and reduce on-the-ground accomplishments. Market-based restoration solutions will help enable cost effective on-the-ground treatments. Wood products industries, biomass and ecosystem service markets need predictable and dependable supply streams to develop and maintain local capacity. The West needs a predictable supply of both forest products and forest labor to attract private investment.

Therefore, we recommend:

A. Land managers implementing landscape-scale restoration initiatives should develop rolling five-year action plans based on landscape scale assessments and priorities, such as those set in the Statewide Forest Assessments and Strategies. Priorities should be developed in coordination

with the affiliated collaborative group and the regulatory agencies. Five-year action plans should integrate the work of timber, vegetation management and wildlife programs. Such plans should be used to identify gaps in existing capacity, assist relevant agencies in coordinating among programs, and increase accountability through annual outcome-based reporting and adaptive management.

12. Create a three-tiered system of restoration funding that supports development of new collaborative projects, sustains funding for established landscape restoration projects, and makes significant investments in large-scale restoration treatments.

Across the West the most-often cited reason for small-scale treatments that do not effectively address the scale of the forest health problem is the inadequate level of funding available for large-scale treatments. Collaboratively developed restoration plans that provide the social license and blueprints for large-scale treatments are time consuming to develop and need modest "seed" funding to develop. Once established, partners and agencies will have the opportunity to seek sustained funding for treatments through authorizations, such as the Collaborative Forest Landscape Restoration Program (CFLRP) or Congressionally directed funding.

Many large-scale treatment proposals that do not succeed in obtaining direct funding will languish because of the standard way that federal agency funds are channeled to specific activities or functional areas. The Lakeview Federal Stewardship Unit in Oregon provides one example of how difficult it is to fund large-scale treatments. Despite broad collaboration to develop principles for restoration treatments, and a 10-year stewardship contract with a mill owner, the scale of restoration treatments are still modest. In Lakeview and elsewhere, the current suite of Forest Service programs that contribute funding to restoration – the combination of wildlife and fisheries, forest management, vegetation and watershed management, forest health, hazardous fuels reduction, and legacy roads programs – are not coordinated with one another, have individual targets that drive work plans, and are allocated in ways that constrain agency flexibility, efficiency and adaptability. Too often, one aspect of a large-scale project, such as hazardous fuels reduction, gets funded while other critical activities, such as invasive species control or road decommissioning, do not receive funding. When activities are "stove-piped" into separate programs with their own funding, targets and accomplishment reporting, the large-scale treatment objectives are not achieved.

Therefore, we recommend:

A. Federal agencies should establish a Community Capacity and Collaborative Support (CCCS) Grant Program to ensure that rural communities and businesses are engaged in landscape-level forest restoration and contributing to forest health solutions where they live. Most collaboratively developed restoration projects started small, and the majority of projects that are currently ready to treat large landscapes have their origins in smaller-scale efforts. Continuous learning and incubation of new centers of collaboration will lead to more and larger scale treatments across the West.

B. Federal agencies should sustain funding for established landscape restoration projects through the Collaborative Forest Landscape Restoration Program and other initiatives that support watershed restoration and job creation.

1. The Governors should support full authorization of the Collaborative Forest Landscape Restoration Program for the 10-year life span of the program. Nine of the 10 large landscapes selected for CFLRP funding in 2010 are in the West, and many more Western projects have submitted applications and are eager for funding.
2. Federal agencies should provide sustained funding for treatments at the level necessary to achieve restoration outcomes, sustain existing forest infrastructure and developing restoration economies, and provide jobs in rural communities.

C. Federal agencies should make significant investments in large-scale restoration treatments by realigning their existing resources to achieve maximum impact on forest health.
1. The Governors should encourage the federal agencies to redesign their budget structure to match their landscape restoration goals and to stem the rapid decline of Western forest health.
2. Restoration funding should be closely tied to the rolling five-year restoration action plans (see recommendation 11) to provide transparency about where funds are being used. Measures should be developed to determine the return on investment in restoration, and to provide both accountability and a system to track improvements in Western forest health, from individual landscapes to the region as a whole.

Workshop

The Western Governors' Association's Forest Health Advisory Committee (FHAC) has long recognized the need for accelerated landscape-scale forest restoration across the West. The FHAC has recognized that landscape-scale restoration must be ecologically, economically, and socially viable, and guided by supportive policies at the local, state, and federal levels. Finally, it has recognized that guiding policies and recommendations must be informed by the real-world challenges and experiences faced by states and their citizens.

Arizona Governor, Jan Brewer requested the WGA convene experts from across the West to share community and state-level perspectives, experiences, and expertise regarding landscape-scale forest restoration. The FHAC held a workshop in September, 2010 to synthesize lessons learned, identify best practices, and generate policy recommendations for the Western governors and other decision makers in the U.S. Department of the Interior and Department of Agriculture, as well as legislators at the state and federal levels. With a diverse group representing multiple interests, we accomplished these goals. Recognizing that the time is right to craft policy recommendations that would receive serious consideration and support across the West, the FHAC Large Scale Treatments Subcommittee embarked on an ambitious timeline for this effort and have received the support of the FHAC and acceptance by the Western governors of these recommendations.

Workshop attendees:

Tom Atzet — Private landowner
Ethan Aumack — Grand Canyon Trust
Kevin Birch — Oregon Department of Forestry
Carol Daly — Flathead Economic Policy Center
Joe Duda — Colorado State Forest Service
Aaron Everett — Washington Department of Natural Resources
Sharon Friedman — USDA-Forest Service
John Gerritsma — US DOI-BLM
Lynn Jungwirth — Watershed Research & Training Center
Dale Kerkvliet — Rocky Mountain Elk Foundation
Connie Lewis — Meridian Institute
Laura McCarthy — The Nature Conservancy
Lloyd McGee — NE Washington Forestry Coalition (Vaagen Brothers Lumber)
George McKinley — Southern Oregon Small Diameter Collaborative
Marty Main — Small Woodland Services, Inc.
Martin Nie — University of Montana
Cheryl Renner — Renner Associates, Planners
Phil Rigdon — Tapash Sustainable Forestry Collaborative (Yakama Nation)
Todd Schulke — Center for Biological Diversity
Courtney Schultz — Colorado State University
Sandy Shaffer — Applegate Partnership
Jeff Silvyn — US Institute for Conflict Resolution
Tom Sisk — Northern Arizona University
Ann Walker — Western Governors' Association

Forest Health Advisory Committee

*Large Scale Treatments Public/Private Lands Subcommittee members
**Large Scale Treatments Public/Private Lands Subcommittee Co-Chairmen

State

Alaska
Chris Maisch — State Forester

Arizona
Ethan Aumack — Grand Canyon Trust**
Molly Pitts — Northern Arizona Wood Products Association
Thomas Sisk — Northern Arizona University

California
Lynn Jungwirth — Watershed Research & Training Center
Crawford Tuttle — Deputy State Forester*

Colorado
Joe Duda — State Forestry
Dan Gibbs — State Senator (former)
Jeff Jahnke — State Forester*
Caitlyn Pollihan — Western Forestry Leadership Coalition
Rebecca Swanson — Governor's Office

Idaho
George Bacon — State Forester*
Tim Christopherson — Associated Logging Contractors of Idaho
Gordon Cruickshank — County Commissioner*
David Groeschl — State Forestry
Lee Heinrich — State Senator (former)
Jay O'Laughlin — University of Idaho
James Riley — Intermountain Forest Association

Kansas
Larry Biles — State Forester

Montana
Julia Altemus — State Forestry
Carol Daly — Flathead Economic Policy Center*
Bob Harrington — State Forester
Patrick Heffernan — PAFTI, Inc.*

Nebraska
Scott Josiah — State Forester

New Mexico
Butch Blazer — State Forester

Nevada
Pete Anderson — State Forester
Gail Durham — State Forestry
Rich Harvey — State Forestry

Oregon
Tom Atzet — Private*
Kevin Birch — State Forestry**
Maia Enzer — Sustainable Northwest*
Nancy Hirsch — State Forester (acting)
Sandy Shaffer — Applegate Partnership*

South Dakota
Joe Lowe — State Forestry
Ray Sowers — State Forester*

Utah
Tim Garcia — State Forestry
Geoff McNaughton — State Forestry*

Washington
Aaron Everett — State Forestry*
John Mankowski — Governor's Office*

Wyoming
Bill Crapser — State Forester
John Crisp — State Forestry*

National
Greg Aplet — Wilderness Society
Chuck Burley — American Forest Resource Council*
Chuck Bushey — International Association of Wildland Fire*
Tim Clark — ESRI
Jim Erickson — Intertribal Timber Council
Laura McCarthy — The Nature Conservancy*
Bob Roper — International Association of Fire Chiefs
Todd Schulke — Center for Biological Diversity*
Ryan Yates — National Association of Counties*

Federal
Rick Cables — Regional USDA Forest Service
Amy Duffy — DOD-Western Regional Partnership
Jim Hubbard — USDA Forest Service
Brian McManus — Regional DOI, USFWS
(NWCG-former Chairman)
Kirk Rowdabaugh — DOI, Office Of Wildland Fire

WGA
Bonnie Butler — Idaho Governor's Office
Michael Carrier — Oregon Governor's Office
John Chatburn — Idaho Governor's Office
Ann Walker — Western Governors' Association

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Attachment B

USDA Forest Service, *Changing Conditions in Southwestern Forests and Implications on Land Stewardship* (1993)

United States Department of Agriculture

Forest Service

Southwestern Region

Changing Conditions in Southwestern Forests and Implications on Land Stewardship

Changing Conditions In Our Forests

Some assert that Southwestern forests have been almost completely logged, especially of large trees. These statements are not based on documented fact, but rather on individuals' perceptions of what they think they have seen happen. This paper describes changes in tree inventories of Arizona and New Mexico forests between 1962 and 1986. It discusses some implications that these changes may have for land stewardship.

