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Comments: Please see our comments regarding the above captioned Federal Register Notice.

General Comments: The preamble to the Federal Register Notice states that the Department of Interior's Bureau of Land Management and the USDA Forest Service "shall, within one year of the date of this order, define, identify, and complete an inventory of old-growth and mature forests on Federal lands." It is important to stress that such an inventory, fraught with numerous complications noted below, must consider all forested acres on all Federal lands. This includes 244.4 million acres of land managed by the Bureau of Land Management, 192.9 million acres of land administered by the USDA Forest Service, 89.2 million acres within the National Wildlife Refuge System, 79.9 million acres within the National Park System, and 8.8 million acres owned by the Department of Defense. It is worth noting that in addition to the more than 56 million acres of National Forest that USDA has identified as being more than 100 years old, the National Park Service has, at a minimum, 4.8 million acres of old-growth forests on which commercial management is prohibited. This 1991 estimate for the National Park Service is substantially outdated and should be updated. Every forested acre in the National Park System will eventually "mature," and cutting trees on National Park land is mostly prohibited, except to protect life and property. Presumably, absent natural disturbances, all forested acres within the National Park System will attain "old-growth" or at least "maturity." Any such inventory must also recognize that the Forest Service and Bureau of Land Management already host significant areas reserved from most active timber management. 7.7 Million Acres of National Forests are in National Monuments. 17.6 Million Acres of NFS lands are in Wild & Scenic River Corridors. 36.6 Million Acres of NFS lands are in Designated Wilderness Areas. 58.2 Million Acres of NFS lands are in Inventoried Roadless Areas. While theoretically some non-commercial fuels reduction work could take place in an Inventoried Roadless Area, for all practical purposes they are off limits to commercial timber harvest, meaning, if the trees in those areas are not killed by wildfires, insects, or other disturbances, they will all achieve "old-growth" status eventually. The total area of NFS lands in these restricted land use categories is three times larger than the 40 Million Acres of NFS lands designated as "suited for timber production," and is 27 Million Acres larger than the entire National Park System. Similarly, forest management is extremely limited on the 85 Million Acre National Wildlife Refuge System. The National Wildlife Refuge Act states that "No person shall disturb, injure, cut, burn, destroy, or possess any real property of the United States" (trees are considered real property) on a National Wildlife Refuge. Most forested lands on National Wildlife Refuges, therefore, will also grow to the maximum extent possible, subject to the natural limitations of each site and natural disturbances. If old-growth is defined as forests that are simply allowed to grow with no management, there are at least 60.8 million acres of old-growth existent on National Forests and National Parks alone. There are an additional 14 million acres of land in State park systems, where, generally speaking, timber management is either prohibited or discouraged. If even half these State park areas are forested, that's an additional 7 million acres that will not be managed and will eventually achieve "old-growth" status, however defined. At 67 million acres, this is an area larger than all but seven States and is 42 times larger than the State of Delaware. Various advocates, on a local level, have suggested criteria such as age of trees, size, presence of down and decaying trees, define "old-growth." We believe a universal definition, or even a "universal definition framework" inherently cannot be based on the best available science, limits the ability of the Forest Service to manage for specific species, and will lead to less old-growth on the landscape over time. Forests will mature, decay, and, in many cases, burn. Current trends suggest that many types of forest disturbance are becoming more common, from large fires to wind events. Without active management, stands experiencing stand-replacing disturbances will not mature into "old-growth" stands, and with no effort to control brush after such events, they may not return as forests at all. In order to conserve forests of any successional stage, the ability to engage in adaptive management is critical. Information about typical successional processes and stages may help inform management, but it does not make it possible to stop forest succession or end disturbance regimes which will "reset" forests to stand initiation phases, regardless of human management. The Origins and Objectives of the Request for Information: The Forest Service, Bureau of Land Management, and the Executive Office of the

President have embarked on this quest to define, inventory, and conserve "old-growth" and "mature forests" at the behest of environmental advocacy groups who have a history of pressing for administrative set-asides on the National Forest System and Bureau of Land Management timberlands. While these advocacy groups (nearly all of whom oppose all commercial timber harvest on Federal lands) claim Forest Service and BLM lands "have no enduring protection" and "are at imminent risk of being logged,^{vi}" the fact is that unmanaged forests make up a significant portion of our Federal lands. These groups also claim that standing timber makes up 95 percent of the "forest ecosystem carbon pool" on Federal lands vs. harvested wood products^{vii}. The National Forests have supplied over half a trillion board feet of timber to meet the needs of the American people since 1940^{viii}. Yet according to these advocacy groups, they still have 95 percent of the forest carbon. This strongly suggests that continued timber management will not have a negative impact