

My name is Timm Martin, age 58. I have lived in Kentucky more than half my life, and though I still have my Wisconsin accent, I consider myself a Kentuckian. My wife Theresa and I live on 350 acres at the head of Little Wolf Creek, in the east section of the Jellico Mountain Project area, sharing 2.5 miles of boundary with the Daniel Boone National Forest. My wife and I have been blessed to have visited over 150 national, state, and local parks, forests, monuments, and recreation areas. Thus, we have developed a deep love and understanding of our nation's public lands, how they are managed, and how they benefit humans and wildlife. We've traveled all over the USA and Canada, and Jellico Mountains are one of the prettiest places we've been, and one of the main reasons we chose to live here.

### CONCERNS ABOUT THE PROPOSED JELICO PROJECT

I am not anti-logging, on the contrary, I believe that some forest management is needed in the Jellico Mountains. I understand that selective logging and other treatments — when done in a balanced way in the right places with follow-up care — can improve forest health, reduce fire danger, and remove unwanted species.

However, I am concerned with the size and scope of the Jellico Project by the United States Forest Service (USFS), the project's impact on old-growth trees and wildlife, over 5,000 acres effectively being clearcut, and herbicide use. I am also worried about the potential for erosion, landslides, flooding, poor water quality, noise, truck traffic, harm to our honeybees and ducks, harm to endangered species, increased invasive and unwanted species, loss of biodiversity, and the heavy focus on resource extraction instead of recreation in the Jellico Mountains.

I explore my concerns deeper in the following pages and propose an alternative. This is not an academic paper, more like a collection of my thoughts and research, and I try to provide proper attribution but may not be perfect. I ran out of time, so my apologies for any mistakes. Since there is a lot of detail here, I've highlighted my questions and recommendations to make it easier for the USFS to respond.

### THE JELICO MOUNTAINS

Jellico Mountain is a 2,126-foot peak rising above Jellico Creek Road in Whitley County, Kentucky. There is another slightly taller Jellico Mountain just across the border in Tennessee. The Jellico Mountains are foothills of the Cumberland Mountains in the southeast section of the Appalachians. With a relief topping 1,200 feet from creek to peak, the Jellicos are more mountainous than the rest of the Daniel Boone National Forest in which they sit. The ridgetops comprise the national forest, and the valleys are mostly larger tracts of private property, vacant and forested, or cleared for housing and family farming.

The Jellico Mountains nearly qualify as temperate rainforest, with more than 50" of annual precipitation and a comfortably warm average high temp of 66F. ((Reference Footnote 1)) There are occasional droughts, but wet is the normal state, and mold is a near-constant rival. Perhaps half of all mornings begin with the Jellico Mountains dripping in dew and enshrouded in mist, which sometimes burns off in the rising sun, and other times keeps us socked in thick fog past noon.

The relatively warm and wet environment means the Jellico Mountains are teeming with wildlife, birds, amphibians, reptiles, insects, waterfalls, streams, trees, bushes, plants, flowers, lichen, fungi, and moss

everywhere on everything. These riches of natural resources provide critical habitat and food for a wide diversity of wildlife, and several threatened and endangered species. The Jellico Project area holds nearly 1,300 acres of forest that could qualify as secondary old growth over 130 years old, but much of this older forest isn't protected in the official "Designated Old Growth" area. ((2))

>> Please see the attached PDF for photos of the beautiful Jellico Mountains. <<

Resource extraction has already inflicted a heavy toll on the Jellicos. Nearly 2,700 acres were logged in the 1980s and 90s. In 2011, the USFS and Bureau of Land Management (BLM) leased over 3,800 acres for oil and gas development. ((2)) And legacy impacts from coal mining that started in 1882 and lasted for a century ((3)), along with significant problems with invasive and unwanted plant species, add to the challenges of restoring and protecting this unique area.

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\* PROPOSED ALTERNATIVE

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SUMMARY

The Jellico Mountains are a special place. Let's aim higher and do something special here.

JELICO MOUNTAINS NATIONAL RECREATION AREA

Recommendation 1> Establish a national recreation area (NRA) in the Jellico Mountains. The NRA would feature hiking, camping, glamping, cabin lodging, rock climbing, gun and bow hunting, fishing, gathering, sightseeing, organized car tours, Jeep Jamborees, country store, open air shows, playground, museum, and historical places like the Wolf Knob Fire Tower. The NRA would be managed by the United States Forest Service on existing national forest land, and possibly include donated and purchased private land.

WILLIAMSBURG-CORBIN-LONDON-PINE KNOT-JELICO: THE NEW MOAB, KENTUCKY STYLE

"Moab is Utah's adventure epicenter — a place where world-renowned natural destinations are scattered around a town that's brimming with local charm." ((4))

The small towns around the Jellico Mountains already have local charm, we just need some business. A young, healthy crowd with money to spend on outdoor recreation will also spend lots of money on food, drink, groceries, lodging, entertainment, activities, fuel, clothing, equipment, tech, toys, gifts, souvenirs, auto repair, paddle boats, bungee jumping, zip lining, guides, services, and more.

No doubt Moab has something going for it: the nearby awe-inspiring Canyonlands and Arches national parks. That's why they call Moab, "A World Famous Slickrock Playground."

But that's not really our vibe. Southern Kentucky along the I-75 corridor is more laid back and down-to-Earth, but hip in our own way. And this area has a lot going for it too: Cumberland Falls State Resort Park, Big South Fork NRR and Scenic Railroad, Cumberland River State Park, Laurel River Lake, Pine Mountain, Copperhead Trail, and hopefully someday, the Jellico Mountains NRA. And don't forget the Original Kentucky Fried Chicken! The nearly complete KY-92 ties east and west together. And Jellico Mountains NRA could be the glue that binds together all these towns and great outdoor playgrounds.

There are many businesses in the area catering to recreation, like the new Mint Gaming Hall, Kentucky Splash Waterpark, Corbin Arena, The Great Escape, Main Street in Corbin, and the burgeoning Main Street in Williamsburg. All these businesses would benefit from an increase in customers coming to the area for outdoor recreation, which would likely encourage more attractions to the area.

### NATIONAL RECREATION AREA

A national recreation area is a protected area in the United States established by an Act of Congress to preserve enhanced recreational opportunities in places with significant natural and scenic resources. ((5)) There are 40 NRAs in the U.S., including 22 managed by the USFS. ((6)) Due to their size, diversity of activities, and proximity to population centers, NRAs are among the most visited units of the National Park System.

### WHY NOT A...?

1. National Monument – Although some National Monuments allow hunting and fishing, it's better to leave the Jellico Mountains under the USFS with its multiuse mandate.
2. National Park – No hunting, fishing, or gathering allowed, as it should be in those places. But the Jellico Mountains have been “working mountains” for centuries and should continue in that role, but with a shift toward recreation and preservation.
3. National Forest (no change) – I asked an ex-forester if the USFS truly balanced recreation and extraction in the Daniel Boone. He said yes, but Red River Gorge is the recreation, and Jellico Mountains are the crop.

The Jellico Mountains and their human and wildlife residents deserve better. Humans can benefit from a new outdoor playground, jobs in the surrounding communities, and cleaner water and air. Wildlife can benefit from a healthy, balanced, and intact natural ecosystem.

### WHAT ABOUT THE PROPOSED LOGGING?

Even if the focus shifts to recreation, the national forest in the Jellico Project area still needs management. But a focus on recreation instead of extraction would likely result in less clearcut and more selective cutting, and fewer treatments overall.

Recommendation 2> The USFS should re-evaluate its Jellico Plan with a focus on recreation and the ongoing health of the forest.

**BENEFITS TO LOCAL COMMUNITIES – FROM THE PROPOSED LOGGING TREATMENTS**

In the Jellico Project town meeting in Whitley County on November 17 ((7)), the USFS stated that revenue derived from logging Jellico Mountains would go into the United States Treasury. Kentucky is the 5th most dependent state on federal funding ((8)), so perhaps this is a good deal for the area. But sharing with 49 other states means Kentucky and specifically Whitley and McCreary counties will see pennies on the dollar in exchange for our trees, creeks, peace, and views. As for direct economic benefits, the USFS said that loggers who live out of town would likely seek accommodations in the area on weekdays, eat in local restaurants, and shop at local stores.