Descriptors include forest acreage by major forest type, total volume of wood, tree size, multi-storied conditions, and forest density.

Total Acreage of Forest Land and Its Distribution by Forest Types

Total forested land in Arizona and New Mexico increased by 573,000 acres, or 5 percent, from 1962 to 1986 (See Table 1, page 4). This increase was due to invasion of coniferous forests into areas such as meadows and woodlands.

Mixed conifer increased by a whopping 1,040,000 acres (81 percent). Ponderosa pine decreased slightly, by 206,000 acres (2 percent). In comparison, the acreage of aspen stands decreased by 222,000 acres (46 percent), despite the increase in total forest area. If this trend continues, the aspen cover type will cease to exist as a distinct cover type in about 25 years. It will persist as a species within mixed conifer stands for extended periods (Pearson, 1931).

It is a good thing that the New Mexico Federation of Women's Clubs prevailed in 1948 to get the State Legislature to choose piñon pine over aspen as New Mexico's state tree (Calabrese, 1993). If aspen had been selected, New Mexico could, in 25 short years, have a state tree that could not be found in stands, but only as scattered, individual trees!

This decline in the amount of aspen and meadows within the mixed conifer zone (predominately white fir, Douglas-fir and ponderosa pine, with Southwestern white pine in some areas) should be considered one of the most pressing environmental concerns in the Southwest today. In 1931, Pearson noted some aspen stands and prairies within the mixed conifer zone lacked young conifers and questioned if they would naturally succeed to mixed conifer. Today, little evidence of such conditions remains, due primarily to control of forest fires and ecological succession. Ecological succession is the gradual supplementing of one community of plants by another, generally from species that start quickly on bare ground, such as grasses or aspen trees, to shade-tolerant species, such as fir trees.

Extensive areas of aspen stands no longer exist and young conifer stands have matured substantially. Our forest inventories indicate that the remaining aspen stands in the Southwest have an understory of conifers that will eventually replace the aspen. Meadows persist within the mixed conifer type, but they too are being invaded by conifers. None remain as extensive areas that were once described as prairies. Almost all meadows in the mixed conifer zone show evidence of conifer invasion at their margins. Allen (1989) stated that "Overall, in the southeast portion of the Jemez Mountains open montane grassland area decreased 55% from 554 ha in 1935 to 250 ha in 1981. Several small montane grasslands present in 1935 have disappeared, while the larger grasslands have been fragmented." Within the mixed conifer type, Douglas-fir is decreasing and white fir is increasing (Van Hooser et al., 1992).

Such profound changes in the forest condition are not surprising. The long history of partial cutting, extensive areas of forests reserved from cutting, and successful fire control in the Southwest have allowed ecological succession to increase the number of conifers, especially the proportion of mixed conifer species such as white fir. This is at the expense of successional tree species such as aspen and ponderosa pine (Van Hooser et al. 1992).

Conifer increase and aspen decrease in the absence of fire or harvest are in accordance with ecological studies of mixed conifers and aspen. Neither aspen nor ponderosa pine regenerate under shaded conditions (Pearson, 1931; Pearson and Marsh, 1935; Moir and Larson, 1985 a,b). Ponderosa pine in the Southwest tends to increase in extent and density at its ecotone with grasslands and oak due to grazing and fire control (Covington and Moore 1992).

These trends have increased the potential habitat suitability for the Mexican spotted owl and other species dependent on dense, multi-story stands. The current and projected timber sale

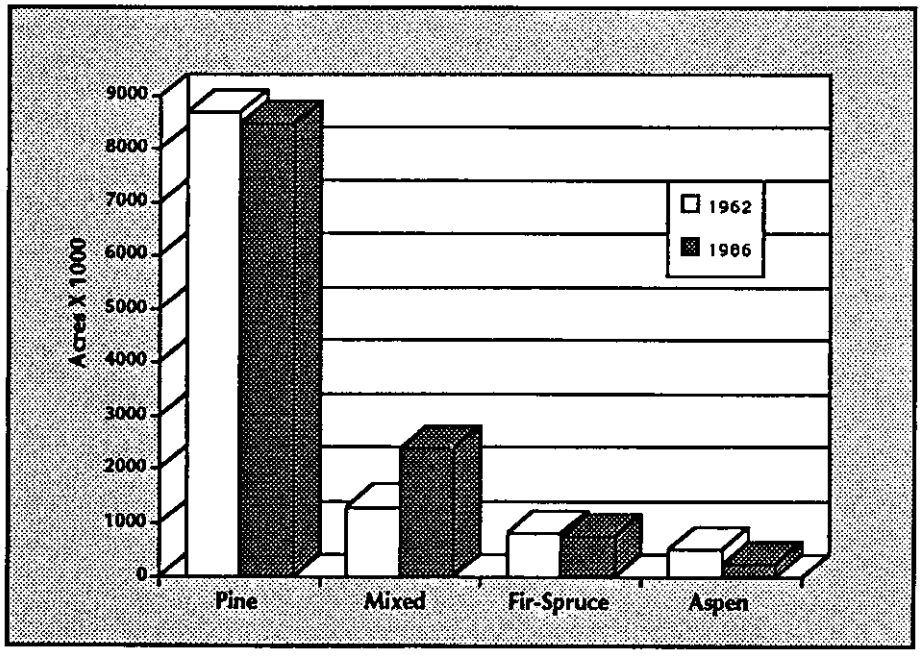


Figure 1. Comparison of forest types in Arizona and New Mexico, 1962 and 1986.

program is too small to mimic the wildfires that had historically maintained the early successional cover types in the Southwestern forest ecosystems.

Total Volume of Wood

Some assert that the Southwest has been logged over, and that the timber industry faces a rapid decline because of over-logging. This is simply not true. Growing stock, or all the wood on trees standing in commercial forests, increased from 1962 to 1986. While forest acreage increased by a modest 5 percent, total tree volume increased by 1,778 million cubic feet (MMCF), or 13 percent. This is despite removal of some 2,200 MMCF (16 percent) of the original volume in the 25-year period. In the national forests, the increase in standing volume was even more pronounced, at 21 percent.

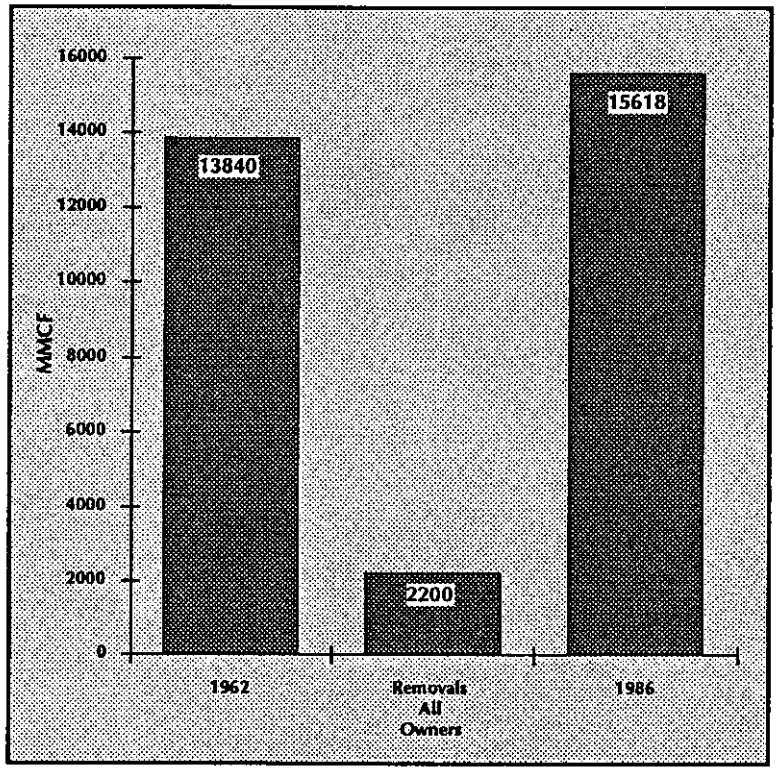


Figure 2. Growing stock volume in 1962, estimated volume removed, and volume remaining in 1986 in Arizona and New Mexico.

These inventories exclude the additional volume of wood in trees in reserved areas, such as wilderness. Acreage in reserved areas increased 2,119,000 acres, or 232 percent. If we were able to account for growth on the 3,033,000 reserved acres, the volume increases would have been even more pronounced.

Recent national forest sell levels of sawtimber and other products in the Southwestern Region of the Forest Service (Arizona and New Mexico) have averaged slightly over 300 million board feet (MMBF) annually. Sawtimber alone has accounted for about 240 MMBF annually. However, recent timber inventories (Connor et al., 1990; Van Hooser et al., 1992) show that the total net annual growth (gross growth minus mortality and defect) of sawtimber in the Southwestern Region is 701 MMBF. When the timber sale volume is deducted from the total growth, then the net annual increase in volume is 461 MMBF. Thus, statements such as "The days are numbered for the majority of timber industry jobs in this region due principally to over-cutting" are simply untrue in the Southwestern Region.