on future carbon outcomes on Federal public lands. Unmanaged forests, by contrast, are increasingly risky, unstable pools of carbon. Emissions from 2020 wildfires in California, which burned predominantly on National Forest System lands, emitted over 112 million metric tons of carbon dioxide^{ix}. That's equivalent to the emissions from over 24 million gas powered passenger cars driven for one year. It is worth noting that for the most part, "old-growth" timber makes up an exceedingly small percentage of the timber program offered for sale by the U.S. Forest Service each year. However, the inclusion of the term "mature" in the Federal Register notice is cause for serious concern. As described below, the Federal statutes which are legally binding upon the Forest Service and Bureau of Land Management don't just contemplate the harvest of mature trees, they actively require it. Moreover, it is clear that some advocates wish to establish a simple tree age cut off, beyond which individual trees - or forest stands - become ineligible for harvest. Such an approach would simply foreclose forest management options (on the few acres of land where management isn't already precluded) and the ability of forest managers to address forest health challenges, respond to unanticipated disturbances, and create habitat for management-dependent threatened or endangered species. FFRC notes that the Forest Service is in the initial stages of implementing the Infrastructure Investments and Jobs Act (Public Law 117-58; 135 STAT. 429). This act did not establish "climate smart stewardship of old-growth or mature" forests as an objective for the Forest Service. It repeated language from previous laws emphasizing (but not requiring) large tree retention while implementing hazardous fuels reduction projects. In response to this legislation, the Forest Service produced a 10-Year Strategy entitled "Confronting the Wildfire Crisis," which sets treatment of over 20 million additional acres of fire prone National Forests as the top priority for the Forest Service. This strategy focused on reducing forest stocking levels and taking immediate actions to protect fire-prone communities. The Executive Order and the resultant Federal Register notice can only be read as an attempt to divert agency resources away from the crisis response directed by Congress. The effort to identify old-growth and "mature" forests and then "conserve" them is not the first time these zero-cut advocacy groups have engaged in a strategic campaign to eliminate forest management through Executive action. In 1996, the Sierra Club, one of the leading members of the "Climate Forests Campaign," adopted a policy opposing all commercial logging on Federal lands^x. In 1998, the Clinton Administration, at the behest of the Sierra Club and others, announced an 18-month moratorium on new road building on the National Forest System^{xi}. Then, through a sweeping, top-down, administrative action, the Clinton Administration adopted the Roadless Area Conservation rule on January 12, 2001^{xii}, unilaterally setting aside 58.5 million acres, or about one third of the National Forest System, from active management, including timber harvest. While legislation to declare even more wilderness and to codify the 2001 Roadless Rule on the National Forests has languished in Congress, these groups have elected to pursue the same strategy to identify even more acres for "preservation," even as 37-million acres of National Forests have burned since the Roadless Rule was adopted^{xiii}. The area of National Forest that have burned since the finalization of the Roadless rule is more than seven times greater than the area experiencing timber harvest^{xiv}. In other words, rather than regarding the Executive Order and the Request for Information as a legitimate policy making exercises intended to solve a real problem, we must recognize them for what they are: an effort to squeeze more mileage out of the dwindling "threat" of timber harvest on Federal public lands while administratively setting aside additional acres from management, without any direction from Congress to do so. The Federal Statutes Regarding Management of Federal Forest Lands Do Not Prioritize or Require Old-Growth or Mature Forest Conservation: The Forest Service's authority to conduct land management on the National Forest System stems from four basic laws - the Forest Service Organic Act of 1897, the Multiple Use Sustained Yield Act of 1960, the Renewable Resources Planning Act of 1974, and the National Forest

Management Act of 1976. These acts provide the legal basis for all management activities, including timber harvest, on the National Forest System. After the enactment of these basic laws, Congress has enacted several statutes streamlining the required analysis for certain types of forest management projects on the NFS, focusing on projects intended to reduce hazardous fuels, protect communities from fire, and reduce the threat of insect and disease on certain acres. These laws include the Healthy Forest Restoration Act of 2003 and the forestry provisions of the 2014 and 2018 Farm Bills. These latter "streamlining" statutes direct the Forest Service to provide direction for old-growth conservation, and to ensure that projects that get streamlined analysis "contribute to" the development of old-growth characteristics. However, these directions only apply to specific projects, and failure to provide specific direction on old-growth conservation in a forest plan only prohibits the agency from using the expedited fuels reduction authorities. Both HFRA and the Farm Bill authorities include provisions regarding large tree retention, however, they are conditioned upon several factors, primarily whether the trees contribute to fire resilience and healthier forests. Neither constitute a prohibition on old-growth, mature, or even "large" tree harvest. The basic laws (Organic Act, MUSYA, RPA, and NFMA) do not establish the "conservation" of "old-growth and mature forests" as an objective on the National Forest System. In fact, they establish that timber harvest, including the