**BENEFITS TO LOCAL COMMUNITIES – FROM OUTDOOR RECREATION**

Outdoor recreation is one of the most effective means to improve the economy in rural communities. “Outdoor activities are increasingly popular across the United States. Recognizing this trend, many communities are seeking to grow their outdoor recreation and tourism economy, invest in their Main Streets, and conserve forests and other natural lands. Encouraging growth on Main Streets and in existing neighborhoods while promoting outdoor recreation can help foster community revitalization, protect air and water quality, create jobs, support economic growth and diversification, and offer new opportunities for people to connect with the natural world.” ((9))

More than 140 million Americans make outdoor recreation a priority in their lives. The outdoor recreation economy in the U.S. directly generates \$646 billion in annual consumer spending. Outdoor product sales account for \$121 billion of that spending and may not help local communities much, but the remaining HALF A TRILLION DOLLARS in travel-related spending is a huge economic boost for destination communities. ((10)) This spending includes food, drink, transportation, lodging, entertainment, activities, souvenirs, and gifts, which total 2.0% of the gross domestic product (GDP) of Kentucky in 2021, slightly above the 1.9% of GDP generated nationwide. ((11))

Outdoor recreation also puts Americans to work. Advancements in outdoor equipment, apparel, and footwear create demand for highly skilled workers in areas like technology, product design, manufacturing, and sustainability. When people play outside, their spending directly supports professions like guides, outfitters, hoteliers, restaurant owners, managers, cooks, servers, cleaners, park rangers, concessionaires, small business owners, and more. In total, 6.1 million American jobs are directly dependent on outdoor recreation, making it one of the largest employment sectors in the United States. ((10))

Federal protection for natural lands has been proven to jumpstart surrounding rural economies. Between 1970 and 2010, western rural counties with more than 30% of their land under federal protection increased jobs at a rate four times faster than rural counties with no federally protected lands. ((12)) While our local community would surely appreciate business from loggers, occasional business from dozens of loggers would be a drop in the bucket compared to the constant, steady stream of outdoor enthusiasts flocking to our community to enjoy outdoor recreation.

BENEFITS TO LOCAL COMMUNITIES – FROM THE PROPOSED JELICO MOUNTAINS NRA

With the proposed Jellico Mountains NRA nearby, local businesses in Williamsburg, Corbin, London, Pine Knot, and Jellico will benefit from a steady flow of customers ready to spend. Residents will benefit from the supply of good jobs and increased standard of living in the community. Communities will benefit from the abundance of clean water and air from the surrounding forest.

Recommendation 3> Establish a task force with local business leaders and residents to advance the formation of Jellico Mountains NRA.

COSTS TO LOCAL COMMUNITIES – OF A NATIONAL RECREATION AREA

More people and more money flowing into an area isn't always a good thing. With the good comes some bad, including crime and traffic. Drugs and petty crime are already a problem in our rural communities. The Jellico Mountains NRA and surrounding towns would need to be properly staffed with security personnel and law enforcement. The Jellico Mountains would need to have the reputation that you feel safe to leave your car parked along the road or in a lot, and then go remote camping overnight in the mountains with your family.

PRIVATE LAND

National land in the Jellico Mountains is beautiful, but it's mostly along the ridgetops. Much of the valleys in the Jellico Mountains are private property. For Jellico Mountains NRA to fulfill its natural and recreational potential, it should contain the entire ecosystem, which means ridges and valleys too.

There are many large tracts of vacant private property in the Jellico Mountains, including thousands of acres owned by a large university that shall remain nameless, but which has already very generously donated large tracts land for preservation, so maybe they would do so again. Also, perhaps some of the large private landowners would be willing to donate or sell their vacant land to a national recreation area to benefit the local community.

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\* CONCERNS ABOUT THE JELICO PROJECT

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The remainder of this document shares my concerns about the Jellico Project as proposed. My apologies for its length, but I have a lot to say about this. And I make these comments with all due respect to the U.S. Forest Service, who I believe does a good job managing our national forests, even if I don't always agree with their priorities and methods. The Stearns District Forest Service people have been terrific to work with. We thank them for their cooperation and look forward to continuing to work with them to make the Jellico Project the best it can be.

### JELICO PROJECT

The USFS is planning a large project of logging, spraying, and road work over the next 40 years through the year 2063. Treatments would occur on 9,800 acres (15.3 square miles) across 256 stands in the Jellico Mountains of Daniel Boone National Forest in southern Kentucky.

The proposed five main treatment methods are: Clearcut 1,016 acres; Two Aged Shelterwood 1,869 acres; Deferment Harvest 2,462 acres; Midstory Removal 524 acres; and Commercial Thinning 4,449 acres. Two Aged Shelterwood and Deferment Harvest are effectively clearcut with reserves, so that means a total of 5,347 acres of effective clearcut. Midstory Removal calls for herbicide use. Invasive species like Tree of Heaven, along with supposedly unwanted species like grapevines and red maples, will be removed, also requiring herbicides. Salvage operations will remove damaged, dying, and dead trees.

Question 1> Does the USFS have time-lapse photos showing prior examples of the five proposed treatment methods, from before treatment, immediately after treatment, and perhaps at five-year intervals for twenty years?

### ECOSYSTEM

The Forest Service's project plan ((13)) says most of the Jellico Project area is trending towards mature forest. "While desired structures, species compositions, and age classes occur in mature forest, the biodiversity provided by young (0-30 years old) and mid-aged (31-80 years old) forest is being lost." The Jellico Project is to "counteract this loss and increase project area biodiversity by providing a mix of habitat for flora and fauna."

Question 2> Is the USFS evaluating the "desired structures, species compositions, and age classes" just within the Jellico Project area, or within the entire ecosystem surrounding the forest? Did the USFS consider that a large portion of surrounding private land has been logged, and is now paved, meadow, or immature forest?

### 30 BY 30

The Global Deal for Nature (GDN) is a time-bound, science-driven plan proposed by scientists to save the abundance and diversity of life on Earth. GDN sets a global goal of preserving 30% of lands and waters by the year 2030, known as "30 by 30" or 30x30. The intent is to avoid catastrophic climate change, conserve species, and secure essential ecosystem services. ((14))

In 2021, the White House launched 30x30 as the "America the Beautiful" initiative, a nationwide conservation goal to conserve 30% of U.S. lands and waters by 2030. The initiative calls for a "decade-long effort to support locally led and voluntary conservation and restoration efforts across public, private, and Tribal lands and waters in order to create jobs and strengthen the economy's foundation; tackle the climate and nature crises; and address inequitable access to the outdoors." ((15))

According to the U.S. Geological Survey's Protected Area Database of the United States (PAD-US), 320 million acres or 14.2% of U.S. land and only 1.4% of Kentucky land is currently protected. PAD-US

defines four levels of protective status, known as Gap Analysis Project (GAP) status codes. GAP 1 and 2 are the highest levels of protection and include areas “having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a natural state.” This includes wilderness areas, national parks, national wildlife refuges, state parks, and designated old growth areas in national forests, and is what comprises the 14.2% protected. Lands with extractive uses like timber harvesting, mining, livestock grazing, and oil and gas production, or that allow off-road vehicle use, are classified as GAP 3, and are not considered as protected. ((16))

The federal government manages 86% of the 320 million protected acres, and states manage 11%. The other 3% is managed by local governments, Native American tribes, nongovernmental organizations like Nature Conservancy and Kentucky Natural Lands Trust, and private landowners. ((16))

U.S. Fish & Wildlife Service manages 39% of federal protected lands, National Park Service manages 28%, and the USFS and BLM manage the rest. USFS has designated much of its land for multi-use recreation and resource extraction, such as 96 million acres of national forest marked for timber production, including most of the Jellico Mountains. ((16))

If the USFS and BLM redesignated all its GAP 3 lands as GAP 1 or 2, the United States would instantly reach its 30x30 goal. That’s unrealistic, of course, but protecting more of the national forest is certainly feasible. ((16)) Three-quarters of mature and old-growth forests (MOG) on federal land are vulnerable to logging. ((17))

Question 3> What is the USFS Stearns District doing to comply with the “America the Beautiful” initiative?

Recommendation 4> The USFS should preserve more mature and old growth forest in the Jellico Mountains.

Recommendation 5> There should be a comprehensive survey of large trees in the east section of the Jellico Project area where Kentucky Heartwood had identified old growth.

#### NATIONAL FOREST TIMBER HARVESTS

About 238 million acres or 30% of U.S. forestland is federally owned, 10% is owned by state and local governments, and 60% is privately owned. Some forests are dedicated to a single purpose like preservation, but many forests have multiple uses. In the U.S., 67% of forestland is used for production, 9% is preserved, and 24% are open, scrub, or urban forests. ((18)) The USFS itself manages 145 million acres of forest.