Tree Size

Another assertion is that practically all trees left in the woods are small, pole-sized trees. However, recent inventories show a different picture. There have been increases in numbers of trees in most size classes.

Data in Table 1 and Figure 3 show that in 1962, there were 8.1 trees per acre over 17 inches (large trees) in diameter breast height (DBH). In 1986, this figure was virtually unchanged at 8.0 trees per acre. The very largest trees, over 20 inches DBH, have decreased by 0.4 trees per acre or 7.4 percent. If we had information on trees in wilderness and other classified areas, this figure could be higher, since there was considerable growth and likely less loss among large trees in wilderness during this same time period.

Other inventories also show an overall increase in large trees. A 1909 inventory on the Kaibab National Forest north of the Grand Canyon (North Kaibab) showed an average of 15 ponderosa pines 16 inches and larger per acre compared to about 27 ponderosa pines in 1989.

In terms of small trees, there has been a dramatic increase in numbers of trees per acre. While an increase in the small-diameter classes probably occurred throughout the century, we have documentation only from 1962 and 1986, when trees from 3 inches DBH to 16.9 inches DBH (Table 1) increased from 132 to 195, or about 48 percent. The total number of trees per acre over one inch in diameter increased from 234 to 294 (26%). Virtually all comparisons of present to historical inventories show this same trend. The 1909 North Kaibab inventory showed 91 trees per acre 3 inches or less in size. Due largely to fire suppression, this number increased to over 1,100 in a 1989 survey.

Forest Density and Multi-storied Condition

Historical records show many Southwestern forests, especially ponderosa pine, were single-story and sparse and were described in 1904 as open forests. Conditions in what is now the Coconino National Forest were described as follows:

> "A yellow-pine forest, as nearly pure as the one in this region, nearly always has an open growth, but not necessarily as lightly and insufficiently stocked as is the case in this forest reserve. The open character of the yellow-pine forest is due partly to the fact that the yellow pine flourishes best when a considerable distance

separates the different trees or groups of trees. It is very evident that the yellow-pine stands, even where entirely untouched by the ax, do not carry an average crop of more than 40 per cent of the timber they are capable of producing. The yellow-pine forest in the reserve is, broadly speaking, a forest long since past its prime and now in a state of decadence. Apparently there has been an almost complete cessation of reproduction over very large areas during the past twenty or twenty-five years (due mostly to sheep use), and there is no evidence that previous to that time, it was at any period, very exuberant." (USGS, 1904).

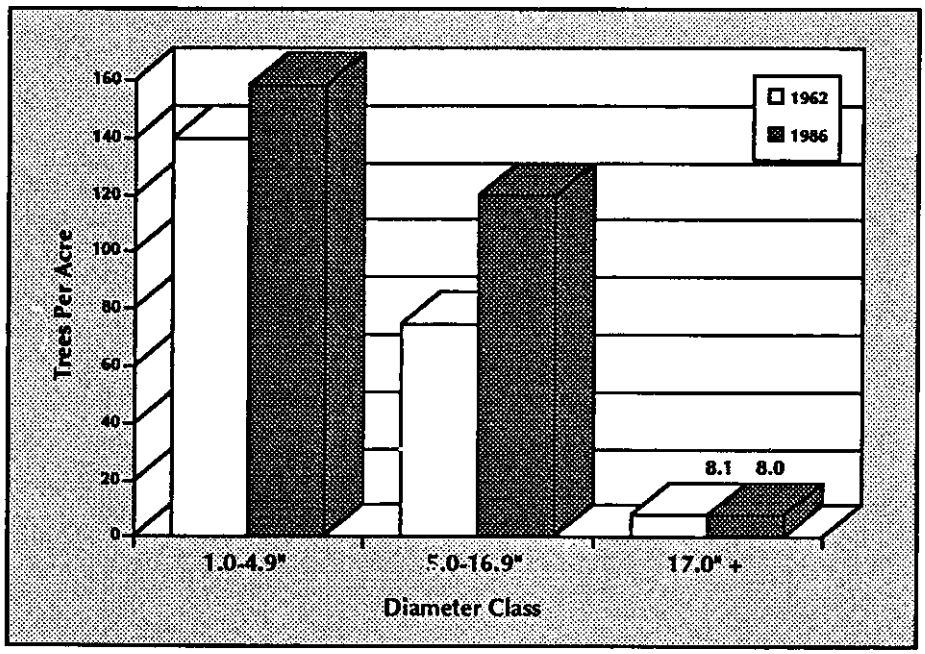


Figure 3. Number of trees per acre by diameter class in Arizona and New Mexico.

Such descriptions indicate that the average condition before European settlement were always less dense than today's ponderosa pine forest.

Today's forests have more volume, more trees in nearly every diameter class, and more canopy layers than ever before. Recent research verifies this fact. Dense stands are difficult to maintain in a healthy condition and, in unmanaged condition, are susceptible to catastrophic crown fires and pest/beetle epidemics when they are not properly managed. Covington and Moore (1992) verify these two points:

"Reports from early travelers illustrate the changes in appearance of the ponderosa pine forest since settlement." Beale, E.F. 1858 report is quoted by Cooper, C.V. 1960 as follows:

'We came to a glorious forest of lofty pines, through which we have travelled ten miles. The country was beautifully undulating, and although we usually associate the idea of barrenness with the pine regions, it was not so in this instance; every foot being covered with the finest grass, and beautiful broad grassy vales extending in every direction. The forest was perfectly open and unencumbered with brush wood, so that the travelling was excellent' (Beale, E.F. 1858).

Cooper (1960) stated that 'The overwhelming impression one gets from the older Indians and white pioneers of the Arizona pine forest is that the entire forest was once much more open and park-like than it is today.'

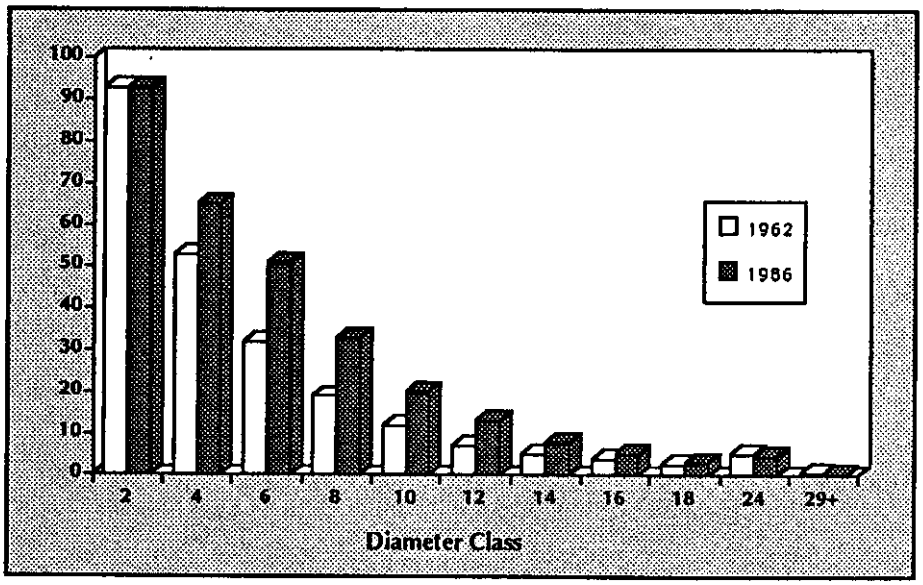


Figure 4. Distribution of trees by two-inch diameter classes on commercial forest lands in Arizona and New Mexico.

"Madany and West (1983) suggested that ponderosa pine seedling survival was probably greater in the early 1900's than in the presettlement days due to reduced competition of grasses (through grazing) with pine seedlings, and the reduced thinning effect that fires once had on seedlings in presettlement times."

"These early descriptions (Whipple 1856 and Beale 1858) of the open nature of presettlement ponderosa pine forests are in agreement with results of recent research which found that canopy coverage by trees of presettlement origin range from 17% (Covington and Sackett 1986), to 22% (White 1985), to 2-31% (Moore unpublished)."

Research by Covington and Moore (1992) shows that the number of trees per acre on the North Kaibab during presettlement was 55.9; in 1990, 276.3; and on the Bar-M area south of Flagstaff, Arizona, the number was 22.8 during presettlement and 851.0 in 1990.

Table 1. Comparison of Timber Inventories, Arizona and New Mexico, All Ownerships

	1962	1986	Differences	Percent Change
Reserved Forest Land, National Forest System (Acres x 1,000)	914	2,834	1,920	210
Total Forested Lands, National Forest System	7,002	8,068	1,066	15
Acres By Forest Type, All Owners (Acres x 1,000)				
Ponderosa Pine	8,705	8,498	(206)	(2)
Other Conifers (Mixed)	1,278	2,318	1,040	81
Fir-Spruce	692	653	(39)	(6)
Aspen	486	263	(222)	(46)
Total	*11,160*	*11,733*	*779*	*5*
Growing Stock, MMCF				
National Forest System	8,469	10,258	1,789	21
All Owners	13,840	15,618	1,778	13
Numbers of Growing Stock Trees Per Acre On Timberland, All Species, All Owners				
Inches DBH				
1.0-2.9	93	93	(1)	(1)
3.0-4.9	53	65	12	23
5.0-6.9	32	51	19	60
7.0-8.9	19	33	13	71
9.0-10.9	12	20	8	67
11.0-12.9	7	13	5	70
13.0-14.9	5	8	2	41
15.0-16.9	4	5	1	17
17.0-18.9	2.7	3.0	0.3	10
19.0-28.9	4.9	4.7	(0.2)	(4)
29.0+	0.5	0.3	(0.2)	(32)
Totals	*234*	*294*	*60*	*26*

Note: These figures are not exactly the same as they occur in the source documents (the Intermountain Research Documents listed in the References). Table 1 has been adjusted based on acreages that had been removed from timberland status between the 1962 and 1980's inventories due to wilderness and other classifications that remove land from the timberland base.