harvest of mature trees, is an objective on unreserved lands on the National Forests. The latter of the four basic laws (RPA and NFMA) direct the Forest Service to set upper bounds on timber harvest levels through the Forest Planning process, identify lands which are not suitable for timber production, and recommend lands for restricted land uses (like Wilderness Areas). None of these provisions target "old-growth" or "mature forests" as a specific conservation goal on the National Forest System, and they restate the MUSYA's focus on timber production as one of the main goals of the system. Moreover, Congress has had numerous opportunities to enact specific protections for old-growth and mature forests and has elected not to do so. In 1991, Rep. Bruce Vento (D-MN) introduced the 'Ancient Forest Act of 1991' (HR 1590) which proposed the creation of a "Pacific Northwest Ancient Forest Reserve System" consisting of approximately 5,660,000 acres of National Forest System lands and approximately 660,000 acres on public lands administered by the Bureau of Land Management. The bill was incorporated into the H.R. 4899 - Northwest Forests Management, Planning, Productivity Improvement, and Protection Act which was reported out of the House Agriculture Committee on October 6, 1992, but never received a floor vote and was not enacted into law. Since 1991, the Congress has had many opportunities to enact legislation designating "old-growth" or "mature" forests as either no-cut zones or conservation priorities on the National Forest System. Legislation like the 2009 Omnibus Public Lands Bill and the Great American Outdoors Act of 2020, among many others, could have easily included such direction, but did not do so. Congress established the general purposes of the National Forest System through legislation four times between 1897 and 1976. At no point did Congress direct the Forest Service to engage in "climate-smart stewardship of mature and old-growth forests." These laws established general limitations on timber harvest, including specific land areas where harvest should not take place, and overall levels of harvest based on a general sustained yield mandate. At no point did Congress establish that old-growth or mature forests required particular attention or conservation on the National Forest System or Federal Public Lands. As the U.S. Supreme Court recently noted, absent a specific grant of legislative authority, there is ample "reason to hesitate before concluding that Congress" meant to confer such authority. Given that Congress has had ample opportunity to act on legislation to establish old-growth and mature forest conservation as a legally binding objective for the management of Federal forests, and declined to do so, the Executive Order of April 23rd, 2022, is an effort to enact a program of old-growth and mature tree conservation that Congress had already considered and rejected. It is worth noting that the recently signed "Inflation Reduction Act" provided \$50 million in funding "for the protection of old-growth forests on National Forest System land and to complete an inventory of old-growth forests and mature forests within the National Forest System." While this provision allows the Forest Service to conduct the inventory and engage in completely undefined activity ("protection" is not defined in the legislation), because it was adopted as part of a "reconciliation" measure, by definition this legislation neither overrides nor amends the existing statutes discussed above. It by no means establishes "old-growth" or "mature" forest protection as a statutory objective for the National Forests or BLM timberlands. Clearly, the inclusion of this provision in the Inflation Reduction Act at the last moment (it had not appeared in any previous version of the legislation, there had been no bills with similar language introduced prior to the sudden release of the IRA "deal", and no hearings on legislation of this type had been held this Congress) can only be read as an attempt to

provide post hoc legitimacy to the effort already commenced by the Executive Branch. Management and Conservation of "Old-Growth" and "Mature" Forests Are Best Addressed through the Forest Planning Process: The 2012 National Forest Planning Rule (36 CFR Part 219) makes no mention of old growth forests or mature trees. It requires identification of a desired future conditions, defined as "a description of specific social, economic, and/or ecological characteristics of the plan area, or a portion of the plan area, toward which management of the land and resources should be directed." Forest Plans must "provide for social, economic, and ecological sustainability within Forest Service authority and consistent with the inherent capability of the plan area," and "maintain or restore the ecological integrity of terrestrial and aquatic ecosystems and watersheds." (emphasis added) Plans must provide for "the diversity of plant and animal communities, within Forest Service authority," including "Ecosystem integrity" and "Ecosystem diversity." (emphasis added). These references to "Forest Service authority" refer to the management statutes discussed above. In the preamble to the 2012 Planning Rule, the Forest Service noted that some commenters "felt the rule should have specific requirements for old-growth and large, intact blocks of forest..." In response the Forest Service noted that the requirements of [sect] 219.9(a)(2)(iii) "provide for key characteristics associated with terrestrial and aquatic ecosystem types and rare aquatic and terrestrial plant and animal communities, which may include old growth stands, meadows, snags, or other characteristics." The agency said that "(m)ore specific requirements were not included in the final rule, because these issues are best identified and determined at the forest or grassland level, reflecting ecosystems and plant and animal communities on the unit." (emphasis added). A review of current Forest Plans found that 105 out of 125 forest plans include a definition of old growth, but there is no one consistent definition used in the forest plans. Definitions