Congress has granted authority to the federal land management agencies to sell timber from the land each agency manages. The USFS and BLM together manage three-quarters of federal forest area and have sold an average of \$364 million worth of timber each year for the past three years. ((19)) The National Park Service (NPS) and Fish and Wildlife Service (FWS) rarely conduct timber sales. ((20))

The amount of timber harvested from federal lands rose to its peak of more than 12 billion board feet (BBF) per year in the 1980s and early '90s, coinciding with the 1986 U.S. peak in per capita consumption of wood products, driven by a spike in demand for new homes following a deep recession. Also at its



peak in 1986 was the amount of timber harvested from national forests: 13% of the U.S. total. Federal timber sales then fell substantially to below 3 BBF annually since the year 2000. Today, most timber harvested in the United States is from private lands. However, federal timber sales are still important to forest product businesses, particularly those located near forests managed by USFS and BLM. ((20))

The USFS is required by law to identify and remove from consideration for timber production all national forest lands that cannot be harvested legally due to executive orders or legislation, will be difficult to restock or damaging to harvest, are not forested, or have other desired conditions such as old growth. All other land in the national forest is considered suitable for timber production.

Question 4> What is the target volume of timber sales for the USFS nationwide? Are there specific targets for the Daniel Boone National Forest and Stearns District?

Question 5> What is the estimated gross and net income/cost per acre for the five types of prescribed treatments? One estimate is \$1000 timber value per acre, which seems low. ((21))

Question 6> Other than the designated old growth area along the Tennessee border, has the USFS excluded from production any other national forest land in the Jellico Mountains?

#### PROACTIVE, ONGOING FOREST MANAGEMENT

Forests are amazing self-regenerating, self-managing units. Trees drop leaves, nuts, and berries, which grow into new trees and become food for trees, plants, and wildlife. Natural disturbances like fire, wind blowdowns, insect infestations, and old age create new openings in the canopy and opportunities for new growth and sun-loving plants and animals. This natural cycle has proven itself over millions of years before humans arrived and, to a lesser extent, in wilderness areas and national parks today.

The problem is that humans have eliminated some disturbances like fire, while introducing many more disturbances like more larger fires, invasive trees and plants, invasive insects eating up the trees, deer and wild hogs eating up the ground cover, logging and road building, and climate change. ((22)) This means our “untouched forests” aren’t really untouched, and therefore don’t represent the natural forest or “what God intended.” We simulate the natural forest in wilderness areas and national parks, leaving them mostly untouched. But even in those areas, humans start fires and sometimes decide to stop fires because they threaten people or property. Which is the right thing to do as stewards of this planet and citizens of our country.

Another key issue of the “natural forest with human disturbances” that we have today, is that it may not represent what’s in the best interest of humans or even in the interest of the forest’s inhabitants. For example, foresters typically want more hardwoods like white oak than what might occur naturally, nearby residents don’t want invasive species growing unchecked, and deer and their hunters prefer ample cleared meadows.

So, what we have here is a “we broke it, we bought it” situation. Humans messed up the forest, so we have a responsibility to fix it. But humans like to be proactive, so instead of just fixing our mistakes, we want to “manage it” ongoing. Just like any car owner knows to keep their oil changed, fluids filled, and tires pumped. Keeping things well-maintained reduces the number and size of problems that occur. If the Jellico Mountains had been maintained all along, perhaps this new project would be a fraction its



size. When we possess something as valuable as a national forest, we need to manage it in a proactive and ongoing manner.

This doesn't mean we should chop down every tree in the national forest. Management should include large areas left untouched or lightly managed. This also doesn't imply we should actively manage our wilderness areas and national parks. Even though they are not perfectly natural and truly untouched by humans, they represent our best approximation of the natural world, and it's our responsibility to preserve them the best we can for future generations.

Recommendation 6> The USFS should manage the national forest proactively and ongoing, such that each district always has an active management plan, which can include limited or no treatments for some areas. One possible solution is "20 every 10," in other words, a 20-year plan updated every 10 years.

#### HABITAT FRAGMENTATION

Logging can cause habitat fragmentation ((23)) by changing large areas of forest from one habitat type to another. Species that thrive in mature forests will have to migrate to other areas, if possible, otherwise they'll have to adjust to conditions no longer compatible with their natural habitat needs. Many plants and animals will simply perish under the new conditions.

Each animal requires space to live, known as its "home range," which must be large enough to provide sufficient food, cover, and water to support the animal. Some species, like the goshawk, have large home ranges and therefore require large areas of contiguous forest. Heavily logged areas can also serve as barriers to wildlife travel. Many amphibians and reptiles have poor dispersal ability and are unable to travel far without tree cover. A clearcut forest or even a simple gravel road may mean death for a dispersing salamander. ((24))

Fragmenting larger forests into smaller forests increases the proportion of edge habitat, which increases the density of predators such as hawk, crow, raccoon, and opossum. These species prey upon small animals on the ground, and nesting eggs and chicks in trees. Edge habitat also increases the population of parasite species like the brown-headed cowbird, which lays its eggs in nests of other birds, which unwittingly raise cowbird chicks instead of their own species. ((24))

Predators and parasites cause problems especially for migratory forest songbirds, who travel all the way from Central and South America to breed. The songbirds expend so much time and energy migrating, they generally nest only once a year and lay fewer eggs than birds that live in the area year-round. Thus, migratory forest songbirds usually require large forest tracts so they can nest deep within the forest, far away from habitat edges, predators, and parasites. ((24))

Recommendation 7> The USFS should ensure that sizeable wildlife corridors are preserved during and after the Jellico Project. In other words, don't force wildlife to travel across heavily logged areas, without providing a way around cleared spaces.

Recommendation 8> The USFS should preserve a large, contiguous portion of the Jellico Mountains so it will develop into a contiguous, mature forest. Treatments in these preserved areas should be limited to removing invasive and undesired species.

Recommendation 9> Study the current state and feasibility of an east-west wildlife corridor, with animal bridges and tunnels crossing major thoroughfares, along the southern Kentucky and northern Tennessee border, from Pine Mountain, through Jellico Mountains NRA, to Big South Fork NRRRA.

### REDUCTION OF BIODIVERSITY

USFS logging operations often follow an even-aged management protocol. This reduces biodiversity in a forest by encouraging a plantation-like prescription to logged landscapes. A 2016 study ((25)) showed that 50% intensity logging, which removes half of all mature trees in a forest, retained biodiversity levels for most plant and animal species except birds and mycorrhizal fungi, whose biodiversity decreased. (Mycorrhizal fungi ((26)) improve the growth, nutrition, water absorption, and disease resistance of their host plants.) With 100% logging, which removes all mature trees, biodiversity decreases greatly across nearly all species.

Question 7> Will there be any studies to assess the biodiversity in the Jellico Mountains before and after 5,000 acres of clearcutting?

### TREE DISEASE

Logging increases the likelihood ((23)) of introducing and spreading lethal tree diseases. Stumps left behind after logging experience much higher infection rates than living trees. Logging debris left behind also invites disease and insect pests. Trees stressed by logging and disease are more susceptible to attack by bark beetles and other insects.

Question 8> What Best Management Practices (BMPs) does the USFS use to prevent the introduction and spread of tree diseases and pests?

### DISTURBED & COMPACTED SOIL

Logging machinery, vehicles, and operations disturb from 23% to over 70% of the soil in a logged area ((27)), compacting some areas while generating erosion and sedimentation in others. Soil compaction can last for decades ((23)) and restricts root growth; reduces nutrients, oxygen, and water available to vegetation; and has a significant detrimental effect on microorganisms found in the soil. Disturbed soils promote the establishment of invasive non-native plant species.

Question 9> What will the USFS do to minimize the effects of disturbed and compacted soil, especially in clearcut tracts?

### RUNOFF & EROSION

In a mature forest, surface runoff and soil erosion are generally low ((28)) because of the natural forest litter layered on the ground. Logged areas are far more likely to experience erosion, landslides, and sediment deposited in streams. Increased runoff from logging quadruples the erosive force ((27)) that

can carry up to 1000X more mass of sediment. Erosion reduces forest productivity by decreasing soil, water, and nutrients available to plants and wildlife.

Question 10> What will the USFS do to minimize the effects of runoff and erosion, especially in clearcut tracts?

### SEDIMENTATION

The concentrated nature of runoff from forest roads and snig-tracks, particularly on side slopes, makes it difficult to control sediments and deposit them in the forest before they reach streams. High concentrations of sediments can increase the transport of heavy metals, organics, and pathogens ((29)), which can harm aquatic ecosystems and contaminate drinking water sources in downstream communities. Sedimentation is most pronounced in the first few years following logging, but watersheds do not return to pre-harvest sediment levels for two decades. ((30)) Some endangered mussels and fish are especially sensitive to sedimentation. ((31))

I've heard from residents along Jellico Creek who had sediment problems in their drinking water and irrigation systems. Some blamed logging done on nearby private property.