Land Stewardship Implications

Current stands are extremely dense compared to presettlement conditions and are not sustainable in their present state. High tree density is clearly related to susceptibility to bark beetle epidemics (Pearson, 1931; McCambridge et al., 1979; Massey et al., 1977). Significant forest health problems from bark beetles, mountain pine beetle, Western pine beetle, roundheaded pine beetle, Douglas-fir beetle, and Scolytus beetles are certain and tree losses are likely during drought periods when soil moisture is inadequate to support a high density of trees. Also, defoliation by spruce budworm will be a chronic problem. This insect is strongly associated with multi-storied stands of white fir and Douglas-fir throughout the Southwest (Linnane, 1986).

Managing for dense, multi-storied stands in ponderosa pine and Douglas-fir has increased and, if allowed to continue, will increase dwarf mistletoe infection. This parasitic plant spreads by expelling seeds that fall on nearby and understory trees, reducing growth and eventually killing the trees. Small trees never reach large size and stand density is greatly reduced (Hawksworth, 1961).

Two Southwestern Regionwide surveys for dwarf mistletoe conducted 30 years apart indicate that dwarf mistletoe has increased in recent history as forests have become more dense and less stand regeneration has occurred; in the 1950s, 30 percent of the commercial forest was infected and by the 1980s, the infection had reached 39 percent.

High levels of infection eventually eliminate high stand densities and large trees (Hawksworth, 1961). Stands become unsuitable for species such as the Mexican spotted owl, have lower visual quality, and timber productivity is reduced. Open stands of small infected trees can be expected to persist indefinitely until replaced after a stand-destroying event such as fire or clearcutting. If timber cutting, prescribed fire, or natural fire activities are reduced or forgone, dwarf mistletoe infestation can be expected to intensify over time (Parmeter, 1978).

The changed vegetative conditions in Southwestern forests have resulted in dead and down material, insect and disease incidence, and risk of wildfires. Of particular concern is fire in steep, dense, or multi-storied stands of mixed species.

Because of extreme fuel loading, most stands cannot be safely burned to return them to a sustainable condition. In dense stands wildfires are extremely large, hot, and catastrophically destructive to the forest, soil, and endangered wildlife. The most practicable and controllable way to return forests to a healthy, sustainable condition and to maintain and enhance threatened and endangered species habitat is through timber harvest. Thus, the forest management tool best suited to provide long-term health of the forests and for endangered species habitat is tree harvest. Providing jobs and multiple resources is an additional, important benefit of these harvests.

Presently, intensive management is being directed at improving habitat for Mexican spotted owls by promoting dense, multi-storied stands. This will continue to accelerate movement of tree stands toward more dense conditions and increase the probability, extent, and intensity of wildfires beyond what we now experience in the Southwestern mixed conifer and portions of the ponderosa pine forests. Where timber and fuel management activities are forgone, wildfire losses can be expected to be higher than would otherwise occur.

The current low level of harvest and cultural (pre-commercial thinning) treatments cannot prevent aging and increasing small-tree density of Southwestern forests. They will become older, denser, and perhaps more extensive. However, at some point, ecological limits will be reached, resulting in extensive forest destruction from insects, diseases, and fires. Similar losses are well-documented throughout the interior West where the same circumstances have prevailed, such as most recently in the Blue Mountains of eastern Oregon.

Forest management concerns attributed to fire exclusion, resulting in increased tree density in ponderosa pine forests include overstocked sapling patches; reduced tree growth; interrupted nutrient cycles; increased disease, insect infestation, and parasites (e.g., root rot, bark beetle, dwarf mistletoe); decreased forage quality and quantity; increased fuel loading; increased vertical fuel continuity due to dense sapling patches; increased severity and destructive potential of wildfires; increased tree canopy closure; decreased on-site water availability; decreased stream-flow and ground water recharge; shifts in habitat quality for biota; decreases in some important forest types; decreases in early successional plant communities; and visual unattractiveness.

Many of the above are applicable in mixed conifer also.

There are many social, economic, and politically imposed factors that have contributed to developing forest health problems, which effectively limit treatment of the forest as a whole to improve its health. These factors include:

- Fire prevention and control.
- A budgeted sale program of 310 MMBF.
- Mexican spotted owl guidelines.
- Almost no use of clearcutting.
- Visual quality objectives.
- Smoke management guidelines.
- Forest plan standards and guidelines.
- Large increases in reserved areas such as wilderness.
- Limited budget for precommercial thinning.
- Meager market for small trees (5-9" DBH).
- Protection of threatened and endangered species (thistles, salamanders, etc.).

These limitations are unlikely to change in the near future and they reduce options for the amount of treatment possible.

What Can be Done?

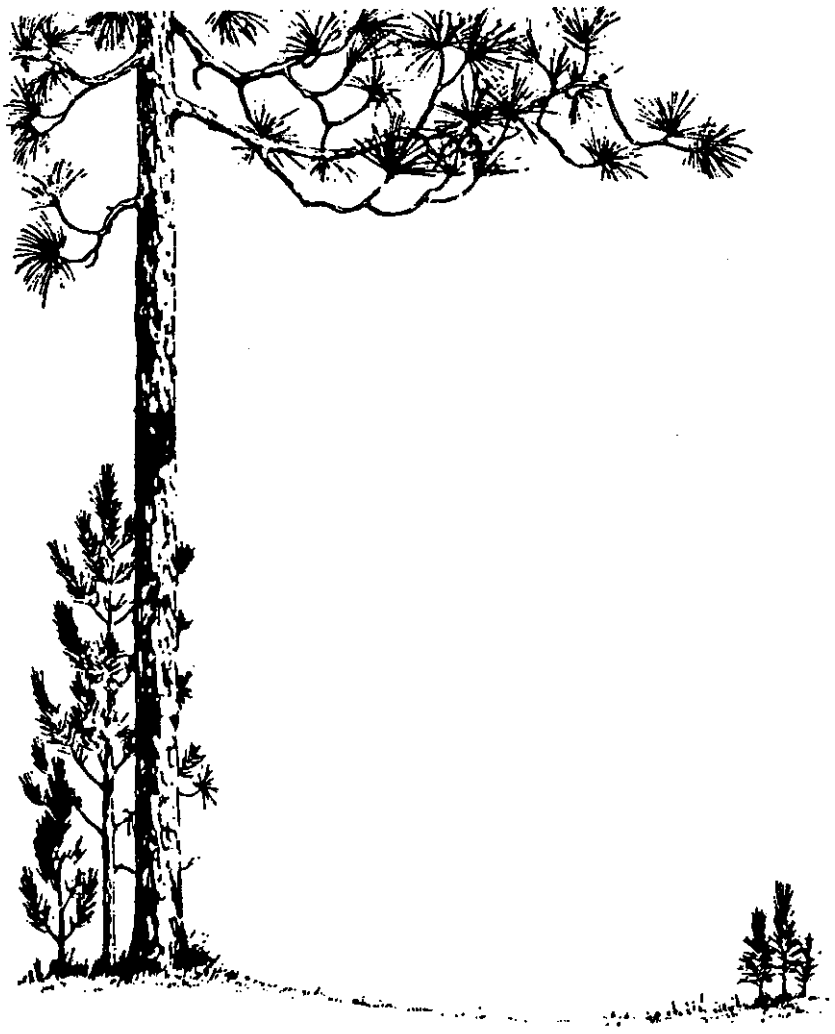
We should start where potential ecological effects are most profound. Correction of forest health problems requires rigorous analysis and careful planning and must be considered in light of the total ecosystem. Some approaches that appear to merit implementation include:

- Increase regeneration of aspen, including large blocks.
- Harvest around urban interface.
- Establish Integrated Pest Management demonstration areas.
- Wilderness fire programs.

- Prompt salvage of major mortality when it does occur.
- Reduce incidence of white pine blister rust in Lincoln National Forest.
- Re-establish ponderosa pine in selected portions of the white fir habitat type
- Aggressive .harvest of small trees.
- Intensive precommercial thinning program.
- Increased prescribed fire program.
- Revise Forest plan standards and guidelines as needed, based on new information and new management, such as management under the Northern goshawk guidelines.

Aggressive implementation of the Northern goshawk management guidelines, designed with forest health in mind, would lead to forests that are sparser and more like presettlement conditions. These forests would be easier to maintain in a healthy condition. We will need to resolve conflicts between Northern goshawk management guidelines and current Mexican spotted owl management guidelines, which can lead to very unhealthy forests in the long run.

Through the Forest Service Ecosystem Management Scientific Committee, we can work toward modification of the Northern goshawk guidelines to make them even better for forest health.