vary throughout and even within Forest Service regions, which reflects the diversity of forest types, successional stages, and disturbance history found throughout the National Forest System. Eighty of the forest plans have guidelines for old-growth management that are tailored to the types of forests found on each unit. Not only does the current forest planning process require Forests to work with their local communities to identify "old-growth" forests, the Forest Service has worked with State and local governments to establish broad forest management objectives through the State Forest Action Plans, required by the 2008 Farm Bill^{xvi}. Community Wildfire Protection Plans, authorized by the 2003 Healthy Forests Restoration Act^{xvii}, also include specific management actions that could be foreclosed by a single national definition of old-growth or mature forests. Collaborative Forest Landscape Restoration Projects, similarly, frequently focus on reducing fire danger, frequently by thinning (sometimes very large trees) from forest stands to restore more fire resilient forests. Unified national definitions or strategies to conserve a specific forest successional phase will very likely contradict specific tactics and strategies adopted through these other Local, State, and Federal cooperative efforts. The Forest Service should consider carefully the negative impacts such contradictions will create with local communities and State partners who have invested considerable time and money into developing these efforts. The Forest Service and Bureau of Land Management have presented no compelling case as to how a single, nation-wide definition of "old-growth" or "mature" forests helps improve conservation outcomes. By simply responding to a public pressure campaign without basis in Federal law, this effort is likely arbitrary and capricious. Below are the answers to the questions posed in the Request for Information. What criteria are needed for a universal definition framework that motivates mature and old-growth forest conservation and can be used for planning and adaptive management? Any "universal definition framework" of "old-growth" and "mature" forests can only be either so general as to be useless in guiding forest management or so specific that it inadvertently excludes numerous forests that many would otherwise recognize as either "old-growth" or "mature." This is why the Forest Service has chosen to use Regional definitions, further refined through Forest Plans, which allow them to capture forest attributes by forest type. Even these Regional definitions provide ranges for a variety of attributes, and the task of identifying, mapping, and conserving "old-growth" and "mature" stands is addressed through locally developed Forest Plans. Whatever definition (or "universal definition framework") is adopted, the Forest Service and Bureau of Land Management should focus on identifying and "conserving" (through management) these lands through the land management planning processes required by law. We also object to the idea that a definition should "motivate" a specific management approach, even one as generic as "conservation." Definitions help define terms that then inform rational decision-making. For the Forest Service, this decision-making process is governed by the statutes mentioned above, which are implemented through the local planning process. It is not clear what the Forest Service means by a "universal definition

framework" in this context. A simple or "universal" definition of old-growth could be a simple age class - for instance, something between 100 and 200 years old. Even defining the age of a stand is a complex task - is the stand as old as the oldest dominant tree? Or is it as old as the median age of dominant trees? Many Western Forests have developed a dual-age stand structure due to fire exclusion. Many of the understory trees will be much younger than the dominant trees in those stands. If such a stand meets a "universal definition framework" as either "old-growth" or "mature," the land managers may find themselves unable to conduct any management, even that intended to reduce fire or insect threats to the dominant trees. Within one Region of the Forest Service, an effort to establish a "minimum stand age" to be considered old-growth was attempted. Due to the wide variety of forest types, elevations, climate regimes, disturbance regimes, and land ownership history, minimum stand ages spanned between 80 and 140 years.^{xviii} In another Region, the minimum age for "old-growth" varied by forest type by 200 years (100 years as the minimum for Aspen stands, 300 years for Bristlecone pine stands^{xix}). It is difficult to determine what a "universal framework" contributes to developing management strategies when there is significant variation in "old-growth" characteristics in just one region of the Forest Service. Age is a poor guide to what constitutes "old-growth." USDA recently noted that 56 million acres of the National Forest System are forests older than 100 years old, while 11 million acres are older than 200 years old^{xx}. The memo notes that "the majority of these forests are in Congressionally or administratively designated areas designed to protect and preserve their natural values," and that "all national forests currently protect or limit management actions in old-growth stands through forest specific land management plan components or by specific Secretarial direction." A "universal definition framework" does nothing to make this task easier for forest managers, and thus doesn't forward the "cause" of conserving these forests (unless one's objective is merely to map acres above a certain age class with an eye towards eventually prohibiting any timber management thereon, which is likely what is motivating this effort to begin with). One definition of old-growth or mature forests cannot adequately capture the wildly varied conditions under which our present forests developed. If the Forest Service and Bureau of Land Management settle on a simple age cut off, then about 30 percent of the National Forests is "old-growth" (using