Question 11> What will the USFS do to minimize the effects of sedimentation in our creeks?

### ALTERED STREAM FLOW

Roads, ditches, and newly created gullies can dramatically alter the paths of water flow ((23)) across the landscape, which in turn greatly affects the health of aquatic organisms. Increased sediments, temperature, and pH levels can decrease survival rates of many fish, amphibian, and invertebrate species. Logging can degrade spawning areas, reduce pool refuge habitat, and impede feeding visibility. Loss of water species negatively affects mammals, birds, and bats.

Question 12> What will the USFS do to minimize damage to our creeks? Will the USFS restore any creeks they happen to damage?

### REDUCED WATER QUALITY

Forests are the source for the highest quality and most sustainable water resources in the continental U.S., and many cities around the world (including Williamsburg, Kentucky) rely on water draining from protected forest areas. Forests in watersheds have been shown to drastically reduce the need for drinking-water treatment, thus reducing water costs for citizens and businesses.

Logging operations often negatively affect water quality. The severity of impact is determined by slope, geology, harvest type, equipment used, weather conditions during and after harvest, and use of Best Management Practices (BMPs). Typically, the impact of logging on water quality lasts only a few years after harvest, due in large part to the rapid natural re-vegetation of Midwestern and Eastern forests. However, there are few studies on the cumulative effects of past and ongoing timber harvesting on overall watershed health. ((32))

The U.S. Supreme Court ruled that EPA regulations on water pollution as mandated by the Clean Water Act do not apply to sediment and other pollution from logging operations, which is one of the biggest sources of water pollution in our country after agriculture. The problem is the Clean Water Act primarily deals with “point source” pollution, like a factory pipe dumping chemical waste directly into a river. Whereas the pollution from logging is often less concentrated and more dispersed, thereby not qualifying as a single point source. ((33))

Forest management can harm water quality by causing increased sedimentation, transport of dissolved organic carbon, soil and surface water acidification, sulfur and nitrogen pollutants, and the mobilization and methylation of mercury. Many species of fish, amphibians, and freshwater invertebrates are sensitive to changes in background water quality. ((34))

Recommendation 10> There should be water quality studies in the major creeks in the Jellico Project area before, during, and after harvesting operations.

### WATERSHED

In the east section of the Jellico Project area, Jackson Creek flows into Little Wolf Creek, which flows into Wolf Creek, into Clear Fork, and then into the Cumberland River, from which the city of Williamsburg pumps its water at a facility on Croley Bend Road. The Cumberland River generally flows east to west and drains 18,000 square miles of southern Kentucky and north-central Tennessee into the Ohio River. ((35))

In 2016, Kentucky’s Energy and Environment Cabinet recognized Williamsburg as having some of the state’s cleanest drinking water. ((36)) Most Kentucky water treatment plants pump water from a lake where turbidity levels (how clear the water is) remain relatively constant. However, turbidity levels in a river can change by the hour and are highly affected by pollution and runoff, making the award for clean water at Williamsburg even more special.

Note that water from the central and west sections of the Jellico Project area also flows into the Cumberland River, but downstream from the Williamsburg water source. This includes water from Jellico Creek, Ryans Creek, Rock Creek, Hayes Creek, Osborn Creek, and Marsh Creek.

Question 13> Did the USFS consider the Wolf Creek-Clear Fork watershed when planning the Jellico Project?

### FORESTS TO FAUCETS

The USFS Forests to Faucets 2.0 Assessment uses Geographic Information Systems (GIS) to determine the relative importance of small watersheds to surface drinking water. It identifies areas that 1) supply surface drinking water, 2) have consumer demand for this water, and 3) are facing significant threats. ((37))

For the Wolf Creek-Clear Fork watershed, the Forests to Faucets Assessment shows that 80% of the water is used for public supply, 11% for mining, 5% for domestic use, and 4% for livestock, aquaculture, and irrigation.

The Forests to Faucets Assessment uses indices normalized on a scale of 0 to 100 to compare watersheds. For example, values between 90-100 represent the top 10% of all watersheds in the U.S., and values between 0-10 represent the bottom 10%.

The Importance to Surface Drinking Water Index (IMP) is an estimated value combining average annual runoff, population, and water intake, where 0 is not important, and 100 is very important. ((38)) IMP for the Wolf Creek watershed is 81 out of 100.

The Ability to Produce Clean Water Index (APCW) is an estimated value combining the percentage of natural cover, percentage of agricultural land, percentage of impervious surface, percentage of riparian natural cover, and average annual runoff. APCW for the Wolf Creek watershed is 58.

Combining IMP and APCW indices with potential threats produced a THREAT index for each. The Wolf Creek watershed has a THREAT index of 56 for wildfire, 41 for insects and disease, and 94 for water yield decrease due to climate change.

The Land Use Change (LUC) Index estimates how climate change and increased population will put pressure on a watershed. LUC for the Wolf Creek watershed is 92.

This means the Jellico Project watershed (for the east section, at least) is very important to public water, mining, and agriculture, and is under future threat from population and climate change.

Question 14> Does the USFS have any obligation to notify nearby water collection plants of the proposed logging?

Question 15> What will the USFS do to ensure the waterways in the Jellico Mountains are not disturbed or polluted during treatments?

### FLOODING

Mature forests hold and use more water than young forests, farms, and meadows. Leaves on trees catch rainwater, causing some to evaporate, while the rest drips to the ground and is less likely to erode the soil. ((39)) Tree roots absorb water, drying the soil so it can hold even more rainwater. Logging increases the magnitude and frequency of floods. ((40))

Governments are increasingly being held responsible for damages caused by logging projects. For example, the British Columbia government paid \$300,000 to settle a lawsuit by a Canadian couple whose property severely flooded after the government logged a third of the surrounding forest. ((41))

Question 16> Is the USFS concerned the proposed extensive clearcut could increase the risk of flooding?

### LANDSLIDES

Studies show that logging on a steep, concave (bowl-shaped) slope increases the likelihood of shallow landslides, mainly because of the loss of tree-root strength. Roots bind soil particles and reinforce a slope. ((42)) A mature forest canopy blocks heavy rain and wind from eroding the surface. Heavy logging machinery disturbs and compacts topsoil, lowering its ability to absorb water. ((43))

Question 17> What will the USFS do to lessen the chance of landslides, especially on clearcut steep slopes?

#### JULY 2022 LANDSLIDE AND FLOOD

On July 31, 2022, Jackson Creek and Little Wolf Creek flooded after the area received six inches of rain in two hours before our rain gauge failed, and then it rained for another hour after that. Heavy rain events are common here, with a few floods each year, any time of the year, but more often in spring. Storms can train over us for hours, and once or twice a year, our mountains squeeze the rain out of hurricane remnants. So, while heavy rain and floods are expected, the 2022 mega flood was not.

Photos show Jackson and Little Wolf Creeks flooding our property about an hour after the water crest. My dogs and I had walked across the same, normally placid Jackson Creek just hours before the flood. Despite the creeks expanding far beyond their normal flood stages, we experienced no damage to our structures, though a few roads washed out. The flood also threatened two honeybee hives, but no bees were lost. We were stranded in our holler for less than 24 hours, thanks to the amazing overnight work of the Whitley County roadcrew. Sadly, some neighbors down Little Wolf Creek were flooded out of their homes. Our flood occurred a few days after the mega flood that devastated eastern Kentucky and left 39 dead. ((44))

One side effect of the mega flood was a massive amount of sediment deposited on our property along Jackson Creek. Later, we discovered there was a large landslide earlier in March 2022 at the head of a feeder into Jackson Creek. The landslide occurred right in the middle of a 44-acre tract the USFS had clearcut with reserves in 1990.

The Jellico Project prescribes treatments on nearly all the mountaintops above Jackson Creek. We believe the logging prescribed in the Jellico Project will increase our problems with landslides and flooding.

Recommendation 11> Someone (USFS or Kentucky Heartwood?) should investigate – while the evidence is still relatively fresh – the July 2022 Jackson Creek flood and its link to the landslide and logging. The study should collect soil samples, analyze debris patterns, review photos and drone videos, and produce a report. The purpose is not to assign blame, but for scientific research to help inform the policy of clearcutting steep slopes like in the Jellico Mountains.