Conclusion

Assertions about decline in Southwestern forests due to timber harvesting are not based on fact. The data show that tree density, volume, and number of canopy layers increased between 1962 and 1986. Fir is increasing at the expense of aspen and ponderosa pine. The number of large trees has remained about the same during this period. Unsustainable forest changes are largely due to reduced incidence of fire during the last 100-plus years and failure to replace fire with timber harvest, especially in the small and mid-size diameter classes. Rather than move toward less disturbance as has been the trend in the recent past, it is vitally important that we address the unsustainable situations created by type conversions and extremely dense forests of today.

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Attachment C

Norman D. James, *Managing to Burn – Redirecting the ESA's focus from Land Use Regulation to Species' Recovery* (2012)

ALI-ABA AND ENVIRONMENTAL LAW INSTITUTE
SPECIES PROTECTION: CRITICAL LEGAL ISSUES

MANAGING TO BURN

REDIRECTING THE ESA'S FOCUS FROM LAND USE REGULATION TO SPECIES' RECOVERY

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Phoenix, Arizona

April 6, 2012

"We're crazy to sit in trees when there's this incredible law where we can make people do whatever we want."

Comment by Robin Silver,
Co-founder of the Center for Biological Diversity[1]

I. Introduction

The Endangered Species Act ("ESA"), 16 U.S.C. §§ 1531-1544, was enacted in 1973 to provide a program for the conservation of endangered and threatened species and to comply with certain treaties and conventions concerning wildlife and plants. *See* 16 U.S.C. § 1531. The ultimate goal of the protections afforded species under the ESA is their recovery, at which point the protections of the Act are no longer required. A species may be removed from the lists of endangered and threatened species – delisted – only if the best scientific and commercial data available indicate that the species is no longer endangered or threatened. *See*, *e.g.*, 50 C.F.R. § 424.11(d)(2) (discussing criteria for delisting species).

Unfortunately, the ESA's recovery goal often takes a backseat to another goal – land use regulation. As one commentator stated a decade ago, "The ESA is not the single most important federal environmental statute, but – whether one applauds or deplores this turn of events – the law is now a primary obstacle to land development and related activities in America." George Cameron Coggins, "A Premature Evaluation of American Endangered Species Law," *in Endangered Species Act: Law, Policy, and Perspective*, at 1 (Donald C. Baur and Wm. Robert Irvin eds., ABA 2002). This evolution has occurred

[1] Nicholas Lemann, "No People Allowed: A radical environmental group attempts to return the Southwest to the wild," *The New Yorker*, Nov. 22, 1999, at 106.

incrementally over the past 25 years through a combination of judicial decisions redefining key provisions of the ESA and policy changes at the agency level, which have altered the way the ESA applies to land and resource uses while encouraging lawsuits by environmental organizations.

As a result, the ESA's regulatory focus is often on regulating land uses, as opposed to focusing more broadly on ecological conditions that support recovery. Underlying this focus is the implicit (or, in the case of some environmental organizations, explicit) assumption that if a particular land use is halted, ecological conditions inevitably will improve and recovery will follow. A more cynical view is that the ESA is principally a means to halt land uses that are considered inappropriate by public interest groups, such as timber harvesting, livestock grazing or real estate development, even when species' recovery may be impaired.

One consequence of the ESA's shift in focus is that land management by the Forest Service and Bureau of Land Management is often dominated by the ESA-related concerns. In extreme cases, public land is being managed for the benefit of a single species of wildlife, notwithstanding the adverse impact of such management on overall ecological conditions. This paper provides an example of such management.

The Forest Service has long recognized that decades of fire suppression have greatly altered the condition of the National Forests in Arizona and New Mexico, making them unnaturally dense and susceptible to catastrophic wildfires and pest/beetle infestations. In 1996, the Regional Forester amended the Forest Plans for Arizona and New Mexico National Forests to incorporate management standards for the Mexican spotted owl ("MSO"), a species listed under the ESA, and the northern goshawk, another forest species. Under this amendment, timber harvesting was severely limited and livestock grazing and other resource uses were restricted to promote "old growth" forest conditions.

As a result of this management change and related litigation brought by environmental groups, the southwest region's forest products companies went out of business. Very little timber has been cut on the region's forests since 1994, allowing the forests to become older, denser and even more susceptible to wildfires and disease. This has led to increasingly larger, stand-destroying wildfires. These wildfires damage property, threaten rural communities, limit recreational opportunities, disrupt the hydrologic cycle, and destroy important wildlife habitat, including large blocks of critical habitat and protected nesting sites for the MSO.

Last year was the worst wildfire year in Arizona history. In 2011, wildfires destroyed over one million acres of land, much of it within a National Forest. The largest wildfire, called the Wallow Fire, burned nearly 530,000 acres. Three other wildfires burned an additional 320,000 acres in southern Arizona. Notably, all four of these fires began in MSO critical habitat within National Forests, and they impacted as much as 20 percent of the species' critical habitat in Arizona. Yet the focus of National Forest management in the southwest has been, and apparently will continue to be, limiting

timber harvesting – which would open and thin the forest, reducing fuel loads and protecting wildlife habitat.

In short, rather than managing southwestern National Forests to promote healthy, resilient ecosystems, the forests are being allowed to deteriorate in order to conserve habitat for the MSO and northern goshawk, destroying those species' habitat in the process. It seems that the federal government and environmental groups, which are driving the process through listing petitions and litigation, are more interested in using the ESA to restrict land uses than in actually conserving species.

II. The National Forests in Arizona and New Mexico *Circa* 1990

Forest Service Region 3 (also called the Southwestern Region) includes 11 National Forests in Arizona and New Mexico. The National Forests in Arizona are the Apache-Sitgreaves, Coconino, Coronado, Kaibab, Prescott and Tonto National Forests. They contain about 11.2 million acres. The National Forests in New Mexico are the Carson, Cibola, Gila, Lincoln and Santa Fe National Forests. They contain about 9.1 million acres.

Ecosystems containing timberland, woodland and chaparral comprise over 16 million acres, or about 75 percent of National Forest lands in Region 3. It is widely acknowledged that fire exclusion and other factors associated with European settlement have greatly altered the condition of these forested lands, resulting in increased susceptibility to drought, insects and disease, and intense, stand-destroying wildfires. *See, e.g.,* W. W. Covington and M. M. Moore, "Postsettlement Changes in Natural Fire Regimes and Forest Structure: Ecological Restoration of Old-Growth Ponderosa Pine Forests," *in Assessing Forest Ecosystem Health in the Inland West* 153-81 (R. Neil Sampson and David L. Adams eds., The Haworth Press 1994).

In all forest types, tree stands are much denser than was reported in the late 1800s. Inventories of Arizona and New Mexico forests showed that the total acreage of all forested land increased by 573,000 acres, or 5 percent, from 1962 to 1986, when the region's Forest Plans were being developed. Moreover, the total volume of growing stock increased by 13 percent on all forested land and by 21 percent on National Forest land, despite average annual timber sales of approximately 300 million board feet ("mmbf"). Total net growth (gross growth minus mortality and defect) in Region 3 National Forests is estimated to be approximately 700 mmbf per year.

At the same time, the composition of the region's forests shifted, with mixed conifer increasing by over one million acres (81 percent) and aspen declining by 222,000 acres (46 percent). Forest openings also decreased or disappeared, as mixed conifer filled in meadows and reduced grasses and forbs. The Forest Service stated in a 1993 paper:

> Today's forests have more volume, more trees in nearly every diameter class, and more canopy layers than ever before. ... Dense stands are difficult to maintain in a healthy condition and ... are susceptible to catastrophic crown fires

> and pest/beetle epidemics when they are not properly managed.

USDA Forest Service, *Changing Conditions in Southwestern Forests and Implications on Land Stewardship* 3 (1993).

III. The Mexican Spotted Owl Background

The MSO is one of three spotted owl subspecies recognized by the American Ornithologists' Union, along with the northern and California spotted owls. *Final Rule to List the Mexican Spotted Owl as Threatened Species*, 58 Fed. Reg. 14248 (March 16, 1993) ("MSO Listing Rule"). The MSO's range is extensive, extending from the southern Rocky Mountains in Colorado and the Colorado Plateau in southern Utah through Arizona and New Mexico to the southern end of the Mexican Plateau in central Mexico. The primary administrator of lands supporting the MSO in the United States is the Forest Service. According to the species' recovery plan, 91 percent of MSOs known to exist in the United States between 1990 and 1993 occupy land within a National Forest. *Recovery Plan for the Mexican Spotted Owl (Strix occidentalis lucida)* 21 (Dec. 1995) ("MSO Recovery Plan").

In the northern portion of its range, MSOs are found in steep canyons and rocky cliffs with little or no vegetation. In central and eastern Arizona and in western New Mexico, owls are found in forested mountains containing dense, uneven-aged tree stands, with a multi-storied structure, moderate to high canopy closure and accumulations of snags and other debris. Most of these areas are located within either a National Forest or an Indian reservation, and are considered vital to the overall stability and persistence of the MSO in the United States. MSOs also occupy forested areas in various mountain ranges in southeastern Arizona and in central and northern New Mexico.

Information on the historic population level and distribution of the MSO is sparse, and it is not known whether the species' population is declining, increasing or stable. In the MSO Recovery Plan, the FWS acknowledged that although it has limited data, the MSO's population is likely stable and well distributed throughout its historic range.