the 100-year-old figure from the Secretary's memorandum). This figure will include, possibly, Krumholtz growing near tree line on the Pisgah-Nantahala to remnant cove hardwoods on the Monongahela National Forest. These ecosystems have very little in common, except that one could conceivably visit them within the space of a week. If the agencies instead rely on a definition that is based on tree sizes, they will instead eliminate acres that are in fact very old, but which lack what one Forest Service study refers to as "old growthness." Large Douglas Firs growing on productive sites in the Pacific Northwest will be much larger than scraggly oaks growing on a cliff face in the George Washington National Forest, even if the trees themselves are the same age. A definition of "old-growth" and "mature forests" that relies on subjective judgments and ability to discern "old-growthness" amounts to either a Potter Stewart standard ("I know it when I see it^{xxi}"), or what could be called the Great Pumpkin standard (where the Great Pumpkin selects which pumpkin patch to appear in based on its "sincerity^{xxii}"). Neither is useful for forest managers. Forest Service efforts to define "old-growth" on a regional basis have emphasized the inapplicability of one region's definition of "old-growth" to other regions with different climates, geological history and soil development, disturbance regimes, insect pathogens, etc.^{xxiii} In 1989, then-Chief Dale Robertson issued a "position" on "old-growth" which characterized them as "ecosystems distinguished by old trees and related structural attributes. Old-growth encompasses the later stages of stand development that typically differ from earlier stages in a variety of characteristics which may include tree size, accumulation of large wood material, number of canopy layers, species composition, and ecosystem function." This position seems to describe more the climax phase of Douglas fir forests in the Pacific Northwest than a "universal definition framework." Each Region was tasked, following the 1989 position, with developing "Guidance for Conserving and Restoring Old-Growth Forest Communities on National Forests." Even at the Regional level, this effort has proven complex. In the Forest Service Southern Region, for instance, the Forest Service noted that "Sixteen old growth forest community types have the potential of occurring on southern national forest lands," ranging from spruce-fir forests at higher elevations to humid, subtropical pine flatwoods along the Coastal Plain. Regionally rare subalpine spruce forests could be characterized by numerous, very old, but very small trees (due to poor sites, shallow soils, short growing seasons, and high winds), where lower elevation forests on better sites, but with similar stand establishment dates, could be characterized by large trees, multi-layered canopies, with broken and "decadent"

trees^{xxiv}. Any effort to sort and sift the "old-growth" values on these wildly disparate forest types is entirely subjective and is inherently unrepeatable across the 193-Million-Acre National Forest System. Examples of "old-growth" identified by outside advocacy groups illustrate the complexity of defining old-growth and mature forests, even in a "universal definition framework." For instance, the Old-Growth Forest Network says that the Belfast Creek/Devil's Marble Yard area in the George Washington-Thomas Jefferson National Forest in Virginia is characterized by both "tall straight cove hardwoods" along creeks and "gnarly Chestnut oak" along drier ridges^{xxv}. While forest stands on both the cove bottoms and the drier ridges may have similar stand initiation dates, they are otherwise extraordinarily dissimilar, with one being characterized by tall, straight trees and the other by stunted, "gnarly" trees, that, despite being at least 100 years old, are less than 10 inches in diameter. As to what "motivates mature and old-growth forest conservation", FFRC questions the legal basis of this as an objective for the National Forest System. The Executive Order makes some nods towards "climate smart" forestry as the basis for this effort, but the Forest Service itself acknowledges that timber management can increase overall carbon sequestration and storage^{xxviii}, suggesting that active ^{xxvi}. Numerous studies have shown that management - including harvest - is the best way to maximize carbon sequestration on forest lands. Other research has shown that insect and disease disturbances significantly reduce forest carbon sequestration in U.S. forests^{xxvii}, rather than preservation or further "conservation," is required for all forest types and successional stages. At most, then, any "universal definition framework" should direct each National Forest to rely on site-specific information, provided through Regional definitions, and allow management strategies to be developed through the existing Forest Planning process. What are the overarching old-growth and mature forest characteristics that belong in a definition framework? There are no "overarching old-growth and mature forest characteristics" that are applicable across a 193-million-acre National Forest System that spans humid, subtropical pine flatwoods in the Florida Panhandle to Boreal forests in the Lake States, to arid pine forests in the Mountain West, to temperate rain forests in the Pacific Northwest and Alaska. A search of the term "old growth definition" on the Forest Service's Research Portal (Treesearch) yields 11,217 different results^{xxix}. Limiting search results to publications in the last decade cuts that tally down to "just" 4,000 different publications. One Forest Service and Bureau of Land Management webpage^{xxx} lists definitions of old-growth forests, as well as research publications on the topic. There are 24 separate definitions, nearly all of which only apply to old-growth and mature forests in the Pacific Northwest. In California alone, there are differing definitions of old-growth for:

- * Coastal Redwoods
- * Mixed Conifers
- * White Fir
- * Douglas Fir/Tanoak/Madrone
- * Pacific Douglas Fir