#### CLIMATE CHANGE

More extreme heat, drought, storms, floods, disappearing glaciers, shrinking water sources, warming oceans, non-arable land, uninhabitable land, food shortages, displaced populations of humans and wildlife, and a loss of species more than a thousand times faster than normal, so fast that our time is now called “The Sixth Mass Extinction.” ((45)) These are all effects of climate change already occurring today and expected to grow worse.

The climate on Earth is and always has been changing, but the change is accelerating due to humans. We didn’t care when our planet grew hotter and lost its polar ice caps 250 million years ago ((46))

because none of us were around. But we're here now, and one tenth of the world lives in a low-elevation coastal zone at risk from rising seas or crumbling coastlines. ((47)) And everyone is at risk from food shortages, rising prices, and political instability.

Carbon dioxide (CO<sub>2</sub>) is a heat-trapping gas (greenhouse gas) resulting from the extraction and burning of fossil fuels like coal, oil, and natural gas, from wildfires, and from natural events like volcanic eruptions. Since the beginning of the industrial age in the 18th century, human activities have raised atmospheric CO<sub>2</sub> by 50%, greater than the level that occurred naturally at the end of the last ice age 20,000 years ago. CO<sub>2</sub> in the atmosphere warms the planet, causing climate change. ((48))

Humans are pumping over 10 billion tons of carbon (36 billion tons of CO<sub>2</sub>) into our atmosphere every year ((49)), yet the net increase is only 4.7 billion tons of carbon. ((50)) The rest of the carbon is captured by plants on land and in the ocean. Forests are the largest single carbon sink, absorbing around 30 percent of the CO<sub>2</sub> emitted by human activities each year. America's forests absorb more than 10% of U.S. greenhouse gas emissions. ((51))

Mature forests still accumulate CO<sub>2</sub> because carbon makes up about half the dry weight of wood, and as trees grow older, they grow bigger, which means they absorb more carbon every year. ((50)) The largest trees in a mature forest may represent just 1% of all stems, yet store at least 40% of the above-ground carbon. Mature forests also store a lot of carbon in the soil, which is protected from erosion by the tree canopy. In fact, some mature forests can have more carbon in the soil than in the trees. ((50)) If we hope to limit the effects of climate change, the carbon dioxide removal (CDR) rate needs to increase rapidly for the Earth to remain within the 2.0C goal set by the Intergovernmental Panel on Climate Change (IPCC). ((52)) Forests are essential for raising the CDR rate.

There is a growing interest in planting more trees, like with Nature Conservancy's "Plant a Billion Trees" campaign to "slow the connected crises of climate change and biodiversity loss." ((53)) As policy scientist William Moomaw says, "planting trees is great, and it makes us all feel good, and it's a wonderful thing to do, and we absolutely should be reforesting areas that have been cut... but they will not make much of a difference in the next two or three decades because little trees just don't store much carbon. Letting existing natural forests grow is essential to any climate goal we have." ((50))

Foresters often cite declining tree growth rates at the leaf-level and stand-level while forests age as justification for logging mature forests, going so far as to say that logging helps fight climate change by replacing old trees with more productive young trees. But it turns out the growth rate of individual trees of most species actually increases as the tree ages. For example, a tree with a 40-inch diameter trunk grows three times faster than a 20-inch diameter tree, and the mass of leaves on a typical tree can grow 100-fold for each 10-fold increase in tree diameter. So, while leaves grow slower as trees age, the increase in the number of leaves more than makes up for the decline. Large trees generally capture carbon more efficiently than smaller-sized trees. ((54))

Question 18> Did the USFS consider climate change in their evaluation of the Jellico Project? Using 2022 climate science?

Question 19> How will the Jellico Project affect the sequestration of carbon and the impacts of climate change in our region?



## VALUE OF DEAD TREES

A theme we repeatedly hear from foresters is that “a dead tree is a waste,” and a forest with many dead trees is “out of balance” or “sick.” That viewpoint is often reflected in managed forests, which usually lack large quantities of snags and down wood. But it turns out that sanitized, managed forests are actually less healthy than so-called “sick” natural forests. An ecologically healthy forest has lots of dead trees, broken tops, and down logs. Such forests may not look tidy from a forester’s perspective, but a forest with lots of dead trees is the most biologically diverse and healthy, from a forest ecosystem perspective. ((55))

Snags are important biological legacies passed from one forest generation to the next. Dead trees and down wood play an important role in ecosystems by providing habitat for wildlife, cycling forest nutrients, decreasing erosion, controlling drainage, and improving soil moisture. ((55)) As dead wood is decomposed by fungi, bacteria, and other life forms, it aids new tree and plant growth by returning important nutrients to the soil.

Nearly half of North American native bird species rely on snags for at least a portion of their life cycle. ((55)) Many woodpeckers nest in cavities they excavated in snags or dead parts of living trees, while using those same dead trees to drill for food. Many bat species hide in cavities in dead trees or under the loose bark of dead and dying trees. Eagles, hawks, and owls often use snags and dead branches to watch for prey while hunting. Flycatching birds (that catch flying insects directly out of the air) use these perches to launch aerial attacks. Mammals like squirrels, opossums, and raccoons use dead trees as nesting sites. Snakes use logs to regulate their internal temperature by sunning themselves on cooler days and hiding from the sun on warmer days. Salamanders use rotting logs or stumps both as shelter and food source. ((56))

Insects also love logs. Ants are among the most common invertebrate in forests and play a critical role in a healthy forest ecosystem. Not only are ants a food source for many animals from birds to bears, but ants also feast on the pupae of defoliating moths that attack trees. Hundreds of species of wasps, solitary bees, and colonial bees reside in down logs and are major pollinators of flowers and berry-producing shrubs. ((55))

Many species of fungi grow only on dead wood, breaking it down, and returning important nutrients to the soil. Some common lichens are more abundant on bare, barkless branches of dead trees than on live trees. Below the litter layer in soil, a complex mix of bacteria, fungi, protozoa, and micro-fauna like arthropods, springtails, mites depend on dead wood. Forest litter like leaves, needles, and branches are also important to forest soils, but the forest is dependent on the influx of carbon from whole trees that have a lifecycle of hundreds of years. ((55))

The speed at which deadwood breaks down depends on local climate and decomposers like fungi, microorganisms, and insects. For example, termites and wood-boring beetles consume carbon in wood for themselves, confining it to the biosphere. But insects don’t always accelerate wood decomposition, as is often assumed. Insects account for 29% of deadwood carbon release each year, but their role is disproportionately greater in the tropics and has lesser effect in cooler regions. The combination of warm and wet is best at promoting decomposition. Boreal and temperate forests like the Jellico Mountains account for less than 7% of carbon released from deadwood each year, and the rest comes from the tropics. ((57))

Question 20> Does the Stearns District of the USFS consider dead trees a waste? If so, is that from the perspective of human consumption, or the forest ecosystem as a whole?

#### HOLISTIC VIEW OF CARBON

The USFS says it follows a “more holistic view” by considering where carbon goes once it leaves the forest. They believe harvesting trees can reduce carbon emissions more than leaving the forest unmanaged, especially in forests experiencing high rates of mortality. When forests are properly harvested and allowed to regrow, they eventually recover carbon lost during harvesting. Also, carbon in harvested trees is transferred to wood products, which can store carbon for months, years, or even decades, depending on the product (e.g., paper, furniture, homes). Carbon storage continues when forest products are disposed in landfills at the end of their usable life. Also, leaving forests unmanaged increases the risk of carbon loss through wildfires and insect epidemics, which can undercut the goal of maximizing carbon storage in the forest. ((58))

Question 21> Does the USFS know of any independent, peer reviewed, scientific studies that support this “holistic view” of harvesting forests to maximize carbon storage?

#### ENDANGERED SPECIES

Logging can harm all wildlife but especially endangered species, for the reasons described above: forest fragmentation; loss of biodiversity leading to loss of food sources; loss of shelter, water, and food, such as fruit-bearing trees; change in habitat, forcing wildlife to migrate, adapt, or die; erosion and road building changing the landscape and creating barriers; sedimentation and pollution choking aquatic life. ((59))

Sedimentation from logging and landslides can damage waterways and harm threatened and endangered species that are especially sensitive to sedimentation. Jellico Mountains have two such species found nowhere else in the world: Cumberland Darter and Blackside Dace, which are federally protected by the Endangered Species Act. ((60))

“After reviewing and incorporating information from the public and the scientific community, the U.S. Fish and Wildlife Service ... identified approximately 228 river miles and 29 acres of critical habitat in Kentucky, Tennessee, Alabama, and Arkansas, that contain aquatic habitat essential to the conservation of the Cumberland darter, rush darter, yellowcheek darter, chunky madtom, and laurel dace, five species of fish protected by the Endangered Species Act (ESA). The critical habitat designation includes areas in McCreary and Whitley counties, Kentucky.” ((61))

In the Jellico Mountains, the Cumberland Darter has been found in Marsh Creek and Little Wolf Creek. The Black Sided Dace has been found in various branches of Jellico Creek: Bucks Branch, Crisillis Branch, Ross Branch, and Ryans Creek. ((61))

Question 22> What is the USFS doing to protect the endangered species in the Jellico Project area?