Based on a petition submitted by Dr. Robin Silver, the Fish and Wildlife Service ("FWS") listed the MSO as a threatened species in 1993. The primary basis for listing the MSO was the modification of habitat resulting from timber harvesting on National Forests in Arizona and New Mexico under shelterwood (even-aged) harvesting methods, combined with the inadequacy of the Forest Service's then-existing management guidelines for MSO habitat. MSO Listing Rule, 58 Fed. Reg. at 14266-14269.[2] The

[2] Under a shelterwood system, mature trees are removed in two or more cuts. A preparatory cut removes a portion of the mature trees and is intended to make the remaining trees more wind resistant and less susceptible to wildfire and disease. Next, a seed cut removes additional trees in order to allow sunlight to reach the forest floor and regeneration to occur. (Certain trees, particularly ponderosa pine and aspen, are shade-intolerant and do not regenerate well in shaded conditions, in contrast to many fir and spruce species.) After new trees are established, a final or removal cut occurs which removes the remaining mature trees.

FWS explained that habitat on National Forest land that could become suitable MSO habitat in the future must be considered indefinitely unsuitable because of the emphasis placed on shelterwood timber harvesting in the region's Forest Plans. *Id.* at 14267.

The FWS disregarded declining timber harvest levels and the Forest Service's implementation of management strategies to protect MSO nest sites. *Id*. at 14261, 14264-66. Region 3 of the Forest Service added the MSO to its regional list of sensitive species in 1983, thereby requiring that the MSO be given special management consideration when the region's first iteration of Forest Plans were issued between 1985 and 1988. The Forest Service also formed a task force in 1988 to develop habitat management direction, and, in 1989, issued management guidelines and inventory protocols, which included the creation of management territories to protect owl nests.

As a consequence of these management efforts, the volume of commercial sawtimber began to decline from late 1980 levels. *See* attached table, Sawtimber Volume Sold, Fiscal Years 1986-2009, Arizona and New Mexico National Forests. On a regional level, the volume of timber sold declined from 348 million board feet mmbf in 1989 to 139 mmbf in 1992 and 104 mmbf in 1993 – the year the MSO was listed. In addition, the harvesting methods shifted from shelterwood to selective cutting, in which mature trees are cut in small groups in order to maintain uneven-aged conditions.

In December 1995, FWS issued a recovery plan for the MSO. The recommendations contained in the Recovery Plan emphasized impacts to the species caused by timber harvesting and, moreover, catastrophic wildfire. In describing the general approach used in developing recommendation, the Recovery Plan provides:

> Management priorities should focus on actions to alleviate threats to Mexican spotted owls; thereafter, or in coordination with alleviating threats, other management priorities (e.g., creating replacement owl habitat) should be pursued. Two primary threats that managers should focus on are catastrophic wildfire and the widespread use of even-aged silviculture.
>
> Heavy accumulations of ground and ladder fuels have rendered many Southwestern forests vulnerable to stand-replacing fires. Such fires represent real and immediate threats to the existence of spotted owl habitat. The management guidelines that follow are intended to provide land managers with flexibility to reduce these fuel levels and abate fire risks. Fire management should be given the highest priority.

MSO Recovery Plan at 82; *see also id.* at 81 ("The primary threat throughout the forested U.S. range of the [MSO] is the threat of widescale, stand-replacing fire.").

Notably, neither the 1993 MSO Listing Rule nor the 1995 MSO Recovery Plan identified timber harvesting per se as a threat to the MSO. Rather, as stated, the primary threat is timber harvesting using shelterwood harvesting methods, which promote uniform stands of even-aged trees. And as stated, even before the MSO was listed, the Forest Service had begun shifting from shelterwood to selective cutting methods, under which mature trees are cut in small groups in order to promote uneven-aged forest conditions.

IV. Northern Goshawk Background

Another forest species, the northern goshawk, was also important in driving forest management policies. The goshawk is a raptor that is found in forested areas throughout much of the northern hemisphere. It is considered a habitat generalist that uses a variety of forest types, ages and structural conditions. It preys on various small to medium-sized birds and mammals. In the southwest, the primary forest types occupied by goshawks are ponderosa pine, mixed-spruce and spruce-fir. *See* USDA Forest Service, *Management Recommendations for the Northern Goshawk in the Southwestern United States*, *General Technical Report RM-217* (1992).

In 1980s, there was concern that populations of goshawks were declining as a result of timber harvesting and other resource uses. In 1982, the Forest Service listed the goshawk as a sensitive species. Subsequently, in 1990, the Regional Forest established a scientific committee to develop a credible strategy to conserve goshawk, which culminated in the goshawk Management Recommendations. These recommendations acknowledged that many forested areas in the southwest consist of dense thickets of smaller diameter trees that are prone to catastrophic wildfire and to insect and disease outbreaks. To accelerate the conversion of these areas into larger, mature trees, the committee recommended that tree harvesting and prescribed fire be used to create an uneven-aged mosaic of different forest structures and conditions, including the creation of forest openings.

In the meantime, environmental groups petitioned to list the goshawk as an endangered species in Arizona, Colorado, New Mexico and Utah in 1991, contending that the goshawk, like the MSO, requires "old growth" forest conditions and is threatened by timber harvesting. The petition was subsequently amended to include the entire "forested west." The FWS rejected this petition the following year, finding that the petition failed to present substantial information that listing may be warranted. *Notice of 90-Day Petition Finding*, 57 Fed. Reg. 28474 (June 25, 1992). This touched off a series of lawsuits challenging the FWS's findings, which ultimately ended in 1998 after a third petition finding that listing is not warranted. *Notice of 12-Month Finding*, 63 Fed. Reg. 35183 (June 29, 1998).

V. The Forest Service's Region-Wide Forest Plan Amendments

Spurred by the proposed rule listing the MSO published in early 1991, as well as the petition by environmentalists to list the northern goshawk, the Forest Service began working on comprehensive amendments to the Region's Forest Plans to eliminate their

emphasis on shelterwood timber harvesting methods and to formally add standards and guidelines for the protection of MSO and goshawk habitat.

The amendment process began in 1992 when the Forest Service published a notice of its intention to prepare an environmental impact statement. *See Ariz. Cattle Growers' Ass'n v. Cartwright*, 29 F. Supp. 2d 1100, 1102-04 (D. Ariz. 1998) (summary of administrative proceedings relating to the region-wide amendments). The Forest Service explained in a 1993 NEPA scoping report that that the "desired situation is for Forest Plans to more accurately reflect the management practices actually being implemented" through project-level decisions, in addition to incorporating the latest information on the habitat needs of the MSO and the northern goshawk into the plans.

This process culminated in the issuance of a Record of Decision by the Regional Forester in June 1996, which adopted amendments to the Forest Plans for each of the 11 National Forests in Arizona and New Mexico. USDA Forest Service, *Record of Decision for Amendment of Forest Plans* (June 5, 1996). The amendments focused primarily on timber harvesting and, with respect to the MSO, incorporated recommendations found in the species' recovery plan. Record of Decision, at 1-2 (general discussion) and 87-91 (specific standards and guidelines applicable to MSO habitat).[3]

In the Record of Decision, the Regional Forester acknowledged that adopting the alternative that incorporated additional standards and guidelines for the MSO and goshawk would not promote healthy forests by reducing the risk of wildfire and insect or disease outbreaks. *Id.* at 8-10. However, the primary purpose of the region-wide amendment was to adopt additional protection for the MSO and goshawk, rather than adopting the best alternative for the entire forest ecosystem. Consequently, alternatives that placed greater emphasis on overall ecosystem health, including more aggressive fuel treatments and the creation of more open conditions, were rejected. *Id.*[4]

The primary justification for this decision was the timing of the amendments. The Regional Forester emphasized that the amendments were being adopted late in the life of the region's Forest Plans, which were then scheduled for revision within the next two to five years. *Id.* at 13-14. During the revision process, the standards and guidelines would be reviewed with additional public input. Thus, the amendment was not considered "significant" under the National Forest Management Act. *Id.* Unfortunately, the region's

[3] The recommendations contained in the Recovery Plan focused primarily on timber harvesting, both from the standpoint of avoiding adverse impacts caused by logging certain protected and restricted areas and from the standpoint of limited timber treatments, such as pre-commercial thinning, to reduce fire risk. MSO Recovery Plan at 82-95.

[4] In the 1996 Record of Decision, the Regional Forester explained that Alternative E, developed by timber industry consultants, "has the lowest risk of epidemic insect and disease infections, has the lowest risk of catastrophic fire losses, provides the best balance of vegetation structural stage distribution, is most likely to sustain aspen in the long term, and most likely would provide better habitat for forage-using wildlife species." But this alternative was not consistent with the purpose and need for the amendments, which was protecting habitat for the MSO and the goshawk. Record of Decision at 10.

forest plans have not been revised since the Record of Decision was issued in 1996, and these "temporary" amendments remain in effect today.

Under the amendments, regional timber production was dramatically reduced. The annual volume of sawtimber harvested from the region's National Forests – which constitute the principal source of commercial timber in the southwest – was reduced to about 80 mmbf per year, which amounted to a reduction of nearly 80 percent from the average annual allowable sale quantity in the region's Forest Plans. Moreover, the average volume of "large" sawtimber, defined as trees with a diameter at breast height greater than 12 inches, was reduced to only 10 mmbf per year. The amendments permitted an additional 70 mmbf of "small" sawtimber (trees with a diameter between 9 inches and 11.9 inches dbh) to be harvested annually. To put these quantities into perspective, 10 mmbf is the equivalent of one medium-sized commercial timber sale.