- * Mixed Subalpine
- * Jeffery Pine
- * Ponderosa Pine
- * Lodgepole Pine
- * Red Fir
- * Ponderosa Pine (Northeast California)

When the Eastern Region (Region 9) of the Forest Service was tasked with developing an "old-growth" definition, they concluded that "there is no consensus on the concept of old-growth", noting that there were at least ten different definitions in the scientific literature at that time, each specific to a unique forest type. The region went on to describe nine different forest types (out of the 68 distinct forest cover types found in the Eastern Region) that they considered to reach "old-growth" conditions. The researchers suggest that old-growth can be defined by three main factors: age of stand; lack of human disturbance (e.g. few stumps. no recent entry for thinning or harvesting. no grazing); and lack of catastrophic natural disturbance. Even with these broad criteria, the Region 9 report found that "old-growth" types varied widely along a number of variables, including the role of disturbance in stand initiation and development: Beech-Maple-Basswood forests were characterized as having "disturbances that are frequent but of low intensity, often forming single- or small multiple-tree gaps" whereas "old-growth" Northern Pine Forests resulted from "large-scale fires" centuries prior to European settlement. This research paper seems to conclude that only forest types that tend to grow larger trees achieve "old growthness."^{xxxi} Even

this effort at defining "old-growth" for just one region of the Forest Service did not claim to be evaluating every forest type present on the National Forests in that one region. This variability in old growth characteristics was not restricted to the Eastern Region. The Rocky Mountain Region (Region 2), with relatively less complex forest types and fewer ecozones, developed descriptions of "old-growth" for 8 forest types, each with four numeric minimum criteria: The minimum size (DBH) of the dominant trees, the number of trees per acre, the minimum age, and the number of standing dead trees. Among the forest types, the minimum size varied by more than 44 percent (from 10 inches to 18 inches DBH), the number of trees per acre varied by a factor of three (from 10 to 30 trees per acre), while the minimum age varied by 100 years (from 100 to 200 years minimum). Only the number of standing dead trees per acre (ten) was consistent across the eight forest types. Other, less quantifiable characteristics included the presence of pathogens and the lack of vigorous growth. The Region's "old-growth" coordinator noted that two of the forest types (Lodgepole Pine and Aspen) were considered "seral" and would be unlikely to remain stable for long periods of time due to natural disturbance. The region's description of old growth types noted that for some species "little old-growth remains," and that "it will take active management to return existing stands to an old-growth condition," and that in many of the remaining stands "a dense understory of younger trees has developed due to the absence of fire," saying these stands are now "dramatically different from what existed prior to the 1870's."^{xxxii} This once again highlights the need to avoid simple age cutoffs that prohibit management, allegedly in the service of "old-growth" conservation.

Likewise, Region 8 described "old-growth" on more than 18 different forest types, with variations in tree size (from 8 inches DBH to 30 inches DBH), basal area (varied by 400 percent, from 10 ft³ per acre to 40 ft³ per acre) and minimum ages ranging from 80 years (for slash pine) to 140 years^{xxxiii}. This level of variation is found within each regional "old-growth" definition or guidance developed by the Forest Service in response to Chief Robertson's direction. The passage of more than 30 years since that regional effort does not have reduced the complexity of defining (a sometime transitory) successional stage across 193 Million Acres of National Forests. There is no single management strategy - or even common "conservation" approach - which is appropriate to fire adapted forests and damp hardwood forests, regardless of their successional stage. Defining a successional stage, mapping it, and then determining not to cut any trees on those acres is not a successful forest carbon strategy. More than 37 Million Acres of National Forests have burned since the 2001 Roadless Rule was adopted, an area more than 7 times larger than the acres where any harvest has taken place^{xxxiv}. The fact is, in every state where the National Forests make up the majority of timberlands, forests are a net carbon source, due to mismanagement which yields high levels of mortality and fire^{xxxv}. Counting up the old trees - and having a national "definition" of "old-growth" - does nothing to improve this situation. Each National Forest has its own unique natural and human history, with differing ownership history, unique disturbance regimes (some of which have been greatly altered by human intervention, others of which are changing due to the impacts of a shifting climate, including anthropogenic climate change), and different management history. Some very old stands of trees on the National Forest system have developed on the poorest sites - due to low timber values, there was no incentive to cut, and in fact no market for, the trees growing there. The characteristics of "mature" forests on lands as diverse as sites with deep volcanic soils and high site indices and xeric cliff faces are so disparate as to lack any overarching characteristics. This level of diversity and complexity repeats itself and multiplies across the 193-Million-Acre National Forest System. Late successional, or "old-growth" (and certainly "mature") Longleaf stands on the Kisatchie National Forest are characterized by relatively few trees per acre, with an understory of wiregrass, palmetto, and young, naturally regenerating Longleaf pine trees. (see Fig. 1). These "mature" stands of Longleaf (like others found on the Southern Coastal plain, and like the Shortleaf Pine forests on the Ouachita National Forest in Arkansas), also