Question 23> When was the last endangered species evaluation done in the Jellico Project area and by whom? Please provide a link.

Question 24> Does the USFS plan any further surveys of endangered species in the Jellico Project area?

#### INVASIVE SPECIES

A logging operation can involve dozens of vehicles making hundreds of trips over weeks or years to a remote area. Vehicles, workers, wildlife, and birds can transport seeds of non-native plants into logged forests, where the reduction of canopy and newly disturbed soils allow invasive species to take root and outcompete native species.

Invasive species that represent a “severe threat” in Kentucky ((62)) include Tree-of-Heaven, Autumn Olive, Japanese Honeysuckle, Kudzu, Japanese Knotweed, Multiflora Rose, Water Hemlock, and Johnson Grass.

Invasive species is an obvious example where “natural” doesn’t necessarily equal better. Left untouched, Tree of Heaven and Kudzu line our roads, Autumn Olive and Japanese Knotweed fill our fields, and flooding our wet valleys is Water Hemlock, the most dangerous plant in North America, kin to the plant that killed Socrates. ((63)) Fun Fact: Our land was the first official sighting of Water Hemlock in Whitley County, though it was later discovered to be widespread in the county by then.

One reason Jellico Mountains have problems today with invasive species is the USFS didn’t seem to have actively managed the forest after their treatments in the 1980s and 90s. Follow-up treatments don’t generate revenue, in fact, they cost a bunch, especially if done correctly, like applying herbicide on each stem instead of mass spraying.

Question 25> What will the USFS do to ensure that invasive species don’t become a major problem in treated areas like they did after the 1980s and 90s treatments? Especially given over 5,000 acres are scheduled to be clearcut or clearcut with reserves, creating a ripe environment for invasives?

Recommendation 12> Fewer clearcut areas mean fewer endangered species, so clearcut fewer areas to reduce the follow-up costs of maintaining cleared areas.

#### RED MAPLE

The Jellico Project plan explicitly calls out Red Maples for removal. Red Maple has the widest north-to-south range of all other native trees on the U.S. East Coast. Red Maples have a high canopy, stunning fall display with red twigs and red/orange leaves, and bright red buds in the spring that open to show red flowers, followed by dangling red-winged fruit called samaras, which are as attractive as the flowers. Fast growing up to three feet per year, Red Maples can grow to more than 120 feet tall, though they average 40-50 feet. They live from 50-150 years and like both wet and dry soils. ((64)) Red Maple is well-suited for making clothespins, musical instruments, and boxes. Moose, deer, and rabbits help keep young Red Maples in check. ((65))

The downside of Red Maple is it has weaker branches susceptible to ice storms and winds. Although Red Maples are resistant to heavy damage by pests and disease, they can still be harmed by aphids, scales, verticillium, and root rot. ((64)) Red maple wood is soft and often deformed, so only the best specimens

can be used for furniture and flooring. After fires, hurricanes, or logging, Red Maples spring up quickly and can become the dominant species in the forest. ((65))

We don't have a large problem with Red Maples in our mature forest. Cleared areas are where Red Maples pose the most problem, and ironically, the Jellico Project will be creating 5,000 new cleared acres.

Question 26> Can the USFS please elaborate on its plans to remove Red Maple from the Jellico Mountains?

#### GRAPEVINE

The wild grapevine that climbs to the treetops of Kentucky forests is related to the cultivated vine that produces grapes to make wine. Wild grapevine can grow up to 20 inches in diameter and climb to a tree canopy 120 feet high. ((66)) Grapevines do not kill trees directly. They are not parasites. In fact, grapevines need trees alive to support themselves as they climb skyward to sunlight. ((67))

Grapevine tangles offer dense nesting and escape cover for wildlife throughout the year. After acorns and nuts, grapes are the most important food for wildlife in deciduous woods during summer ((67)), feeding more than 80 species of birds and many mammals like black bear, raccoon, quail, grouse, and turkey. Grapevines grow quickly in clearcut areas and often produce the only dependable food source for wildlife in the early years of forest regeneration.

In 2004, the USFS published guidelines for controlling wild grapevines: "Grapevines (*Vitis* spp.) are becoming a major problem to forest managers in the Appalachians, especially when clearcutting is done on highly productive hardwood sites. Where present, grapevines can reduce tree quality and growth, and eventually kill the tree... Grapevines damage hardwood trees by breaking tops and limbs, twisting and bending the tree bole, and uprooting trees, thus reducing tree quality, and eventually killing the tree." ((68))

The USFS guidelines recommend: "If the objective is to grow only high-quality timber, then elimination of all grapevines could be the control treatment. If wildlife development is the sole management objective, then grapevine growth and reproduction could be maintained or stimulated. However, in most situations forest managers want to grow good-quality timber and at the same time encourage wildlife. To meet this objective, grapevines should be controlled by treatments that provide enough grapevines for recommended wildlife purposes, while trying to keep grapevines out of the crown of trees designated for the production of quality timber." ((68))

Question 27> Does the USFS use the 2004 guidelines for grapevine management, or are there newer guidelines and science to follow?

Question 28> What is the Jellico Project plans for controlling grapevine?

#### NOISE

Quiet is one of top things that people really appreciate about living in the Jellico Mountains. It's not uncommon to go an hour or more without hearing a human-made noise, other than our own talking and walking. We can be halfway up the mountain and hear a vehicle in the valley and know whose truck it is driving on which gravel driveway. When the wind is from the east, we can sometimes hear the interstate 3 miles away as the crow flies. The more quiet a place is, the more sound travels.

Logging operations are noisy. For example, chainsaws operate at 90-110 decibels, and vehicle-mounted saws are much louder. One in three loggers ((69)) report hearing loss. A neighbor can hear a chainsaw in a windy forest 460 feet away, or 830 feet away in a quiet forest. ((70)) Vehicle engines rumble through these hollers, tree falls sound like thunder, and thunder can echo for a full minute.

When I asked an ex-forester if the USFS typically groups harvesting jobs by area, so that they go in and do all their logging in one area for a year or two, and then move on and not return for years until follow-up treatments are needed. He said no, we should expect to hear trucks and saws rumbling through our valley for the next 40 years.

Question 29> Does the USFS consider noise and traffic disturbances to neighbors when scheduling treatment jobs?

### TRAFFIC

With logging comes trucks, noise, exhaust, and traffic along curvy, narrow mountain roads. Heavy trucks drive ruts into the asphalt. Most of the Jellico Mountain roads barely qualify as two lanes, especially when one of those lanes is blocked by a logging big rig.

Recommendation 13> The USFS should publish the public routes it plans to use for the Jellico Project, a list of any road improvements that will be necessary to support the logging traffic, and a commitment to promptly fix any road damage caused by logging trucks.

Recommendation 14> Publish a list of private easements you've acquired, if any, for the Jellico Project.

### LIGHTS

It's dark at night in the Jellico Mountains. On clear nights we can see the planets and satellites after dusk, and the Milky Way galaxy streaming across the sky. We occasionally see some city glow from Williamsburg, Kentucky to the north, and Jellico, Tennessee to the south. Some people light up their property like a Walmart parking lot. I've never understood why someone would move to the country and replicate the city. Sensor lights, cameras, and dogs are more effective anyway for nighttime security, versus bathing everything in artificial light. Fortunately, our valley is fairly dark.

Logging at night is uncommon in this part of the country. Regardless, we prefer not to see our ridges lit up at night.

Question 30> Is there any plan for forest treatments at night?

## HERBICIDE USE

A large, new study reveals the effects herbicide has on wildlife and timber production. Stands that have or haven't been treated with herbicides are usually recognizable based on the amount of vegetation growing at the foot of young forests whose canopies haven't yet closed. Untreated forests tend to have green floors, whereas heavily treated forest floors are initially quite bare. Trees grow faster when herbicides are sprayed, producing up to 30 percent more timber volume, but there is a negative effect on biodiversity. There were fewer bird species and pollinators found in areas where herbicides were sprayed, but not much change in populations of deer, elk, and moths. For the most part, the number of species begins to equalize and recover after five years. "In the end, some species responded negatively, some species have been resilient, and some responded negatively and then recovered." ((71))

My wife Theresa manages a dozen beehives spread far apart across our property. Amazingly, after five years of beekeeping, she has maintained a 100% hive survival rate by using the latest science, paying close attention and providing ongoing care to her hives, focusing on Varroa mite integrated pest management (IPM), using both natural and chemical treatments, insulating hives in winter, and monitoring the temperature of her hives with Bluetooth devices.