The bottom line is that the Forest Service's region-wide amendments effectively destroyed the region's forest products industry by eliminating public access to commercial-grade timber. The Forest Service was aware that intensive management was needed to address the unsustainable condition of the region's forests, including the removal of timber to reduce stand density. Nevertheless, the agency opted to manage much of the region's forests by promoting dense, multi-story stands for the MSO and the northern goshawk, and restricting access to the timber on which the region's forest products industry depended.

VI. Environmental Groups Use the MSO to Enjoin Timber Harvesting

Before the Forest Service could complete its region-wide amendment process, environmental groups brought suit against the agency, seeking an injunction compelling the Forest Service to initiate consultation on the effects of each of the region's Forest Plans on the MSO and prohibiting all timber harvesting until the completion of consultation. *See Silver v. Thomas*, 924 F. Supp. 976 (D. Ariz. 1995).

The basis for this lawsuit was the Ninth Circuit's decision in *Pacific Rivers Council v. Thomas*, 30 F.3d 1050 (9th Cir. 1994). In that case, the court held that a Forest Plan is a continuing agency actions for the purpose of Section 7(a)(2) of the ESA, 16 U.S.C. § 1536(a)(2), requiring the Forest Service to re-initiate consultation on the effect of the Forest Plan on species listed *after* the Forest Plan has been adopted. *Pacific Rivers*, 30 F.3d at 1056-57. The Ninth Circuit also stated in dicta that it had previously held that timber sales constitute *per se* irretrievable commitments of resources under Section 7(d) of the ESA, 16 U.S.C. § 1536(d), and thus cannot proceed during consultation. *Id.* (following *Lane County Audubon Soc. v. Jamison*, 958 F.2d at 290, 295 (9th Cir. 1992)).[5]

[5] In *Lane County*, the court held that *future* timber sales could not proceed under the timber management guidelines at issue until consultation has been completed, but did not enjoin announced and ongoing timber sales, apparently because consultation had been completed at the project level on those sales. 958 F.2d at 295. The *Pacific Rivers*' panel did not consider this distinction, nor did the district court in *Silver*. *See Silver*, 924 F. Supp. at 983.

In the *Silver* case, the plaintiffs pointed out that the region's Forest Plans were adopted between 1985 and 1988, and, therefore, no consultation had taken place regarding the effect of the Forest Plans on the MSO, which was not listed until 1993. Consequently, they argued, the Forest Service was violating Section 7(a)(2), just as it did in *Pacific Rivers*. *Silver*, 924 F. Supp. at 982. The Forest Service argued that it had initiated consultation on the Forest Plan amendments and had been consulting with the FWS on all project-level decisions that may affect the MSO. *Id.* at 981.

The district court held, first, that the Forest Plans are agency actions that trigger consultation and, second, that the Forest Plans are "program planning documents" that affect the MSO, following *Pacific Rivers* and *Lane County*. *Id.* at 983-84. The court also held that the initiation of consultation on the amendments to the region's Forest Plans was irrelevant because until the amendments became effective, ongoing activities would be governed by the existing Forest Plans. *Id.* at 984-85. The court dismissed the Forest Service's argument that project-level consultations had been completed on all ongoing timber sales, holding that, as a matter of law, project-level consultations are insufficient to comply with the ESA. *Id.* at 985.

Having determined that ongoing violations of the ESA existed, the district court issued sweeping injunctive relief without conducting a hearing. *Id.* at 988-89. The court ordered the Forest Service to immediately commence consultation on the existing Forest Plans, and further ordered the Forest Service to "defer or suspend all timber harvest activities" through the region until consultation has been completed on both the existing Forest Plans and the amendments to the Forest Plans. *Id.* at 989. Thus, all timber harvesting was enjoined, regardless of whether consultation had been completed on a particular timber sale at the project level and regardless of whether a particular timber sale would even affect the MSO.

VII. The Demise of the Region's Forest Products Industry and Proactive Forest Management

The injunction issued in the *Silver* case remained in effect for nearly 16 months, until November 1996, in part due to procedural maneuvering by the plaintiffs and the district judge's apparent distrust of the Forest Service. Ultimately the district judge who entered the injunction retired from the bench, and the new district judge assigned to the case vacated the injunction shortly after taking over the case. But the combination of the injunction and the 1996 region-wide Forest Plan amendments took its toll on the region's forest products industry.

As shown in the attached table, the volume of commercial grade timber sold by the Forest Service dropped dramatically and remained at extremely low levels through the rest of the decade. In 1990, about 272 mmbf of timber was sold in commercial timber sales on Region 3 National Forests. That sale quantity was well below the allowable sale quantity in the pre-amendment Forest Plans, 390 mmbf per year, and about 40 percent of estimated annual growth, approximately 700 mmbf per year. From 1994 – the year after the MSO was listed – through 1999 the *total* sale quantity on all Region 3 National Forests was 145 mmbf, or about 24 mmbf per year.

The two National Forests with the largest historic sale volume, the Apache-Sitgreaves National Forest in central and eastern Arizona and the Coconino National Forest in north-central Arizona, had annual sale volumes that averaged 8.7 mmbf and 3.6 mmbf, respectively, from 1997 though 1999. By contrast, the annual allowable sale quantities in the Forest Plans for the Apache-Sitgreaves National Forest and the Coconino National Forest are 99 mmbf and 89 mmbf, respectively.

Because of the lack of timber, the region's handful of forest products companies went out of business. In contrast to other parts of the United States, where private and state-owned lands produce significant volumes of timber, virtually all of the commercial grade timber in Arizona and New Mexico is found on either the region's National Forests or Indian reservations, such as the White Mountain Apache Reservation in eastern Arizona. Most tribal land is inaccessible to private businesses, leaving the region's National Forests as the principal source of timber for commercial operations. And without reasonable assurance of access to timber, businesses will not invest the capital needed to finance a successful forest products company.

Meanwhile, environmental groups continued to litigate over the region's Forest Plans. In 2000, the Center for Biological Diversity filed a lawsuit challenging the Forest Service's 1996 environmental impact statement for the region-wide Forest Plan amendments on the basis that the northern goshawk requires "old growth" forest conditions. While the lawsuit was not successful in forcing even greater restrictions on logging, the environmentalists were able to obtain a ruling from the Ninth Circuit which required the 1996 EIS to be supplemented to disclose "responsible, opposing scientific viewpoints" concerning goshawk habitat preferences. *Ctr. for Bio. Diversity v. U.S. Forest Serv.,* 349 U.S. 1157 (9th Cir. 2003).

On remand, the Forest Service issued a second record of decision and affirmed the 1996 decision to adopt the alternative that restricted timber harvesting. Forest Service, U.S. Dep't of Agriculture, *Record of Decision for Amendment of Forest Plans, Arizona and New Mexico* (June 8, 2006). As in 1996, this decision was justified on the basis that the amendments would be effective for only a short period – this time for five to 10 years. *Id.* at 1, 4. The Regional Forester again acknowledged that this alternative was not the environmentally preferred alternative from the standpoint of forest ecosystem health. However, he did not address the fact that the 1996 amendments were intended to be in effect for only two to five years.

At about the same time, in June 2005, the Forest Service completed another programmatic Section 7 consultation on the region's Forest Plans, in response to threatened litigation by Forest Guardians (now called WildEarth Guardians). In its biological opinion, the FWS concluded that the continued implementation of the region's Forest Plans is not likely to jeopardize the continued existence of the MSO or result in adverse modification of the MSO's critical habitat. This determination was based on the incorporation of the MSO Recovery Plan's guidance into the Forest Plans in 1996. The FWS noted that recent wildfires had destroyed 84 MSO protected activity centers in Arizona, but determined that most "take" within the past 10 years had been primarily in

the form of temporary "harassment" rather than habitat alteration, which, according to the FWS, is the greatest threat to the MSO.

In 2010, the Center for Biological Diversity, Western Watersheds Project and WildEarth Guardians brought suit challenging the Forest Service's compliance with the 2005 biological opinion, contending that the agency had failed to undertake monitoring of MSO sites in accordance with the opinion's incidental take statement. Although the Forest Service initiated consultation to address its failure to comply with the monitoring requirement, the court issued a preliminary injunction halting a fuels reduction project on the Coconino National Forest because it would affect MSO habitat. *See Ctr. For Bio. Diversity v. U.S. Forest Serv.*, 820 F. Supp. 2d 1029 (D. Ariz. 2011). As a result, another programmatic consultation on the effect of the region's Forest Plans on the MSO and other forest species is currently underway.

In short, the severe reductions in timber harvest levels implemented under the 1996 Record of Decision – which were to last two to five years – have now remained in place for over 15 years. And environmental groups have continued to challenge the Forest Service's regional planning and individual timber sales through lawsuits, threats of lawsuits and administrative appeals to keep timber from being harvested. As a result, Region 3 timber sale volume averaged about 52 mmbf per year from 2000 through 2009 – a small fraction of the estimated annual growth in the region's National Forests.

With no Forest Plan revisions on the horizon, the National Forests in Region 3 will continue to be managed under standards adopted in the 1996 Record of Decision, allowing forest conditions to further deteriorate and wildlife habitat – including large blocks of critical habitat for the MSO – to be destroyed.

VIII. Managing to Burn

The result of managing the region's National Forests to "protect" habitat for the MSO and the northern goshawk was entirely predictable – massive wildfires that destroy the species' habitat, as well as important habitat for other species of fish and wildlife. The Forest Service explained in 1993:

> The current low level of harvest and cultural (pre-commercial thinning) treatments cannot prevent aging and increasing small-tree density of Southwestern forests. They will become older, denser, and perhaps more extensive. However, at some point, ecological limits will be reached, resulting in extensive forest destruction from insects, diseases, and fires. Similar losses are well-documented throughout the Interior West ....