experience frequent disturbances, from frequently occurring fires (now intentionally set as a management practice) to stochastic events such as windthrow and breakage from tornadoes and hurricanes^{xxxvi}. By contrast, some forest types are impossible to "conserve" at a stage of "maturity." Both Jack Pine^{xxxvii} and xlviii. If these stands are not managed, they will be succeeded by other species. While those succeeding forests may eventually reach (found on the Ottawa National Forest in Michigan) and most stands of Quaking Aspen and Big Tooth Aspen (found throughout the Lake States and at certain elevations in the Mountain West) are short-lived species, requiring natural disturbance or harvest to perpetuate them "old-growth" or "maturity," there is no particular conservation benefit to them as they replaced an early seral forest type with unique ecosystem benefits, habitat types, and other, beneficial attributes (like rapid carbon

sequestration). The benefits of early seral forest types - like the benefits of older, mature forests - are easily identified through Forest Plans, and can be conserved and managed through that local process. In fact, when one evaluates current Forest Plan objectives, Eastern National Forests frequently have the most difficulty meeting their plan objectives for early seral - i.e. - young - forests, not "old-growth" and "mature forests." A 2015 study conducted by our organization found that for National Forests in Regions 8 and 9, they were only accomplishing one third of the early seral habitat goals identified in the Forest Plan.^{xxxix} Overall regeneration harvest on the National Forest System has declined by more than 90 percent since 1990^{xl}, strongly suggesting that the vast majority of acres on the National Forest System (at least those not burned in catastrophic wildfires) are evolving into "maturity", if not "old-growth" status. FIGURE: page 17 of 25 - (Figure 1: Mature Longleaf Stand, Kisatchie National Forest, USDA Forest Service Photo). FIGURE: page 18 of 25 - (Figure 2: Overmature Aspen Stand, Gunflint Ranger District, Superior National Forest, Photo by Minnesota Forest Industries, 2013) FIGURE: page 19 of 25 - (Figure 3: Mature or "old-growth" Sitka Spruce on the Tongass National Forest in Alaska) How can a definition reflect changes based on disturbance and variation in forest type/composition, climate, site productivity and geographic region? It's not clear how a definition can reflect, in any meaningful way, the diversity of conditions found even on one National Forest, much less across the entire estate of 193 million acres of National Forests, and millions of acres of Bureau of Land Management forests. Consider just one aspect of the conditions in which forests grow, develop, and change over time: elevation. The elevations on the Willamette National Forest in Oregon, for instance, range from just over 1,500 feet to over 10,500 feet^{xli}. Even absent climate change or natural variation, forest stands on this one unit experience temperature variation of up to 17.5 degrees Celsius, based solely on elevation, not to mention varying site indices, slopes, and other factors. Such variations of elevation - which is correlated with temperature, soil depth, site index, and likelihood of disturbance - is typical on NFS units in the West, where elevations frequently vary by at least this much. In the east, NFS unit elevations varies by 3,000 to 5,000 feet, which produces similar, but less dramatic variation in stand types, stand establishment dates, site indices, and other factors. Differences in elevation are just one aspect forest establishment and development. Numerous other factors make it nearly impossible to identify commonalities in forest type/composition, climate, site productivity and geography. On one relatively small NFS Unit (the George Washington National Forest in Virginia) the Nature Conservancy identified 24 different "ecological zones" and 15 different Ecological Systems^{xlii}. The forests now growing on the George Washington National Forest are the result of extensive prior land use changes: from the time of European settlement to the present day. Most of the area was clearcut for timber, tanbark, or charcoal, and then was farmed or grazed in an arguably unsustainable way prior to being proclaimed a National Forest in 1936. What are now 86-year-old mixed hardwood stands were, in recent history, eroded clearcuts, small scale farms, or pasture. If allowed to continue maturing, many of these forests would develop into different forest types. The land management practices which set the stage for these forests (widespread clearcutting, subsistence farming, followed by forest establishment) would be largely unacceptable today. Establishing a management direction for this forest, which supports a great deal of recreational activity, is not facilitated by having a universal framework definition of "old-growth" or "mature" forests. There is some evidence that some forest types are actually more susceptible to disturbances when they have reached "maturity." The DeSoto National Forest, for instance, noted that wind damage from Hurricane Katrina was concentrated "predominantly in the older, larger sized trees" which they said were "over 31 years old."^{xliii} "Mature" Jack Pine (probably less than 80 years old) was damaged by a July 19, 2019 windstorm on the Chequamegon-Nicolet National Forest^{xliv} in Wisconsin. In order to recreate the type of habitat favored by the endangered Kirtland's Warbler, the Forest Service proposed salvaging this mature timber to ensure stand regeneration to the favored habitat type for this species. Similarly, a July 2, 2012 windstorm on the Chippewa National Forest in Minnesota saw damage disproportionately in the older (80-years or older) stands, with this one day event destroying about 10 percent of this age class on the forest.^{xlv} The Forest Service must recognize that disturbance events are predictable and will occur across the National Forest System. These disturbance events - whether wind, fire, ice storm, or other events, will change forest structure, often resetting the forest succession process to zero in one day or even a few hours. It is not clear how any definition of "old-growth" or "mature" forests helps the Forest Service deal with events like this. Moreover, it is even less clear how an inventory of such stands helps, outside of the context of a forest plan or a targeted forest restoration effort. Allowing a single definition to lead to the mapping of "no touch zones" will simply rob the Forest Service of the ability to react to