The prescribed clearcut areas will potentially offer Theresa's honeybees more nectar and pollen-bearing plants to work. But we worry that her honeybees and other pollinators will be harmed by the use of herbicides. Theresa will be closely monitoring how her bees will do after the Jellico Mountain logging and herbicide use begins.

Question 31> Will the USFS notify nearby residents when herbicide treatments begin?

Question 32> How will the USFS apply herbicides? Direct stem or aerial spraying? And on what species for what purposes?

Question 33> What herbicides will the USFS deploy in the Jellico Mountains, and how are they known to interact with honeybees and other pollinators?

## FIRE

"Fire has been essential to the health of forest ecosystems for millennia. Untamed and frequent burns, sparked by lightning, shaped the diversity of life — nearly 80 percent of the native vegetation in North America evolved with fire." ((72))

But for the last century, fire suppression and exclusion practices have created hazardous and unhealthy conditions. "This is exacerbated by increasingly warm and dry conditions caused by climate change. Forests have grown dense, making them prone to insect and disease outbreaks. These crowded forests provide a ladder for flames to reach high into the tree top or crown and produce more intense blazes that are harder to manage. Additionally, buildup of fuels on the ground reduces fire and drought resiliency. In the absence of low-intensity and frequent burns, forests are less healthy, wildlife habitat is lost, and communities are threatened by the increased risk of major fire events." ((72))

Most of the big wildfires in the U.S. occur in western states and Alaska because the region tends drier and hotter. California wildfires accounted for 40% of U.S. total acres burned in 2020. While lightning is

responsible for some wildfires, 60-85% of wildfires are caused by human activity, including campfires, debris fires, powerlines, electrical malfunctions, cigarettes, and arson. Though lightning-caused fires tend to be more severe than human-caused. ((73))

Although not as bad as out west, forest fires are still a major threat to Kentucky forests. There are an average 1450 wildfires in Kentucky each year. Arson is the primary cause of Kentucky wildfires, uncontrolled debris burning is second, and 99% of all wildfires in Kentucky are caused by humans. The worst recent fire year in Kentucky was 2001 with a total of 178,925 acres burned. ((74))

Question 34> How do the treatments prescribed in the Jellico Project plan reduce the likelihood of wildfire?

### VIEWSHED

All forest uses and management activities have the potential to affect scenery. The Forest and Rangeland Renewable Resources Planning Act of 1974, as amended by the National Forest Management Act of 1976 (16 U.S.C. 1601), as well as other laws and regulations, compel the USFS to include requirements for consideration, treatment, and protection of scenery and aesthetics. USFS is required to inventory and manage visual resources on USFS lands, and to assess the aesthetic impacts of timber sales and other activities. ((75))

General Guidance for managing scenery on National Forest lands comes primarily two sources, including the "Forest Service Manual 2800 - Chapter 2380: Landscape Management" (issued 2003). Chapter 2380 states that it is USFS policy to:

1. Inventory, evaluate, manage, and, where necessary, restore scenery as a fully integrated part of the ecosystems of National Forest System lands and of the land and resource management and planning process.
2. Employ a systematic, interdisciplinary approach to scenery management to ensure the integrated use of the natural and social sciences and environmental design.
3. Ensure scenery is treated equally with other resources.
4. Apply scenery management principles routinely in all National Forest System activities.

Given some of the prescribed treatments, including large clearcut slopes right next to homes like on Osborn Creek and Bunch Branch, it's unclear whether the USFS considered scenery in the Jellico Project.

Question 35> Was the visual impact of treatments a consideration in planning the Jellico Project?

### CLEARCUT

Clearcutting is the most common and economically profitable method of logging. Clearcut logging is a forestry practice in which most or all trees in an area are uniformly cut down. It is used by foresters to create certain types of forest ecosystems and promote select species that require an abundance of sunlight or even-age stands. ((76))



As one would expect, clearcutting is the most destructive form of even-aged logging. For other treatments like Two Aged Shelterwood, loggers leave some seed trees to drop seeds or cones and restock the area and give wildlife cover and shelter. In all variations of even-aged logging, timber companies eventually remove all trees. Sometimes, foresters plant seedlings in clearcut areas to grow into an even-aged plantation. ((77)) Other times, foresters allow Mother Nature to do her thing. Or a mix of both. But planted or natural, a clearcut area will require a lot of ongoing maintenance to keep out invasive and unwanted species. Clearly, none of these clearcut methods are better than a natural, biodiverse forest with trees of many species and ages.

Clearcutting has many negative side effects:

**Increases Fire Danger** – After a clearcut, planting trees of the same age and species results in a forest that burns hotter and faster than the diverse forests they replace. It’s a myth that clearcutting land reduces fuel for wildfires. Instead, it removes mature trees that resist fire and slow the wind that spreads fire to communities. Studies on forest fires show that fires in even-aged stands grow faster and burn hotter. Young trees burn more easily than old trees, and after an area is clearcut, the first natural vegetation to grow in is often highly flammable shrubbery. The USFS says, “Clearcutting can cause rapid regeneration of shrubs and trees that can create highly flammable fuel conditions within a few years of cutting.” The loss of tree canopy exposes the land to more sunlight, making it hotter and drier. Hotter and drier air from clearcuts raise temperatures and lessen humidity in adjacent forest areas as well, creating a significant fire hazard. ((77))

**Degrades Our Water** – Clearcutting causes erosion, landslides, and contamination of our water supply with sediment and toxic herbicides. Clearcutting compacts the ground and decreases the soil’s ability to retain water, ultimately affecting our supply of clean water. The amount of sediment in water is directly correlated with the percentage of land clearcut, in other words, the more clearcutting there is, the more sediment pollution there is. ((77))

**Threatens Wildlife** – Clearcutting indiscriminately destroys entire habitats. Species that need particular conditions to survive may struggle or go extinct in a clearcut area. Clearcut reduces biodiversity found in a natural forest, but of course, some species will benefit from newly cleared areas and forest edges.

**Accelerates Climate Change** – “Forests are the only carbon capture and storage ‘technology’ we have in our grasp that is safe, proven, inexpensive, immediately available at scale, and capable of providing beneficial ripple effects.” ((78)) Clearcutting releases carbon stored by older trees and replaces them with seedlings that have little ability to remove CO<sub>2</sub> from the atmosphere for decades. Large amounts of carbon stored in forest soils and roots are released along with vehicle emissions into the atmosphere during clearcut operations. Emissions caused by forest harvesting in the U.S. is greater than emissions from commercial and residential building, combined. ((77))

**Raises Temperature** – Clearcutting raises temperature on land and in riparian zones due to lack of shade, which adversely affects both terrestrial and aquatic animals. ((79))

**Worsens Air Quality** – Trees remove carbon dioxide and release oxygen into the atmosphere. Clearcutting removes lots of trees. ((79))

**Spoils the Scenery** – Clearcut forest landscapes, especially on steep slopes, can be a real eyesore, especially compared to the normal beauty of the Jellico Mountains. Though to be honest, slopes will

remain ugly for only a few years. Kentucky has a way of greening up fast. But even if a forest regains its beauty, it will look managed for decades after a clearcut.

The USFS proposed three variations of clearcutting in the Jellico Mountains: Clearcut 1016 acres, Two Aged Shelterwood 1869 acres, and Deferment Harvest 2462 acres, for a total of 5347 acres of effective clearcut. There are few clearcut tracts prescribed for ridgetops, partly because most of the ridges in the Jellico Mountains are thin and steep, which means most clearcut areas are prescribed on steep slopes.

If you think about, most of the negative effects discussed in this document are amplified by clearcutting.

Question 36> How will the USFS clearcut on steep slopes? Will the loggers cut terraces into the slope?

Question 37> Why is clearcutting better than selective cutting? Who benefits most from clearcutting?

Recommendation 15> Reduce the amount of prescribed clearcutting in the Jellico Project, especially on steep slopes.

### PROJECT SIZE AND SCOPE

Let's be honest. Whether it's 10,000 acres or 9,798 acres, that's a lot of trees. And over 5,000 acres clearcut. And a lot of herbicide and disturbed ground. And a lot of work by the USFS for decades to keep out the invasives. And a lot of steep slopes spilling into creeks that towns depend on to drink, and farms depend on to irrigate crops and livestock. And this will be going on for four decades, well beyond the lifetime of many local residents.