Changing Conditions in Southwestern Forests, *supra*, at 5. When the Forest Service issued this paper, the "low level" of timber harvests and cultural treatments was removing approximately 300 mmbf of timber annually. Currently, the timber sale volume is about 60 mmbf per year. It primarily consists of pre-commercial thinning and related

maintenance work near developed areas – so-called "WUI" projects – to reduce fire risk to homes and businesses, and salvage timber removed from areas damaged by wildfires.

In 2011, wildfires burned over one million acres of land in Arizona. The four largest wildfires occurred primarily in areas designated as critical habitat for the MSO. *See Final Designation of Critical Habitat for the Mexican Spotted Owl*, 69 Fed. Reg. 53182 (Aug. 31, 2004) ("MSO CH Rule").[6] These fires (in order of size) are:

Wildfire	Acres Burned	National Forest	MSO CH Unit	Size of CH Unit
Wallow	527,774 acres	Apache-Sitgreaves	UGM-7	863,749 acres
Horseshoe	222,954 acres	Coronado	BR-W-18	179,439 acres
Murphy Complex	68,708 acres	Coronado	BR-W-13	54,735 acres
Monument	30,526 acres	Coronado	BR-W-15	50,844 acres

These four wildfires alone burned nearly 850,000 acres in Arizona, most of which has been designated as critical habitat for the MSO. Nearly 20 percent of the total MSO critical habitat in Arizona was affected.

By definition, critical habitat consists of areas that are essential to the survival and recovery of the species. *See* 16 U.S.C. § 1532(5)(A); *see also Gifford Pinchot Task Force v. U.S. Fish and Wildlife Serv.*, 378 F.3d 1059, 1069-72 (9th Cir. 2004). This habitat is being destroyed in large blocks, and will continue to be destroyed without a dramatic change in the Forest Service's management strategy.

The FWS devised the MSO's critical habitat around MSO protected activity centers or "PACs," in accordance with MSO Recovery Plan guidance. PACs are areas containing essential nesting and roosting habitat and are subject to the highest level of activity restrictions. MSO CH Rule, 69 Fed. Reg. at 53183. FWS explained in its rule designating critical habitat:

> PACs include a minimum of 600 acres ... that includes the best nesting and roosting (i.e., resting) habitat in the area. A PAC contains the nest site, a roost grove commonly used during the breeding season in the absence of a verified nest site, or the best nesting/roosting habitat if both nesting and roosting information are lacking and the most proximal and highly used foraging areas.

[6] In 2004, over 8.6 million acres of land was designated for the MSO, including nearly four million acres of land in Arizona. About 80 percent of this critical habitat land is located within a National Forest, while an additional 18 percent is located on land administered by the National Park Service.

Id. at 53183. Consequently, in addition to burning a substantial amount of critical habitat, the 2011 wildfires impacted a large number of MSO PACs. The precise number is not known; however, the author has been informed by a credible source that at least 80 and possibly 100 PACs were damaged or destroyed by the Wallow Fire alone. This amounts to 15 percent of the PACs in the Upper Gila Mountains Recovery Unit, which, according to the FWS, contains the largest known concentration of owls, with approximately 63 percent of known PACs in southwestern region. On a combined basis, the four wildfires destroyed nearly 120 PACs, or about 10 percent of all PACs in the United States.[7]

This estimate is consistent with the damage caused by other recent wildfires. In June, 2002, the Rodeo-Chediski Fire burned more than 460,000 acres of forested land in east-central Arizona, much of it within the Apache-Sitgreaves National Forest. At the time, this was the largest wildfire in Arizona history. In its 2005 biological opinion, the FWS reported that this wildfire damaged or destroyed 55 MSO PACs containing approximately 33,000 acres. At that time, the FWS estimated that about 11 percent of the PAC habitat in the Upper Gila Mountains Recovery Unit had been impacted by moderate to high-intensity, stand-replacing fires in the previous seven years. The FWS also noted several large fires in other recovery units, including the Aspen Fire, which burned approximately 85,000 acres, including nine MSO PACs, and the Nuttall Complex Fire, which burned approximately 29,725 acres and impacted 20 MSO PACs. These fires occurred on the Coronado National Forest.

Thus, while 2011 was the worst wildfire season in Arizona to date, the magnitude and intensity of wildfires on the region's National Forests has increased significantly over the past 15 years. In fact, the 10 largest wildfires in Arizona history have occurred since 1996, and eight of those fires have occurred since 2002.[8] There is no reason to expect this trend to change, given the lack of proactive forest management.

The foregoing discussion focuses only on the impact on MSO critical habitat. Of course, there are other protected species of fish, wildlife and plants found in the areas burned by the wildfires, such as listed species of native fish and amphibians that occupy streams impacted by run-off from burned areas, which will carry sediment and debris from the fire. The MSO, however, appears to be the most impacted species given that the four major fires all started within and destroyed large portions of designated MSO critical habitat units in southern and eastern Arizona.

In short, the Forest Service has been aware that intensive management is badly needed to address the unsustainable condition of the region's forests and reduce the risk

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[7] In the 2004 critical habitat rule, the FWS stated that there are a total of 1,176 PACs in the southwestern United States, of which over 1,000 are found within National Forests in Arizona and New Mexico. MSO CH Rule at 53184.

[8] These wildfires are: Wallow, 538,049 acres (2011); Rodeo-Chediski, 468,638 acres (2002); Cave Creek Complex, 248,310 acres (2005); Horseshoe 2, 222,954 acres (2011); Willow, 119,500 acres (2004); Aspen, 84,750 acres (2003); Edge, 71,625 acres (2005); Lone, 61,300 acres (1996); Warm, 58,630 acres (2006); Bridger Complex, 53,503 acres (1996).

of catastrophic wildfires for two decades. Nevertheless, the agency has opted to manage much of the region's forests to promote extremely dense, multi-story stands for the MSO and the northern goshawk and, in the process, eliminated access to the timber on which the region's forest products industry depended. This set the stage for increasingly larger, stand-destroying wildfires – the primary threat to the MSO's recovery according to the species' Recovery Plan.

The threats identified by the Forest Service 20 years ago – drought, insects and disease, and intense, stand-destroying wildfires – have become more acute, and forest health has continued to deteriorate due to the lack of proactive management. In effect, the region's forests are being managed to burn. The only questions are when, where, and how severely.

In contrast, a holistic, multiple-use management approach that considers the entire forest ecosystem would not only protect habitat for the MSO, the northern goshawk, and other fish and wildlife species, but also ensure that the region's forests are able to adapt to periods of drought and remain capable of providing a full range of ecosystem services. Such an approach necessarily will require a serious commitment to fuel reduction and forest rehabilitation – i.e., timber harvesting on a significant scale, including the removal of some larger-sized trees. The Forest Service, however, has rejected this management strategy on two occasions in the past, and seems unlikely to adopt it in the future, notwithstanding the deteriorating condition of the region's forests.

Sawtimber Volume Sold, Fiscal Years 1986-2009
Arizona and New Mexico National Forests
(millions of board feet (MMBF))

	Region 3	**Arizona**	**New Mexico**	**Apache-Sitgreaves**	**Coconino**
Est. Annual Growth	*701 MMBF*	*367 MMBF*	*334 MMBF*		
ASQ[9]	*390 MMBF*	*267 MMBF*	*123 MMBF*	*99 MMBF*	*89 MMBF*
1986	337.7	212.6	125.1	81.4	47.7
1987	377.2	235.9	141.3	88.7	74.5
1988	320.9	206.0	114.9	75.1	64.9
1989	348.4	252.3	96.1	81.6	82.3
1990	271.9	198.4	73.5	57.7	69.0
1991	226.7	159.4	67.3	94.5	33.1
1992	139.4	115.2	24.2	31.7	53.4
1993	104.4	83.5	20.9	31.8	21.3
1994	44.9	38.2	6.7	10.2	11.1
1995	38.6	30.9	7.7	15.9	8.5
1996	1.0	0.5	0.5	0.5	0.0
1997	13.2	0.6	12.4	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0
1999	46.8	43.2	3.6	25.5	2.2

[9] The ASQ (Allowable Sale Quantity) is the quantity of timber that may be sold on an average annual basis as established by the Forest Plans for Region 3 adopted between 1986 and 1989. Thus, for example, the average quantity of timber that may be sold each year on the Apache-Sitgreaves National Forest is 99 MMBF.

2000	35.6	33.1	2.5	7.8	11.6
	Region 3	**Arizona**	**New Mexico**	**Apache-Sitgreaves**	**Coconino**
Est. Annual Growth	*701 MMBF*	*367 MMBF*	*334 MMBF*		
ASQ	*390 MMBF*	*267 MMBF*	*123 MMBF*	*99 MMBF*	*89 MMBF*
2001	23.7	13.9	9.8	1.8	7.5
2002	19.4	15.2	4.2	0.8	3.0
2003	48.6	34.4	14.2	22.6	7.5
2004	69.4	54.5	14.9	28.9	9.1
2005	76.5	55.9	20.6	24.7	12.2
2006	74.4	60.9	13.5	9.3	32.9
2007	80.2	73.3	6.9	38.4	16.0
2008	65.3	52.2	13.1	19.9	10.6
2009	46.8	38.6	8.2	29.4	0.3