disturbance events. The Forest Service and Bureau of Land Management have made no compelling case that one type of "mature" or "old-growth" forests - say one with high site indices and currently hosting a long-lived forest vegetation community - is superior to a forest at another stage of development. As previously noted, for many forest types, late successional forest development is a transitory stage - soon to be replaced by an early successional phase due to management or natural disturbance, or transition to a different forest type. In the case of areas burned in severe wildfires, failure to actively control competing vegetation is leading, in many areas, to conversion of (formerly mature) forests to brush fields. Thus, a definition and any subsequent inventory and mapping exercise will - at most - capture a "snapshot" of a particular stage of forest development. Having one definition, rather than examining the relative amount of older and mature forests versus other stages of forest development during the Forest Plan revision process, does not provide clearer information about the state of our forests, nor does it provide a guide to future management. How can a definition be durable but also accommodate and reflect changes in climate and forest composition? Any "durable" definition of "old-growth" or "mature" forests would be so general as to be useless in guiding management efforts. As noted, (repeatedly) above, there is so much variation in the late successional forest types (including many which are eventually succeeded by other forest types), that a single definition is neither useful nor durable. Some mature forests can be maintained in preferred states for some period of time through active management, such as "mature" stands of Longleaf and Shortleaf pine. However, this management must eventually include harvest, including the harvest of mature trees, both to help maintain stand structures favored by sensitive species (like the Red Cockaded Woodpecker and Gopher Tortoise), and to reinitiate new stands through regeneration harvest. A definition that is specific enough to identify stands favored by activists who oppose management is going to be too strict to allow adaptive management, which is increasingly necessary to help forests adapt to a changing climate. What, if any, forest characteristics should a definition exclude? FFRC views this entire exercise as an effort to identify an additional tranche of National Forests and Bureau of Land Management forest lands on which timber harvest is further limited or entirely prohibited. Given that more than half the National Forest System is already in extremely restrictive land uses (designated Wilderness Areas, Wild & Scenic River Corridors, and Inventoried Roadless Areas), we do not view development of a "universal definition framework" as a useful exercise. However, at a minimum, the current Forest Plans must provide some guidance on which acres are intended to be unmanaged versus those intended to be managed for timber pursuant to binding Federal law. Acres identified as "suitable for timber production", including "matrix" lands identified in the Northwest Forest Plan, should not be considered as "reserve" areas for either current or future "old-growth" or "mature" forests. Forest types which are regarded as "seral" (i.e. - likely to slowly type convert to other forest types, or other cover types entirely) should also be excluded from any "universal definition framework." Aspen, lodgepole pine, jack pine, and most Southern Yellow Pine species are regarded as seral species that will slowly convert absent disturbance. Douglas Fir sometimes regenerates in catastrophic events as well. While we do not regard anything about this process as useful, the Forest Service must acknowledge that highly disturbance dependent species are not going to remain in an "old-growth" (or even "old-growthness") condition indefinitely. Finally, at the risk of being overly repetitive, the current Forest Planning process is the proper venue to evaluate the status of "old-growth" or "mature" forests, identifying where such stands exist, and adopting site-specific management strategies that are consistent with Federal law. Conclusion: We appreciate the opportunity to provide these comments on the Request for Information. However, we reiterate that this entire effort is a distraction from the mission Congress has identified as the Forest Service's top priority: Confronting the deadly and dangerous buildup of hazardous fuels that is fueling what the Forest Service itself calls a "wildfire crisis." In the 10-year strategy Congress demanded of the Forest Service, the agency notes that many of its acres have "become dense forests with hundreds of trees per acre.^{xlvi}" The Forest Service must not adopt an unscientific, simplistic age or diameter cut-off for defining "old-growth" or "maturity." Any arbitrary limit based on tree (or stand) age or diameters will simply make it impossible for the agency to enact the 10-year strategy it just promulgated, or to comply with the corpus of law identified above. In less fire prone forests, establishing age or diameter limits for harvest will either ensure that no tree will live longer than that age, or, more likely, that forest stands will "age out" of management. Such a management approach is not based on sound science, doesn't comport with existing forest management laws, and ensures that the National Forests and Bureau of Land Management forests will continue to deliver poor carbon, climate, and environmental outcomes for the American people. FOOTNOTES: i

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