We genuinely appreciate the USFS saying after the town meeting that after all the analysis is completed, the Jellico Project would probably be closer to 8,000 acres. ((80)) Hopefully there won't be any "shrinkflation," such as saying, "We'll only log 3,000 acres over the next 10 years." (Extrapolated, that's 12,000 acres over the original 40-year project length.)

Recommendation 16> Regardless of whether the ultimate designated use for the Jellico Mountains turns out to be recreation, crop, or somewhere in between, the USFS should find ways to treat fewer total acres in the Jellico Project, and find ways to use less damaging treatments and more selective cutting.

### 3D MODELING

Two-dimensional maps are useful, but they can be misleading when trying to visualize the effect of logging on steep, mountainous terrain like the Jellico Mountains. A logging tract nearby on the map might not even be visible because it's on the other side of a mountain ridge, whereas a more distant logging tract might loom prominently in a resident's view. So, we created a comprehensive set of detailed three-dimensional maps that bring to life the large, flat USFS project area map. ((81)) Many residents told us they appreciated these maps to better understand the impact of the proposed project.

The third dimension also adds another layer when evaluating logging projects. A trained cartologist can look at the elevation gradient on a 2D map and imagine the slope. But most people respond better to lifelike 3D models that help them imagine what logging will look like from their perspective on the

mountains they see every day. 3D also highlights some of the more questionable decisions, such as to clearcut steep slopes.

Question 38> Does the USFS internally use primarily 2D or 3D maps during project planning?

Recommendation 17> Internally, the USFS should primarily use 3D modeling instead of 2D when planning and evaluating forest projects, especially in mountainous areas like the Jellico Mountains.

Recommendation 18> Externally, the USFS should primarily use 3D maps instead of 2D when sharing project plans with the public.

Recommendation 19> The USFS website for each project should include an interactive 3D map with an address search function.

Recommendation 20> The USFS website for each project should include the map KML and shape files.

### NOTIFICATIONS

I'm one of the more connected people I know. I subscribe to multiple newspapers and read dozens of news sources daily, and admittedly spend too much time online consuming information. However, I didn't find out about the Jellico Project until I read about it in a paper newsletter we received in the mail from Kentucky Heartwood. ((82)) When we started discussing this project with our friends and neighbors, we discovered NOT ONE person knew about it, not even the Judge Executive of Whitley County, who generally knows everything important going on in his county.

The USFS did nothing wrong and have been following the NEPA process ((83)) correctly, as far as we know. But sometimes you don't know what you don't know, and apparently nobody around here knew we needed to be following the USFS. Of course, many of us now subscribe to the Jellico Project and USFS for updates. But it was wrong that a large, impactful endeavor such as the Jellico Mountains Project could be proposed and planned with no awareness nor input from the surrounding community.

After the town meeting, when I spoke with the USFS, they were surprised to hear that I am not anti-logging. They couldn't understand why we would create a website and organize a town meeting if we weren't completely opposed to the project. I replied that we opposed the project being done in secret. They pushed back and said it wasn't secret, which is 100% correct, but with today's firehose of information available online, it's quite easy to hide in plain sight.

Recommendation 21> Congress should pass legislation requiring the USFS to notify with a postal mailer all residents directly affected by any logging project, prior to the start of the scoping phase. Meanwhile, while waiting for Congress, the USFS should adopt this as a rule.

### DANIEL BOONE STEARNS DISTRICT

The Stearns Ranger District of the Daniel Boone National Forest (DBNF) is managing the Jellico Project. They are part of the United States Forest Service under the U.S. Department of Agriculture (USDA). The Forest Service is legally required to balance five uses: recreation, timber, range, wildlife, and water.

Tim Reed is the District Ranger of the Stearns Ranger District, Daniel Boone National Forest, and is the Responsible Official for this proposal. The Responsible Official will decide whether to implement the proposed treatments. John Hull is the District Silviculturist and Jellico Project Manager.

We've met with Mr. Reed and Mr. Hull a few times. They are smart, professional, and caring for the forests they manage. We appreciate all the work they've done to answer our community's questions. We hope they accept all our public feedback in the manner it was intended: with respect and a desire to improve the Jellico Project for the local community and forest.

### USFS FOREST PLAN

The USFS released its "Revised Forest Plan for the Daniel Boone National Forest" in 2004. ((84)) That 2004 was two years before Al Gore released "An Inconvenient Truth," the movie that launched global awareness of climate change. Since then, we've gained a wealth of scientific knowledge on climate change, forestry, biology, hydrology, and everything else. Also, the Forest Plan was meant to guide the USFS "for the next 10 to 15 years."

Question 39> Is the USFS using 2004 science or the latest 2022 science in its planning and decision-making for the Jellico Project?

Question 40> When will the next Daniel Boone Forest Plan be released?

### LOCAL BUSINESSES AND LABOR

So, they bring in mostly outside companies, take our trees, muddy our creeks, shop at our stores and snooze at our hotels while they're here, leave us a mess and ugly eyesore, deposit the profits in the national treasury, which maybe eventually trickle down a bit to Kentucky. Not a great deal. We would like to see more opportunities for local business and labor to participate in forest management operations.

Question 41> Are there any laws or USFS regulations that require any level of local participation in harvesting operations?

Question 42> What is the history of local businesses landing timber harvesting jobs for the USFS? The USFS has said their bidding process is open to all legal and capable businesses, but local loggers have told me the system is challenging to compete and rigged against small business.

Question 43> What is the record of harvesting firms employing local labor? Is there any way the USFS can encourage use of local labor?

Recommendation 22> The USFS should adopt a rule to require like 20% of harvesting contracts to go to local businesses.

Recommendation 23> The USFS should consider ways to make it easier for small businesses to participate, for example, allowing small businesses to subcontract for larger qualified logging firms.

#### LOCAL REPRESENTATIVE ON USFS PROJECTS

When asked at the town meeting, the USFS said none of their employees working on the Jellico Project live in the project area. Although it would be ideal if somebody at the table had a stake in the matter, it's not always practical. Perhaps the public participation in the NEPA process serves adequately enough as the local representative at the table. But local representation is typically unorganized, and not a working participant in the planning, and certainly not in the decision-making.

Recommendation 24> For communities that are interested, the USFS should adopt a process whereby a small committee of local residents can participate more deeply in the planning and evaluation of forest management projects. This would hopefully lead to better outcomes, more acceptance from the public, and maybe even reduced legal delays.

#### PRIVATIZE PROFITS AND SOCIALIZE COSTS

Large corporations swooping into a depressed area, taking resources, and leaving a mess, is a story as old as time. But the history of exploitation in Appalachia is worth a few paragraphs.

“For well over a century now, central Appalachia has been ruled by absentee landowners only interested in making the highest profit available from natural resource extraction, primarily coal. From the beginning of its presence in the mountains, the coal industry intentionally created single-industry economies to exert absolute control over the people, the politicians, the land and the wealth that still flows out of the mountains. Many critics continue to condemn politicians for their failure to implement adequate coal severance taxes, which could have better insulated coal communities from boom and bust cycles. As a result of these mono-economies, most central Appalachians have been dependent upon and at the mercy of that one industry, an industry that has a legacy of exploiting both land and people.” ((85))

As the coal industry has been losing ground to more economical natural gas and green energy, the Appalachians and eastern Kentucky have had to reinvent themselves. Ironically, green energy jobs are replacing dirty, unhealthy coal mining jobs.

Turning away from an economy dependent on extraction, the Appalachians are switching to “manufacturing, electric vehicle transportation, renewable energy, energy efficiency, reforestation, reclamation, and regenerative agriculture.” Also, government contractors and homeland security. “These industries capitalize on the region’s natural and repurposed fossil fuel assets, including its energy export grid and transportation infrastructure, trades skills and work ethic.” ((86))

These businesses are great. But we cannot ignore the incredible natural assets we have in our own backyards: Jellico Mountains, Big South Fork, Cumberland, Laurel Lake, and Pine Mountain. Currently there is nothing that ties them all together. We could be the hub for this big green playground.

Recommendation 25> The local economy should focus more on outdoor recreation and entertainment. Williamsburg-Corbin-London-Pine Knot-Jellico could serve as the hub, the economic center of gravity, the Kentucky Moab of the natural playground we’ve been blessed with.

CLOSING

Jellico Mountains are more than just a crop of trees. Southern Kentucky is blessed with a tremendous opportunity to become an outdoor recreation hub that would be the envy of rural America, while benefiting our community, country, and planet. Thank you for taking time to read this document and consider these ideas. May the forest be with you.

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